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A NEW

Dictionary of Arts, Sciences, &c.

K.

K, the tenth letter, and ſeventh conſonant, of our alphabet; being formed by the voice, by a guttural expreſſion of the breadth through the mouth, together with a depreſſion of the lower jaw and opening of the teeth.

Its ſound is much the ſame with that of the hard *c*, or *qu:* and it is uſed, for the moſt part, only before *e*, *i*, and *n*, in the beginning of words; as *ken*, *kill*, *know*, &c. It uſed formerly to be always joined with *c* at the end of words, but is at preſent very properly omitted, at leaſt in words derived from the Latin: thus, for *publick*, *muſick*, &c. we ſay, *public*, *muſic*, &c. However, in monoſyllables, it is ſtill retained, as *jack*, *block*, *mock*, &c.

Though it is ſeldom uſed in words derived from the French, as being altogether wanting in that language, yet we meet with *riſk*, *burleſk*, &c. in very good authors, inſtead of *riſque*, *burleſque;* and indeed the former orthography is certainly moſt agreeable to the genius of the Engliſh language.

As a numeral, K denotes 250; and with a line over it, $\bar{K}$, 250000.

KÆMPFERIA, GALANGAL; a genus of the monogynia order, belonging to the monandria claſs of plants.

Species. 1. The galanga, or common galangal, hath tuberous, thick, oblong, fleſhy roots; crowned with oval, cloſe-ſitting leaves, by pairs, four or five inches long, without footſtalks; and between them cloſe-ſitting white flowers, with purple bottoms, growing ſingly. 2. The rotunda, or round zedoary, hath thick, fleſhy, ſwelling, roundiſh, cluſtering roots, ſending up ſpear-ſhaped leaves, ſix or eight inches long, near half as broad, on upright footſtalks; and between them, immediately from the roots, riſe whitiſh flowers, tinged with green, red, yellow, and purple, centres. Both theſe are perennial in root; but the leaves riſe annually in ſpring, and decay in winter. They flower in ſummer: each flower is of one petal, tubulous below, but plain above, and divided into ſix parts; they continue three or four weeks in beauty, but are never ſucceeded by ſeeds in this country.

Culture. Both theſe plants muſt be potted in light rich mould, and always kept in the hot-houſe, giving in plenty of water in ſummer, but more ſparingly in winter. They are propagated by parting the roots ſpring, juſt before they begin to puſh forth new leaves.

Uſes. The firſt ſpecies is cultivated with great care by the inhabitants of Siam for the ſake of its root; the uſe of which, ſays Kempfer, is to remove obſtructions of the hypochondria, to warm the ſtomach, diſcuſs flatulencies, and to ſtrengthen the bowels and the whole nervous ſyſtem. The root was formerly uſed in this country in bitter infuſions; but is now laid aſide, on account of its flavour being diſagreeable.

KALENDAR, a diſtribution of time, accommodated to the uſes of life; or a table, or almanac, containing the order of days, weeks, months, feaſts, &c. happening throughout the year. See TIME, MONTH, YEAR, &c.

It is called *kalendar*, from the word *kalendæ*, anciently wrote in large characters at the head of each month. See KALENDS.

The days in kalendars were originally divided into *octoades*, or eights; but afterwards, in imitation of the Jews, into *hebdomades*, or ſevens; which cuſtom, Scaliger obſerves, was not introduced among the Romans till after the time of Theodoſius.

There are divers kalendars, according to the different forms of the year, and diſtributions of time, eſtabliſhed in different countries. Hence the Roman, the Jewiſh, the Perſian, the Julian, the Gregorian, &c. kalendars.

The ancient Roman kalendar is given by Ricciolus, Struvius, Danet, and others; by which we ſee the order and number of the Roman holidays and workdays.

The three Chriſtian kalendars are given by Wolfius in his Elements of Chronology.

The Jewiſh kalendar was fixed by rabbi Hillel about the year 360, from which time the days of their year may be reduced to thoſe of the Julian kalendar.

The Roman KALENDAR, owed its origin to Romulus; but it has undergone various reformations ſince his time. That legiſlator diſtributed time into ſeveral periods, for the uſe of the people under his command: but as he was much better verſed in matters of war than of aſtronomy, he only divided the year into ten months, making it begin in the ſpring, on the firſt of March; imagining the ſun made his courſe thro' all the ſeaſons in 304 days.

Romulus's kalendar was reformed by Numa, who added two months more, January and February; placing them before March: ſo that his year conſiſted of 355 days, and began on the firſt of January. He choſe, however, in imitation of the Greeks, to make an intercalation of 45 days, which he divided into two parts; intercalating a month of 22 days at the end of each two years; and at the end of each two years more, another of 23 days; which month, thus interpoſed, he called *Marcedonius*, or the intercalary February.

But theſe intercalations being ill obſerved by the pontiffs, to whom Numa committed the care of them, occaſioned great diſorders in the conſtitution of the year; which Cæſar, as ſovereign pontiff, endeavoured to remedy. To this end, he made choice of Soſigenes, a celebrated aſtronomer of thoſe times; who found, that the diſpenſation of time in the kalendar could never be ſettled on any ſure footing, without having regard to the annual courſe of the ſun. Accordingly, as the ſun's yearly courſe is performed in 365 days ſix hours, he reduced the year to the ſame number of days: the years of this correction of the kalendar was a year of confuſion; they being obliged, in order to ſwallow up the 65 five days that had been imprudently added, and which occaſioned the confuſion, to add two months beſides the Marcedonius, which chanced to fall out that year; ſo that this year conſiſted of 15 months, or 445 days. This reformation was made in the year of Rome 708, 42 or 43 years before Chriſt.

The Roman kalendar, called alſo *Julian kalendar*, from its reformer Julius, is diſpoſed into quadriennial periods; whereof the firſt three years, which he called *communes*, conſiſt of 365 days; and the fourth, *biſſextile*, of 366; by reaſon of the ſix hours, which in four years make a day, or ſomewhat leſs, for in 134 years an intercalary day is to be retrenched. On this account it was, that pope Gregory XIII. with the advice of Clavius and Ciaconius, appointed, that the hundredth year of each century ſhould have no biſſextile, excepting in each fourth century: that is, a ſubtraction is made of three biſſextile days in the ſpace of four centuries; by reaſon of the 11 minutes wanting in the ſix hours whereof the biſſextile conſiſts.

The reformation of the kalendar, or the *new ſtyle*, as we call it, commenced on the fourth of October 1582, when ten days were thrown out at once; ſo many having been introduced into the computation ſince the time of the council of Nice, in 325, by the defect of 11 minutes.

Julian Chriſtian KALENDAR, is that wherein the days of the week are determined by the letters A, B, C, D, E, F, G, by means of the ſolar cycle; and the new and full moons, eſpecially the paſchal full moon, with the feaſt of Eaſter, and the other moveable feaſts depending thereon, by means of golden numbers, rightly diſpoſed through the Julian year. See CYCLE, and GOLDEN *Number*.

In this kalendar, the vernal equinox is ſuppoſed to be fixed to the 21ſt day of March; and the cycle of 19 years, or the golden numbers, conſtantly to indicate the places of the new and full moons; yet both are erroneous. And hence aroſe a very great irregularity in the time of Eaſter. To ſhew this error the more apparently, let us apply it to the year 1715. In this year, then, the vernal equinox falls on the tenth of March; and therefore comes too early by 11 days. The paſchal full-moon falls on the 7th of April; and therefore too late, with regard to the cycle, by three days. Eaſter, therefore, which ſhould have been on the 10th of April, was that year on the 17th. The error here lies only in the metemptoſis, or poſtpoſition of the moon, through the defect of the lunar cycle. If the full moon had fell on the 11th of March, Eaſter would have fallen on the 13th of March; and therefore the error ariſing from the anticipation of the equinox, would have exceedingly augmented that ariſing from the poſtpoſition. Theſe errors, in courſe of time, were ſo multiplied, that the kalendar no longer exhibited any regular Eaſter. Pope Gregory XIII. therefore, by the advice of Aloyſius Lilius, in 1582, threw 10 days out of the month of October, to reſtore the equinox to its place, viz. the 21ſt of March; and thus introduced the form of the Gregorian year, with ſuch a proviſion, as that the equinox ſhould be conſtantly kept to the 21ſt of March. The new moons and full moons, by advice of the ſame Lilius, were not to be indicated by golden numbers, but by epacts. The kalendar, however, was ſtill retained in Britain, without this correction: whence there was a difference of 11 days between our time and that of our neighbours. But by 24 Geo. II. c. 23. the Gregorian computation is eſtabliſhed here, and accordingly took place in 1752.

Gregorian KALENDAR, is that which, by means of epacts, rightly diſpoſed thro' the ſeveral months, determines the new and full moons, and the time of Eaſter, with the moveable feaſts depending thereon, in the Gregorian year.

The Gregorian kalendar, therefore, differs from the Julian, both in the form of the year, and in that epacts are ſubſtituted in lieu of golden numbers: for the uſe and diſpoſition whereof, ſee EPACT, in the APPENDIX.

Though the Gregorian kalendar be preferable to the Julian, yet it is not without its defects (perhaps, as Tycho Brahe and Caſſini imagine, it is impoſſible ever to bring the thing to a perfect juſtneſs.) For, firſt, the Gregorian intercalation does not hinder, but that the equinox ſometimes ſucceeds the 21ſt of March, as far as the 23d; and ſometimes anticipates it, falling on the 19th; and the full moon, which falls on the 20th of March, is ſometimes the paſchal; yet not ſo accounted by the Gregorians. On the other hand, the Gregorians account the full moon of the 22d of March, the paſchal; which yet, falling before the equinox, is not paſchal. In the firſt caſe, therefore, Eaſter is celebrated in an irregular month; in the latter, there are two Eaſters in the ſame eccleſiaſtical year. In like manner, the cyclical computation being founded on mean full-moons, which yet may precede or follow the true ones by ſome hours, the paſchal full-moon may fall on Saturday, which is yet referred by the cycle to Sunday: whence, in the firſt caſe, Eaſter is celebrated eight days later than it ſhould be; in the other, it is celebrated on the very day of the full moon, with the Jews and Quartodeciman heretics; contrary to the decree of the council of Nice. Scaliger and Calviſius ſhew other faults in the Gregorian kalendar, ariſing from the negligence and inadvertency of the authors: yet is this kalendar adhered to by the Romaniſts throughout Europe, &c. and uſed wherever the Roman breviary is uſed.

Reformed, or *Corrected*, **Kalendar**, is that which, ſetting aſide all apparatus of golden numbers, epacts, and dominical letters, determines the equinox, with the paſchal full-moon, and the moveable feaſts depending thereon, by aſtronomical computation, according to the Rudolphine Tables.

This kalendar was introduced among the Proteſtant ſtates of Germany in the year 1700, when 11 days were at once thrown out of the month of February; ſo that in 1700, February had but 18 days: by this means, the corrected ſtyle agrees with the Gregorian. This alteration in the form of the year, they admitted for a time; in expectation that, the real quantity of the tropical year being at length more accurately determined by obſervation, the Romaniſts would agree with them on ſome more convenient intercalation.

Conſtruction of a **Kalendar**, or *Almanac*. 1. Compute the ſun's and moon's place for each day of the year; or take them from ephemerides. 2. Find the dominical letter, and, by means thereof, diſtribute the the kalendar into weeks. 3. Compute the time of Eaſter, and thence fix the other moveable feaſts. 4. Add the immoveable feaſts, with the names of the martyrs. 5. To every day add the ſun's and moon's place, with the riſing and ſetting of each luminary; the length of day and night; the crepuſcula, and the aſpects of the planets. 6. Add, in the proper places, the chief phaſes of the moon, and the ſun's entrance into the cardinal-points; *i. e.* the ſolſtices and equinoxes; together with the riſing and the ſetting, eſpecially heliacal, of the planets and chief fixed ſtars. See Astronomy.

The duration of the crepuſcula, or the end of the evening and beginning of the morning twilight, together with the ſun's riſing and ſetting, and the length of days, may be transferred from the kalendars of one year, into thoſe of another; the differences in the ſeveral years being too ſmall to be of any conſideration in civil life.

Hence it appears, that the conſtruction of a kalendar has nothing in it of myſtery, or difficulty, if tables of the heavenly motions be at hand.

Some divide kalendars or almanacs into public and private, perfect and imperfect; others into heathen and Chriſtian.

Public almanacs are thoſe of a larger ſize, uſually hung up for common or family uſe; private are thoſe of a ſmaller kind, to be carried about either in the hand, inſcribed on a ſtaff, or in the pocket; perfect, thoſe which have the dominical letters as well as primes and feaſts inſcribed on them; imperfect, thoſe which have only the primes and immoveable feaſts. Till about the fourth century, they all carry the marks of heatheniſm; from that age to the ſeventh, they are generally divided between heatheniſm and Chriſtianity.

Almanacs are of ſomewhat different compoſition, ſome containing more points, others fewer. The eſſential part is the kalendar of months and days, with the riſings and ſetting of the ſun, age of the moon, &c. To theſe are added various parerga, aſtronomical, aſtrological, meteorological, chronological, and even political, rural, medical, &c. as calculations, and accounts of eclipſes, ſolar ingreſſes, aſpects, and configurations of the heavenly bodies, lunations, heliocentrical and geocentrical motions of the planets, prognoſtics of the weather, and predictions of other events, tables of the planetary motions, the tides, terms, intereſt, twilight, equation, kings, &c.

Gelalean or *Jellalæan* **Kalendar**, is a correction of the Perſian kalendar, made by order of ſultan Gelaleddan, in the 467th year of the Hegira; of Chriſt 1089.

Kalendar, is alſo applied to divers other compoſitions reſpecting the 12 months of the year.

In this ſenſe, Spencer has given the ſhepherd's kalendar; Evelyn, and Miller, the gardener's kalendar, &c.

Kalendar, is uſed for the catalogue, or faſti, anciently kept in each church, of the ſaints, both univerſal, and thoſe particularly honoured in each church; with their biſhops, martyrs, &c. Kalendars are not to be confounded with martyrologies; for each church had its peculiar kalendar, whereas the martyrologies regarded the whole church in general, containing the martyrs and confeſſors of all the churches. From all the ſeveral kalendars were formed one martyrology: ſo that martyrologies are poſterior to kalendars.

Kalendar, is alſo extended to an orderly table, or enumeration of perſons or things.

Lord Bacon wiſhes for a kalendar of doubts. A late writer has given a kalendar of the perſons who may inherit eſtates in fee-ſimple.

Kalendar, *Kalendarium*, originally denoted among the Romans, a book containing an account of moneys at intereſt, which become due on the kalends of January, the uſual time when the Roman uſurers let out their money.

Kalendar *Months*, the ſolar months, as they ſtand in the kalendar, viz. January 31 days, &c.

Aſtronomical **Kalendar**, an inſtrument engraved upon copper-plates, printed on paper, and paſted on board, with a braſs ſlider which carries a hair, and ſhews by inſpection the ſun's meridian altitude, right aſcenſion, declination, riſing, ſetting, amplitude, &c. to a greater exactneſs than our common globes will ſhew.

Kalendar *of Priſoners*. See Calendar.

Kalendar-*Brothers*, a ſort of devout fraternities, compoſed of eccleſiaſtics as well as lay-men; whoſe chief buſineſs was to procure maſſes to be ſaid, and alms diſtributed, for the ſouls of ſuch members as were deceaſed. They were alſo denominated *kalend-brothers*, becauſe they uſually met on the kalends of each month, though in ſome places only once a-quarter.

KALENDARIUM festum. The Chriſtians retained much of the ceremony and wantonneſs of the kalends of January, which for many ages was held a feaſt, and celebrated by the clergy with great indecencies, under the names *feſtum kalendarum*, or *hypodiaconorum*, or *ſtultorum*, that is, the feaſt of fools: ſometimes alſo *libertas decembrica*. The people met maſked in the church; and in a ludicrous way proceeded to the election of a mock pope, or biſhop, who exerciſed a juriſdiction over them ſuitable to the feſtivity of the occaſion. Fathers, councils, and popes, long laboured to reſtrain this licence, to little purpoſe. We find the

the feaſt of the kalends in uſe as low as the cloſe of the 15th century. Du Cange.

KALENDERS. See CALENDERS.

KALENDS, or CALENDS, in the Roman chronology, the firſt day of every month.—The word is formed from καλεω, *I call*, or *proclaim*; becauſe, before the publication of the Roman faſti, it was one of the offices of the pontifices to watch the appearance of the new moon, and give notice thereof to the *rex ſacrificulus*; upon which a ſacrifice being offered, the pontiff ſummoned the people together in the capitol, and there, with a loud voice, proclaimed the number of kalends, or the day whereon the nones would be; which he did by repeating this formula, as often as there were days of kalends, *Calo Juno Novella*. Whence the name *calendæ* was given thereto, from *calo, calare*. This is the account given by Varro. Others derive the appellation hence, That the people being convened on this day, the pontifex called, or proclaimed, the ſeveral feaſts or holidays in the month; a cuſtom which continued no longer than the year of Rome 450, when C. Flavius, the curule ædile, ordered the faſti, or kalendar, to be ſet up in public places, that every body might know the difference of times, and the return of the feſtivals.

The kalends were reckoned backwards, or in a retrograde order. Thus, v. g. the firſt of May being the kalends of May; the laſt, or 30th of April, was the *pridie kalendarum*, or ſecond of the kalends of May; the 29th of April, the third of the kalends, or before the kalends: and ſo back to the 13th, where the ides commence; which are, likewiſe, numbered invertedly to the fifth, where the nones begin; which are numbered after the ſame manner to the firſt day of the month, which is the kalends of April. See IDES, and NONES.

The rules of computation by kalends, are included in the following verſes:

Prima dies menſis cujuſque eſt dicta kalendæ:
Sex Maius nonas, October, Julius, & Mars;
Quatuor at reliqui: habet idus quilibet octo.
Inde dies reliquos omnes dic eſſe kalendas;
Quas retro numerans dices a menſe ſequente.

To find the day of the kalends anſwering to any day of the month we are in; ſee how many days there are yet remaining of the month, and to that number add two: for example, ſuppoſe it the 22d day of April; it is then the 10th of the kalends of May. For April contains 30 days: and 22 taken from 30, there remains eight; to which two being added, the ſum is ten. The reaſon of adding two is, becauſe the laſt day of the month is called *ſecundo kalendas*, the laſt but one *tertio kalendas*, &c.

The Roman writers themſelves are at a loſs for the reaſon of this abſurd and whimſical manner of computing the days of the month: yet it is ſtill kept up in the Roman chancery; and by ſome authors, out of a vain affectation of learning, preferred to the common, more natural, and eaſy manner.

KALENDS, are alſo uſed in church-hiſtory to denote conferences anciently held by the clergy of each deanry, on the firſt day of every month, concerning their duty and conduct, eſpecially in what related to the impoſition of penance.

KALENDS of January, in Roman antiquity, was a ſolemn feſtival conſecrated to Juno and Janus; wherein the Romans offered vows and ſacrifices to thoſe deities, and exchanged preſents among themſelves, as a token of friendſhip.

It was only a melancholy day to debtors, who were then obliged to pay their intereſts, &c. Hence Horace calls it *triſtes kalendæ*; Lib. i. Serm. Sat. 3.

KALI, in botany. See SALSOLA.

KALISH, a province of Lower Poland, with the title of a palatinate. It is bounded on the weſt by the palatinate of Boſnia, on the eaſt by that of Syrad, on the north by Regal Pruſſia, and on the ſouth by Sileſia. Kaliſh is the capital town.

KALISH, a town of Lower Poland, and capital of a palatinate of the ſame name, where the jeſuits have a magnificent college. It is ſeated on the river Proſna, in a moraſs, which renders it difficult of acceſs. E. Long. 18. 0. N. Lat. 52. 20.

KALMIA, in botany, a genus of the monogynia order, belonging to the decandria claſs of plants. Of this genus there are two ſpecies; both of them hardy evergreen ſhrubs, growing four or five feet high; adorned with oval and ſpear-ſhaped entire leaves, and monopetalous five-parted flowers, of a pale or bright red colour, in cloſe round bunches, appearing in June and July. They may be propagated either by ſeeds, ſuckers, or layers; and though natives of America, will ſucceed any where in the open ground in this country.

KALMUCKS, a tribe of Tartars, called alſo *Eluths*, inhabiting the larger half of what the Europeans call *Weſtern Tartary*. Their territory extends from the Caſpian ſea, and the river *Yaik* or *Ural*, in 72 degrees of longitude from Ferro, to mount Altay, in 110 degrees, and from the 40th to the 52d degree of north latitude; whence it may be computed about 1930 miles in length from weſt to eaſt, and in breadth from north to ſouth about 650 miles where broadeſt. It is bounded on the north by Ruſſia and Siberia, from which it is ſeparated by a chain of mountains; on the eaſt by mount Altay; on the ſouth by the countries of Karazm and the two Bukharias, from which it is alſo ſeparated partly by a chain of mountains, and partly by ſome rivers.—For a deſcription of the country, the manners, &c. of the inhabitants, ſee TARTARY.

KAMAKURA, a famous iſland of Japan, about three miles in circumference, lying on the ſouth coaſt of Niphon. It is here they confine their great men when they have committed any fault. The coaſt of this iſland is ſo ſteep, that they are forced to be lifted up by cranes.

KAMINIECK, a very ſtrong town of Poland, and capital of Podolia, with two caſtles, and a biſhop's ſee. It was taken by the Turks in 1672, who gave it back in 1690, after the treaty of Carlowitz. It is ſeated on a craggy rock, in E. Long. 27. 30. N. Lat. 48. 58.

KAMTCHATKA, KAMSCHATCKA, or *Kamchatka*; a large peninſula on the north-eaſtern part of Aſia, lying between 51 and 62 degrees of north latitude, and between 173 and 182 degrees of eaſt longitude from the iſle of Ferro. It is bounded on the eaſt and ſouth by the ſea of Kamtchatka, on the weſt by the ſeas of Ochotſk and Penſhinſk, and on the north by the country of the Koriacs.

1 When firſt viſited by the Ruſſians.

This peninſula was not diſcovered by the Ruſſians before the end of the laſt century. It is probable, however, that ſome of that nation had viſited Kamtchatka before the time above mentioned. For when Volodomir Atlaſſoff entered upon the conqueſt of this peninſula in 1697, he found that the inhabitants had already ſome knowledge of the Ruſſians. A common tradition as yet prevails among them, that, long before the expedition of Atlaſſoff, one Feodotoff and his companions had reſided among them, and had intermarried with the natives; and they ſtill ſhew the place where the Ruſſian habitations ſtood. None of the Ruſſians remained when Atlaſſoff firſt viſited Kamtchatka. They are ſaid to have been held in great veneration, and almoſt deified, by the natives; who at firſt imagined that no human power could hurt them, until they quarrelled among themſelves, and the blood was ſeen to flow from the wounds which they gave each other; and ſoon after, upon a ſeparation taking place, they were all killed by the natives. —Theſe Ruſſians were thought to be the remains of a ſhip's crew who had ſailed quite round the north-eaſtern promontory of Aſia called *Tſchukutſkoi-Noſs*. The account we have of this voyage is as follows.—In 1648, ſeven kotches or veſſels ſailed from the mouth of the river *Kovyma* or *Kolyma*, lying in the frozen ocean in about 72 degrees north latitude, and 173 or 174 eaſt longitude from Ferro, in order to penetrate into the eaſtern ocean. Four of theſe were never more heard of; the remaining three were commanded by Simon Deſhneff, Geraſim Ankudinoff, two chiefs of the Coſſacs, and Feodotoff Alexeeff, head of the Promyſhlenics, or wandering Ruſſians, who occaſionally viſited Siberia. Each veſſel was probably manned with about 30 perſons. They met with no obſtructions from the ice, but Ankudinoff's veſſel was wrecked on the promontory above mentioned, and the crew were diſtributed on board the two remaining veſſels. Theſe two ſoon after loſt ſight of each other, and never afterwards rejoined. Deſhneff was driven about by tempeſtous winds till October, when he was ſhipwrecked on the northern part of Kamtchatka. Here he was informed by a woman of Yakutſk, that Feodotoff and Geraſim had died of the ſcurvy; that part of the crew had been ſlain; and that a few had eſcaped in ſmall veſſels, who had never afterwards been heard off; and theſe were probably the people who, as we have already mentioned, ſettled among the Kamtchatkans.

2 Subdued by them.

As the inabitants of this country were neither numerous nor warlike, it required no great force to ſubdue them; and in 1711 the whole peninſula was finally reduced under the dominion of the Ruſſians.—For ſome years this acquiſition was of very little conſequence to the crown, excepting the ſmall tribute of furs exacted from the inhabitants. The Ruſſians indeed occaſionally hunted, in this peninſula, foxes, wolves, ermines, ſables, and other animals, whoſe ſkins form an extenſive article of commerce among the eaſtern nations. But the fur-trade carried on from thence was very inconſiderable, until the ſeries of iſlands mentioned in the next article were diſcovered; ſince which time the quantities of furs brought from theſe iſlands have greatly increaſed the trade of Kamtchatka, and rendered it an important part of the Ruſſian commerce.

3 Country deſcribed.

The face of the country throughout the peninſula is chiefly mountainous. It produces, in ſome parts, birch, poplars, elders, willows, underwood, and berries of different ſorts. Greens and other vegetables are raiſed with great facility; ſuch as white cabbage, turneps, radiſhes, beet-root, carrots, and ſome cucumbers. Agriculture is in a very low ſtate; owing chiefly to the nature of the ſoil and the ſevere hoarfroſts: for though ſome trials have been made with reſpect to the cultivation of grain; and oats, barley, and rye, have been ſown; yet no crop has ever been procured ſufficient in quantity or quality to anſwer the trouble of raiſing it. Hemp, however, has of late years been cultivated with great ſucceſs.—Every year a veſſel belonging to the crown ſails from Ochotſk to Kamtchatka laden with ſalt, proviſions, corn, and Ruſſian manufactures; and returns in June or July of the following year with ſkins and furs.

4 Volcanoes.

Many traces of volcanoes have been obſerved in this peninſula; and there are ſome mountains which are in a burning ſtate at preſent. The moſt conſiderable of theſe is ſituated near the middle of the peninſula. In 1762, a great noiſe was heard iſſuing from the inſide of that mountain, and flames of fire were ſeen to burſt from different parts. Theſe flames were immediately ſucceeded by a large ſtream of melted ſnow-water, which flowed into the neighbouring valley, and drowned two natives who were there on a hunting party. The aſhes and burning matters thrown from the mountain were ſpread over a ſurface of 300 verſts. In 1767, was another diſcharge, but leſs conſiderable. Every night flames of fire were obſerved ſtreaming from the mountain; and conſiderable damage was done by the eruption which attended them. Since that year no flames have been ſeen; but the mountain emits a conſtant ſmoke.

5 Population, &c.

Kamtchatka is divided by the Ruſſians into four diſtricts; and the government of the whole is dependent upon, and ſubject to, the inſpection of the chancery of Ochotſk. The whole Ruſſian force ſtationed in this peninſula, amounts to no more than 300 men. The preſent population of Kamtchatka is very ſmall, amounting to ſcarce 4000 ſouls. Formerly the inhabitants were more numerous; but in 1768, the ſmall-pox carried off 5368 perſons. There are now only about 700 males in the whole peninſula who are tributary, and few more than 100 in the neighbouring iſlands, called the *Kuril Iſles*, who are ſubject to Ruſſia. The fixed annual tribute conſiſts in 279 ſables, 464 red foxes, 50 ſea-otters with a dam, and 38 cub otters. All furs exported from Kamtchatka pay a duty of 10 *per cent.* to the crown; the tenth part of the cargoes bought from the neighbouring iſlands is alſo delivered into the cuſtoms.

6 Manners, &c. of the natives.

The natives of Kamtchatka are as wild as the country itſelf. Some of them have no fixed habitations, but wander from place to place, with their herds of rein-deer; others have ſettled habitations, and reſide upon the banks of the rivers, and the ſhore of the Penſchinſka ſea, living upon fiſh and ſea-animals, and ſuch herbs as grow upon the ſhore: the former dwell in huts, covered with deer-ſkins; the latter in places dug out of the earth; both in a very barbarous manner.

ner. Their diſpoſitions and tempers are rough; and they are entirely ignorant of letters or religion. The natives are divided into three different people, namely, the Kamtchatkans, Koreki, and Kuriles. The Kamtchatkans live upon the ſouth ſide of the promontory of Kamtchatka: the Koreki inhabit the northern parts on the coaſt of the Penchinſka ſea, and round the eaſtern ocean, almoſt to the river Anadir, whoſe mouth lies in that ocean almoſt in 68° N. Lat.: the Kuriles inhabit the iſlands in that ſea, reaching as far as thoſe of Japan. The Kamtchatkans have this particular cuſtom, that they endeavour to give every thing a name in their language which may expreſs the property of it; but if they do not underſtand the thing quite well themſelves, then they take a name from ſome foreign language, which perhaps has no relation to the thing itſelf; as, for example, they call a prieſt *bogbog*, becauſe probably they hear him uſe the word *bogbog*, God; bread they call *brightatin augſh*, that is, Ruſſian root; and thus of ſeveral other words to which their language is a ſtranger.

It appears probable, that the Kamtchatkans lived formerly in Mungalia, beyond the river Amur, and made one people with the Mungals; which is farther confirmed by the following obſervations, ſuch as the Kamtchatkan having ſeveral words common to the Mungal Chineſe language, as their terminations in ong, ing, oang, chin, cha, ching, kſii, kſung; it would be ſtill a greater proof, if we could ſhew ſeveral words and ſentences the ſame in both languages. The Kamtchatkans and Mungals alſo are both of a middling ſtature, are ſwarthy, have black hair, a broad face, a ſharp noſe, with the eyes falling in, eye-brows ſmall and thin, a hanging belly, ſlender legs and arms; they are both remarkable for cowardice, boaſting, and ſlaviſhneſs to people who uſe them hard, and for their obſtinacy and contempt of thoſe who treat them with gentleneſs.

Although, in outward appearance, they reſemble the other inhabitants of Siberia, yet the Kamtchatkans differ in this, that their faces are not ſo long as the other Siberians; their cheeks ſtand more out, their teeth are thick, their mouth large, their ſtature middling, and their ſhoulders broad, particularly thoſe people who inhabit the ſea-coaſt.

Before the Ruſſian conqueſt, they lived in perfect freedom, having no chief, being ſubject to no law, nor paying any taxes; the old men, or thoſe who were remarkable for their bravery, bearing the principal authority in their villages, though none had any right to command or inflict puniſhment.

Their manner of living is ſlovenly to the laſt degree: they never waſh their hands nor face, nor cut their nails; they eat out of the ſame diſh with the dogs, which they never waſh; they never comb their heads, but both men and women plait their hair in two locks, binding the ends with ſmall ropes. When any hair ſtarts out, they ſew it with threads to make it lie cloſe; by this means they have ſuch a quantity of lice, that they can ſcrape them off by handfuls, and they are naſty enough even to eat them. Thoſe that have not natural hair ſufficient, wear falſe locks, ſometimes as much as weigh ten pounds, which makes their heads look like a haycock.

7 Kamtchatkans inclined to ſelf-murder.

They place their chief happineſs in idleneſs, and ſatisfying their natural luſt and appetites; which incline them to ſinging, dancing, and relating of love-ſtories; and they think it more eligible to die than to lead a diſagreeable life; which opinion often leads them to ſelf-murder. This was ſo common after the conqueſt, that the Ruſſians had great difficulty to put a ſtop to it. They have no notion of riches, fame, or honour; therefore covetouſneſs, ambition, and pride, are unknown among them. On the other hand, they are careleſs, luſtful, and cruel: theſe vices occaſion frequent quarrels and wars among them, ſometimes with their neighbours, not from a deſire of increaſig their power, but from ſome other cauſes; ſuch as the carrying off their proviſions, or rather their girls, which is frequently practiſed as the moſt ſummary method of procuring a wife. Their trade is almoſt entirely confined to procuring the immediate neceſſaries and conveniencies of life. They ſell the Koreki ſables, fox and white dog ſkins, dried muſhrooms, and the like, in exchange for cloaths made of deer-ſkins and other hides. Their domeſtic trade conſiſts in dogs, boats, diſhes, troughs, nets, hemp, yarn, and proviſions: and this kind of barter is carried on under a great ſhew of friendſhip; for when one wants any thing that another has, he goes freely to viſit him, and without any ceremony makes known his wants, although perhaps he never had any acquaintance with him before: the hoſt is obliged to behave according to the cuſtom of the country, and give his gueſt what he has occaſion for; but he may afterwards return the viſit, and muſt be received in the ſame manner. They fill almoſt every place in heaven and earth with different ſpirits, and offer them ſacrifices upon every occaſion. Some carry little idols about them, or have them placed in their dwellings; but, with regard to God, they not only neglect to worſhip him, but, in caſe of troubles and misfortunes, they curſe and blaſpheme him.

8 Cannot number above twenty.

It is very diverting to ſee them attempt to reckon above ten: for having reckoned the fingers of both hands, they claſp them together, which ſignifies ten; then they begin with their toes, and count to twenty; after which they are quite confounded, and cry, Metcha? that is, Where ſhall I take more? They reckon ten months in the year, ſome of which are longer and ſome ſhorter; for they do not divide them by the changes of the moon, but by the order of particular occurrences that happen in thoſe regions. They commonly divide our year into two, ſo that winter is one year, and ſummer another: the ſummer year begins in May, and the winter in November. They do not diſtinguiſh the days by any particular appellation, nor form them into weeks or months, nor yet know how many days are in the month or year. They mark their epochs by ſome remarkable thing or other, ſuch as the arrival of the Ruſſians, or the firſt expedition to Kamtchatka.

9 Their laws.

If any one kills another, he is to be killed by the relations of the perſon ſlain. They burn the hands of people who have been frequently caught in theft; but, for the firſt offence, the thief muſt reſtore what he hath ſtolen, and live alone in ſolitude, without expecting the aſſiſtance of others. They never have any diſputes about their land, or their huts, every one having land and water more than ſufficient for his wants.

They think themſelves the happieſt people in the world, and look upon the Ruſſians who are ſettled among them with contempt. However, this notion begins to change; for the old people, who are confirmed in their cuſtoms, drop off, and the young ones, being converted to the Chriſtian religion, adopt the cuſtoms of the Ruſſians, and deſpiſe the barbarity and ſuperſtition of their anceſtors.

In every oſtrog, or large village, by order of her imperial majeſty, is appointed a chief, who is ſole judge in all cauſes, except thoſe of life and death; and not only theſe chiefs, but even the common people, have their chapels for worſhip. Schools are alſo erected in almoſt every village, to which the Kamtchatkans ſend their children with great pleaſure: by this means it is to be hoped, that barbarity will be in a ſhort time rooted out from amongſt them.

10
Manner of building their huts.

Under the name of *oſtrog*, is underſtood every habitation conſiſting of one or more huts, all ſurrounded by an earthen wall or paliſado.—The huts are built in the following manner: they dig a hole in the earth about five feet deep, the breadth and length proportioned to the number of people deſigned to live in it. In the middle of this hole they plant four thick wooden pillars; over theſe they lay balks, upon which they form the roof or ceiling, leaving in the middle a ſquare opening which ſerves them for a window and chimney; this they cover with graſs and earth, ſo that the outward appearance is like a round hillock; but within they are an oblong ſqnare, with the fire in one of the long ſides of the ſquare: between the pillars, round the walls of their huts, they make benches, upon which each family lies ſeparately; but on that ſide oppoſite to the fire, there are no benches, it being deſigned for their kitchen-furniture, in which they dreſs their victuals for themſelves and dogs. In thoſe huts where there are no benches, there are balks laid upon the floor, and covered with mats. They adorn the walls of their huts with mats made of graſs. They enter their huts by ladders, commonly placed near the fire-hearth; ſo that, when they are heating their huts, the ſteps of the ladder become ſo hot, and the ſmoke ſo thick, that it is almoſt impoſſible for a ſtranger to go up or down without being burnt, and even ſtifled to death; but the natives find no difficulty in it; and though they can only fix their toes on the ſteps of the ladder, they mount like ſquirrels; nor do the women heſitate to go through this ſmoke with their children upon their ſhoulders, though there is another opening through which the women are allowed to paſs; but if any man pretend to do the ſame, he would be laughed at. The Kamtchatkans live in theſe huts all the winter, after which they go into others called *balagans:* theſe ſerve them not only to live in during the ſummer, but alſo for magazines. They are made in the following manner: nine pillars, about two fathoms long, or more, are fixed in the ground, and bound together with balks laid over them, which they cover with rods, and over all lay graſs, faſtening ſpars, and a round ſharp roof at top, which they cover with bramble, and thatch with graſs. They faſten the lower ends of the ſpars to the balks with ropes and thongs, and have a door on each ſide, one directly oppoſite to the other. They make uſe of the ſame kind of huts to keep their fiſh, &c. till winter comes on, when they can more eaſily remove it; and this without any guard, only taking away the ladders. If theſe buildings were not ſo high, the wild beaſts would undoubtedly plunder them; for, notwithſtanding all their precaution, the bears ſometimes climb up and force their way into their magazines, eſpecially in the harveſt, when the fiſh and berries begin to grow ſcarce.

The ſouthern Kamtchatkans commonly build their villages in thick woods, and other places which are naturally ſtrong, not leſs than 20 verſts from the ſea; and their ſummer habitations are near the mouths of the rivers; but thoſe who live upon the Penchinſka ſea, and the eaſtern ocean, build their villages very near the ſhore. They look upon that river near which their village is ſituated, as the inheritance of their tribe.

11
Method of kindling fire.

In order to kindle fire, they uſe a board of dry wood with round holes in the ſides of it, and a ſmall round ſtick; this they rub in a hole till it takes fire; and inſtead of tinder they uſe dry graſs beat ſoft. Theſe inſtruments are held in ſuch eſteem by the Kamtchatkans, that they are never without them, and they value them more than our ſteels and flints; but they are exceſſively fond of iron inſtruments, ſuch as hatchets, knives, or needles: nay, at the firſt arrival of the Ruſſians, a piece of broken iron was looked upon as a great preſent; and even now they receive it with thankfulneſs, finding uſe for the leaſt fragment, either to point their arrows or make darts, which they do by hammering it out cold between two ſtones. As ſome of them delight in war, the Ruſſian merchants are forbid to ſell them any warlike inſtruments: but they are ingenious enough to make ſpears and arrows out of the iron pots and kettles which they buy; and they are ſo dexterous, when the eye of a needle breaks, as to make a new eye, which they will repeat until nothing remains but the point.

12
Conſtruction of their boats.

The Kamtchatkans make their boats of poplar-wood; but the Kuriles, not having any wood of their own, make uſe of what is thrown on ſhore by the ſea, and is ſuppoſed to come from the coaſts of Japan, China, or America. The northern inhabitants of Kamtchatka, the ſettled Koreki and Tſchukotſkoi, for want of proper timber and plank, make their boats of the ſkins of ſea-animals. They ſew the pieces together with whales beards, and caulk them with moſs or nettles beat ſmall. Theſe boats hold two perſons; one of which ſits in the prow, and the other in the ſtern. They puſh them againſt the ſtream with poles, which is attended with great trouble: when the current is ſtrong, they can ſcarcely advance two feet in ten minutes; notwithſtanding which, they will carry theſe boats, fully loaded, ſometimes 20 verſts, and, when the ſtream is not very ſtrong, even 30 or 40 verſts. The larger boats carry 30 or 40 pood; when the goods are not very heavy, they lay them upon a float or bridge reſting upon two boats joined together. They uſe this method in tranſporting their proviſions down the ſtream, and alſo to and from the iſlands.

13
Of their clothes.

Their cloaths, for the moſt part, are made of the ſkins of deer, dogs, ſeveral ſea and land animals, and even of the ſkins of birds, thoſe of different animals being frequently joined in the ſame garment. They make

Kamchatka make the upper garment after two faſhions; ſometimes cutting the ſkirts all of an equal length, and ſometimes leaving them long behind in form of a train, with wide ſleeves of a length to come down below the knee, and a hood or caul behind, which in bad weather they put over their heads below their caps; the opening above is only large enough to let their heads paſs: they ſew the ſkins of dogs feet round this opening, with which they cover their faces in cold ſtormy weather; and round their ſkirts and ſleeves they put a border of white dog-ſkin; upon their backs they ſew the ſmall ſhreds of ſkins of different colours. They commonly wear two coats; the under coat with the hair ſide inwards, the other ſide being dyed with alder; and the upper with the hair outwards. For the upper garment they chooſe black, white, or ſpeckled ſkins, the hair of which is moſt eſteemed for the beauty of its colour.

Men and women, without diſtinction, uſe the abovementioned garments, their dreſs only differing in their under-cloathing and in the covering of their feet and legs. The women have an under-garment, which they commonly wear at home in the houſe, conſiſting of a breeches and waiſtcoat ſewed together. The breeches are wide, like thoſe of the Dutch ſkippers, and tie below the knee; the waiſtcoat is wide above, and drawn round with a ſtring. The ſummer habits are made of dreſſed ſkins without hair; their winter-garment is made of deer or ſtone-ram ſkins with the hair on. The undreſs or houſehold habit of the men, is a girdle of leather, with a bag before, and likewiſe a leathern apron to cover them behind; theſe girdles are ſewed with hair of different colours. The Kamtchatkans uſed formerly to go a-hunting and fiſhing during the ſummer in this dreſs; but now this faſhion is changed, and they wear linen ſhirts, which they buy from the Ruſſians.

The covering of their feet and legs is made of ſkins of different ſorts: in the ſummer-time, during the rains, they wear the ſkins of ſeal with the hair outwards; but their moſt common covering is the ſkin of the legs of the rein-deer, and ſometimes of the legs of other beaſts, the ſhaggieſt they can find, to preſerve them againſt the cold. But the buſkins which both the Coſſacs and Kamtchatkans uſe in their fineſt dreſs, are made in the following manner: the ſole is of white ſeal ſkin, the upper part of white fine leather, the hind quarters of white dog ſkin; what comes round the legs is of dreſſed leather, or dyed ſeal-ſkin; the upper parts are embroidered. Theſe buſkins are ſo extraordinary, that if a bachelor is obſerved to wear them, he is immediately concluded to be upon a ſcheme of courtſhip.

They wear the ſame ſort of caps as the people of Yakutſki. In ſummer they have a ſort of hats of birch bark tied about their head. The kuriles uſe in the ſummer-time caps made of platted graſs. The womens head-dreſs is the perukes that we formerly mentioned; and theſe were ſo dear to them, that when they came to be Chriſtians, they were with difficulty prevailed upon to quit this dreſs for one more decent: however, at preſent, round the Ruſs ſettlements, all is entirely changed, the women wearing ſhirts, ruffles, waiſtcoats, caps, and ribbands; which change nobody now complains of, except the very old people. The women do all their work in mittins; they formerly never waſhed their faces, but now they uſe both white and red paint: for white paint they make uſe of a rotten wood; and for red a ſea-plant, which they boil in ſeal's fat, and, rubbing their cheeks with it, make them very red. They dreſs moſt in the winter time, eſpecially when they either receive or pay viſits. Kamchatka.

The common cloaths for a Kamtchatkan and his family will not coſt him leſs than 100 rubbles; for the coarſeſt worſted ſtockings, which coſt in Ruſſia 20 kopeeks, cannot be bought here for leſs than a ruble; and all other things are ſold in the ſame proportion. The Kuriles are more able to buy good cloaths than the Kamtchatkans; for they can purchaſe for one ſea-beaver, as much as the Kamtchatkans can for twenty foxes; and one beaver coſts the Kuriles no more trouble than five foxes do the Kamtchatkans; for he muſt be a good hunter who catches more than ten foxes in the winter; and a Kurile thinks himſelf unlucky if he doth not catch three beavers in the ſeaſon; beſides which, great numbers are thrown upon the ſhore by ſtorms.

14 Their diet.

The Kamtchatkans divide their fiſh into ſix parts; the ſides and tail are hung up to dry; the back and thinner part of the belly are prepared apart, and generally dried over the fire; the head is laid to ſour in pits, and then they eat it like ſalt fiſh, and eſteem it much, though the ſtink is ſuch that a ſtranger cannot bear it; the ribs and the fleſh which remain upon them they hang up and dry, and afterwards pound for uſe; the larger bones they likewiſe dry for food for their dogs: in this manner all theſe different people prepare the yokola, which is their principal food, or, one may ſay, houſhold bread; and they eat it for the moſt part dry.

Their ſecond favourite food is caviar, or the roes of fiſh, which they prepare three different ways. They dry the roe whole in the air; or take it out of the ſkin which invelopes it, and, ſpreading it upon a bed of graſs, dry it before the fire; or, laſtly, make rolls of it with the leaves of graſs, which they alſo dry. They never take a journey or go to hunting without dry caviar; and, if a Kamtchatkan has a pound of this, he can ſubſiſt without any other proviſion a great while: for every birch and alder tree furniſhes him with bark, which, with his dried caviar, makes him an agreeable meal; but they cannot eat either ſeparately, for the caviar ſticks like glue to the teeth; and it is almoſt impoſſible to ſwallow the bark, chewed ever ſo long by itſelf. There is ſtill a fourth method, which both Kamtchatkans and Koreki uſe in preparing their caviar: the firſt having covered the bottom of a pit with graſs, they throw the freſh caviar into it, and leave it there to grow ſour: the Koreki tie theirs in bags, and leave it to ſour; this is eſteemed their moſt delicate diſh.

There is a third ſort of diet, called by the Kamtchatkans *chupriki*, which is prepared in this manner: in their huts, over the fire-place, they make a bridge of ſtakes, upon which they lay a heap of fiſh, which remains there until the hut becomes as warm as a bagnio. If there is no great thickneſs of fiſh, one fire ſerves to dreſs it; but ſometimes they are obliged to make two, three, or more fires. Fiſh dreſſed in this manner is half roaſted, half ſmoaked, but has a very agreeable taſte, and may be reckoned the beſt of all the Kamtchatka cookery: for the whole juice and fat is prepared with a gradual heat, and kept in by the ſkin, from which they may, when done enough, be eaſily ſeparated; and as ſoon as it is thus dreſſed, they take out the guts, and ſpread the body upon a mat to dry: this they afterwards break ſmall, and, putting it into bags, carry it along with them for proviſion, eating it like the yokola.

The Kamtchatkans have a diſh which they eſteem very much, called *huigul:* it is fiſh laid to grow ſour in pits; and, though the ſmell of it is intolerable, yet the Kamtchatkans eſteem it a perfume. This fiſh ſometimes rots ſo much in the pits, that they cannot take it out without ladles; in which caſe indeed they uſe it for feeding their dogs.

As for the fleſh of land and the larger ſea animals, they boil it in their troughs, with ſeveral different herbs and roots; the broth they drink out of ladles and bowls, and the meat they take out upon boards, and eat in their hands. The whale and ſea-horſe fat they alſo boil with roots.

There is a principal diſh at all their feaſts and entertainments, called *ſelaga*, which they make by pounding all ſorts of different roots and berries, with the addition of caviar, and whale and ſeal's fat.

Before the conqueſt, they ſeldom uſed any thing for drink but plain water, unleſs when they made merry; then they drank water which had ſtood ſome time upon muſhrooms. At preſent they drink ſpirits as faſt as the Ruſſians. After dinner they drink water: and when they go to bed at night, ſet a veſſel of water by them, with the addition of ſnow or ice to keep it cold, and always drink it up before morning. In the winter-time, they amuſe themſelves frequently by throwing handfuls of ſnow into their mouths: and the bridegrooms, who work with the fathers of their future brides, find it their hardeſt taſk to provide ſnow for the family in ſummer-time; for they muſt bring it from the higheſt hills, be the weather what it will, otherwiſe they would never be forgiven.

15 Method of travelling with dogs.

The Kamtchatkans commonly travel in ſledges drawn by dogs. The animals uſed for this purpoſe differ very little from the common houſe-dogs; they are of a middling ſize, of various colours, though there ſeem to be more white, black, and grey, than of any other. In travelling, they make uſe of thoſe that are caſtrated, and generally yoke four to a ſledge. They drive and direct their dogs with a crooked ſtick about four feet long, which they ſometimes adorn with different coloured thongs; this is looked upon as a great piece of finery. They drive their ſledge ſitting upon their right ſide, with their feet hanging down; for it would be looked upon as a diſgrace for a man to ſit down at the bottom of the ſledge, or to make uſe of any perſon to drive him, nobody doing this but the women. It is very difficult to travel in theſe ſledges; for unleſs a man keeps the exacteſt balance, he is liable every moment, from the height and narrowneſs of them, to be overturned: in a rugged road this would be very dangerous, as the dogs never ſtop till they come to ſome houſe, or are intangled by ſomething upon the road; eſpecially in going down ſteep hills, when they run with all their force, and are ſcarcely to be kept in; for which reaſon, in deſcending any great declivity, they unyoke all the dogs except one, and lead them ſoftly down. They likewiſe walk up hills; for it is as much as the dogs can do to drag up the ſledge empty. After a deep ſnow, before it has been hardened by a froſt, there is no travelling with dogs till a road be made, which is effected by a man going before upon ſnow-ſhoes, whom they call *brodovſhika*. The ſnow-ſhoes are made of two thin boards, ſeparated in the middle, bound together at the ends, and with the fore part bent a little upwards. The brodovſhika, having one of theſe ſhoes upon each foot, leaves the dogs and ſledge, and going on clears the road for ſome way; then returning, leads forward the dogs and ſledge ſo far as the road is made; a method which he muſt continue till he comes to ſome dwelling-houſe. This is very laborious; and it happens ſo often, that no driver ever ſets out without his ſnow-ſhoes. When a ſtorm of driven ſnow ſurpriſes them, they are obliged with all haſte to ſeek the ſhelter of ſome wood, and ſtay there as long as the tempeſt laſts, which ſometimes is a whole week. If they are a large company, they dig a place for themſelves under the ſnow, and cover the entry with wood or brambles. Sometimes they hide themſelves in caves or holes of the earth, wrapping themſelves up in their furs; and when thus covered, they move or turn themſelves with the greateſt caution, leſt they ſhould throw off the ſnow; for under that they lie as warm as in their common huts: they only require a breathing-place; but their cloaths muſt not be tight or hard girt about them, for then the cold is inſufferable. Another danger attending travellers is, that in the ſevereſt froſt ſeveral rivers are not quite frozen over; and as the roads for the moſt part lie cloſe upon the rivers, the banks being very ſteep, ſcarce a year paſſes without many being drowned. A diſagreeable circumſtance alſo to thoſe who travel in theſe parts, is their ſometimes being obliged to paſs through copſes, where they run the riſk of having their eyes ſcratched out, or their limbs broken; for the dogs always run moſt violently in the worſt roads, and, to free themſelves, very often overturn their driver. The beſt travelling is in the month of March or April, when the ſnow is turned hard, or frozen a little at top; however, there is ſtill this inconvenience attending it, that ſometimes travellers are obliged to lodge two or three nights in deſert places; and it is difficult to prevail upon the Kamtchatkans to make a fire, either for warming themſelves or dreſſing victuals, as they and their dogs eat dried fiſh, and find themſelves ſo warm wrapped in their furs, that they want no other heat; nay, all the people of this climate bear cold ſo well, that they ſleep in the open air as ſound as others in a warm bed, and awake next morning perfectly refreſhed and alert. This ſeems to be ſo natural to all here, that ſome of them have been ſeen to lie down with their backs uncovered againſt a fire, and notwithſtanding the fire has been burnt out long before morning, they continued to ſleep on very comfortably, and without any inconvenience.

Iſlands in the Sea of KAMTCHATKA. So many of theſe have been diſcovered by the Ruſſians, that the exiſtence of almoſt a continued chain of iſlands between the continents of Aſia and America is now rendered extremely probable. Many further diſcoveries of great importance to ſcience, however, remain yet to be made, and may in part be expected on the return of the Britiſh navigators who lately ſailed to theſe diſtant regions. The iſlands already known are the Kuril iſles, which ſtretch ſouthweſt towards the coaſts of China or Japan, and are almoſt uninhabited; thoſe called *Beering's*, and *Copper-iſlands*, the Aleutian iſles, and Fox-iſlands, or *Lyſſie Oſtrova*, lie almoſt directly eaſt, ſtretching nearly to 230° of Longitude eaſt from Ferro. The firſt project of making diſcoveries in that tempeſtuous ſea which lies between Kamtchatka and America, was ſet on foot by Peter the Great of Ruſſia. Captains Beering and Tſchirikoff were employed in the undertaking; the former of whom was ſhipwrecked and died on the iſland which is ſtill called by his name. As this lies at no great diſtance from Kamtchatka, the inhabitants of the latter ſoon ventured over to it, as the ſea-otters and other animals of that kind were accuſtomed to reſort thither in great numbers.

16 Copper-iſland deſcribed.

Mednoi Oſtroff, or Copper-iſland, which lies in full ſight of Beering's iſland, was next viſited. This iſland has its name from the great quantity of copper with which the north-eaſt coaſt of it abounds, the only ſide which is known to the Ruſſians. It is waſhed up by ſea, and covers the ſhores in ſuch abundance that many ſhips might be loaded with it. Perhaps an India trader might make a profitable voyage from thence to China, where this metal is in high demand. This copper is moſtly in a metallic or malleable ſtate, and many pieces ſeem as if they had formerly been in fuſion. The iſland is not high; but has many hillocks, each of which has the appearance of having formerly been a volcano. With this kind of hillocks all the iſlands in the ſea of Kamtchatka abound, inſomuch that not a ſingle iſland, though ever ſo ſmall, was found without one; and many of them conſiſted of nothing elſe. In ſhort, all the chain of iſlands above-mentioned may, without any ſtretch of imagination, be conſidered as thrown up by ſome late volcanoes. The apparent novelty of every thing ſeems to juſtify this conjecture: nor can any objection be derived from the vegetable productions with which theſe iſlands abound; for the ſummer after the lower diſtrict of Zutphen in Holland was gained from the ſea, it was covered over with wild muſtard.—All theſe iſlands are ſubject to frequent and violent earthquakes, and abound in ſulphur. We are not informed whether any lava is found upon them; but a party-coloured ſtone as heavy as iron, probably a lava, is mentioned as being found there. From this account it is by no means improbable that the copper abovementioned has been melted in ſome eruption.

17 Beering's iſland and the Aleutian iſles.

Beering's iſland is ſituated due eaſt from Kamtchatka, in the 185th degree of longitude, and Copper-iſland about one degree more to the eaſtward, and in the latitude of 54° north. The former is from 70 to 80 verſts long, and ſtretches from north-weſt to ſouth-eaſt in the ſame direction as Copper-iſland. The latter is about 50 verſts in length. About 300 verſts eaſt-by-ſouth of Copper-iſland, lie the Aleutian iſles; of which Attak is the neareſt: it is rather larger than Beering's iſland, and ſtretches from weſt to ſouth-eaſt. From thence, about 20 verſts eaſtwards, is ſituated Semitſhi, extending from weſt to eaſt; and near its extremity is another ſmall iſland. To the ſouth of the ſtrait which ſeparates the two latter iſlands, and at the diſtance of 40 verſts from both of them, lies Shimiya in a ſimilar poſition, and not above 25 verſts in length. All theſe iſlands lie between 54 and 55 degrees of north latitude.

18 Fox-iſlands

The Fox-iſlands are ſituated eaſt-north-eaſt from the Aleutians: the neareſt of theſe, Atchak, is about 800 verſts diſtant; it lies in 56° north latitude, and extends from weſt-ſouth-weſt, towards eaſt-north-eaſt. It greatly reſembles Copper-iſland, and is provided with a commodious harbour on the north. From thence all the other iſlands of this chain ſtretch in a direction towards north-eaſt by eaſt. The next to Atchak is Amlak, and about 15 verſts diſtant; it is nearly of the ſame ſize, and has an harbour on its ſouth ſide. Next follows Saugagamak at about the ſame diſtance, but ſomewhat ſmaller; from thence is 50 verſts to Amuchta, a ſmall rocky iſland; and the latter to Yunakſan, another ſmall iſland. About 20 verſts from Yunakſan there is a cluſter of five ſmall iſlands, or rather mountains, Kigalgiſt, Kagamila, Tſigulak, Ulaga, and Tana-Unok; and which are therefore called by the Ruſſians *Pat Sopki*, or the Five Mountains. Of theſe Tana-Unok lies moſt to the north-eaſt, towards which the weſtern point of Umnak advances within the diſtance of 20 verſts.

Umnak ſtretches from ſouth-weſt to north-eaſt; it is 150 verſts in length, and has a very conſiderable bay on the weſt end of the northern coaſt, in which there is a ſmall iſland or rock, called *Adugak;* and on the ſouthſide Shemalga, another rock. The weſtern point of Aghun Alaſhka, or Unalaſhka, is ſeparated from the eaſt end of Umnak by a ſtrait near 20 verſts in breadth. The poſition of theſe two iſlands is ſimilar; but Aghunalaſhka is much the largeſt, and is above 200 verſts long. It is divided towards the north-eaſt into three promontories, one of which runs out in a weſterly direction, forming one ſide of a large bay on the north-coaſt of the iſland: the ſecond ſtretches out north-eaſt, ends in three points, and is connected with the iſland by a ſmall neck of land. The third or moſt ſoutherly one is ſeparated from the laſt-mentioned promontory by a deep bay. Near Unalaſhka towards the eaſt lies another ſmall iſland called *Shirkin.* About 20 verſts from the north-eaſt promontory of Aghunalaſhka lie four iſlands: the firſt, Akutan, is about half as big as Umnak; a verſt further is the ſmall iſland Akun; a little beyond is Akunok; and laſtly Kigalga, which is the ſmalleſt of theſe four, and ſtretches with Akun and Akunok almoſt from north to ſouth. Kigalga is ſituated about the 61ſt degree of latitude. About 100 verſts from thence lies an iſland called *Unimak,* upon which a Ruſſian navigator (Captain Krenitzin) wintered; and beyond it the inhabitants ſaid there was a large tract of country called *Alaſhka,* of which they did not know the boundaries.

The Fox-iſlands are in general very rocky, without containing any remarkably high mountains: they are deſtitute of wood; but abound in rivulets and lakes, which are moſtly without fiſh. The winter is much milder than in Siberia; the ſnow ſeldom falls before the beginning of January, and continues on the ground till the end of March. There is a volcano in Amuchta, and ſulphur is produced on another iſland, in ſome others are ſprings hot enough to boil proviſions. Sulphuphureous flames alſo are ſometimes ſeen at night upon the mountains of Unalaſhka and Akutan.

19 Manners, &c. of the inhabitants.

The Fox-iſlands are tolerably populous in proportion to their ſize. The inhabitants are entirely free, and pay tribute to no one; they are of a middle ſtature, and live, both in ſummer and winter, in holes dug in the earth. No ſigns of religion were found among them. Several perſons indeed paſs for ſorcerers, pretending to know things paſt and to come; and are accordingly held in high eſteem, but without receiving any emolument. Filial duty and reſpect towards the aged are not held in eſtimation by theſe iſlanders. They are not, however, deficient in fidelity towards each other; they are of a lively and cheerful temper, though rather impetuous, and naturally prone to anger. In general, they do not obſerve any rules of decency; but follow all the calls of nature publicly, and without the leaſt reſerve. Their principal food conſiſts in fiſh and other ſea-animals, ſmall ſhell-fiſh, and ſea-plants; their greateſt delicacies are wild lilies and other roots, together with different kinds of berries. When they have laid in a ſtore of proviſions, they eat at any time of the day without diſtinction; but in caſe of neceſſity, they are capable of faſting ſeveral days together. They ſeldom heat their dwellings: but when they are deſirous of warming themſelves, they light a bundle of hay, and ſtand over it; or elſe they ſet fire to train-oil, which they pour into a hollow ſtone. They feed their children when very young with the coarſeſt fleſh, and for the moſt part raw. If an infant cries, the mother immediately carries it to the ſea-ſide, and, be it ſummer or winter, holds it naked in the water, until it is quiet. This cuſtom, it is ſaid, is ſo far from doing the children any harm, that it hardens them againſt the cold; and accordingly, they go barefooted through the winter without the leaſt inconvenience. They are alſo trained to bathe frequently in the ſea; and it is an opinion generally received among the iſlanders, that by theſe means they are rendered bold and fortunate in fiſhing.

The men wear ſhirts made of the ſkins of cormorants, ſea-divers, and gulls; and, in order to keep out the rain, they have upper garments of the bladders and other inteſtines of ſea-lions, ſea-calves, and whales, blown up and dried. They cut their hair in a circular form quite cloſe to their ears; and ſhave alſo a round place on the top. The women, on the contrary, let the hair deſcend over the forehead as low as the eyebrows, and tie the remaining part in a knot upon the top of the head. They pierce the ears, and hang in them bits of coral, which they get from the Ruſſians. Both ſexes make holes in the griſtles of their noſes, and in the under-lips, in which they thruſt pieces of bone, and are very fond of ſuch kind of ornaments. They mark alſo and colour their faces with different figures. They barter among one another ſea-otters, ſea-bears, clothes made of birds-ſkins and of dried inteſtines, ſkins of ſea-lions and ſea-calves for the coverings of their canoes, wooden maſks, darts, thread made of ſinews and hair of reindeer.

Their houſehold utenſils are ſquare pitchers and large troughs, which they make out of the wood driven aſhore by the ſea. Their weapons are bows and arrows pointed with flint, and javelins of two yards in length, which they throw from a ſmall board. Inſtead of hatchets, they uſe crooked knives of flint or bone. Some iron knives, hatchets, and lances, were obſerved among them, which they had probably got by plundering the Ruſſians.

According to the reports of the oldeſt inhabitants of Umnak and Unalaſka, they have never been engaged in any war, either amongſt themſelves or with their neighbours, except with the people of Alaſhka, the occaſion of which was as follows. The ſon of the toigon or chief of Umnak had a maimed hand; and ſome inhabitants of Alaſhka, who came to viſit upon that iſland, faſtened to his arm a drum, out of mockery, and invited him to dance. The parents and relations of the boy were offended at this inſult; hence a quarrel enſued; and from that time the people have lived in continual enmity, attacking and plundering each other by turns. According to the reports of the iſlanders, there are mountains upon Alaſhka, and woods of great extent at ſome diſtance from the coaſt. The natives wear cloaths made of the ſkins of reindeer, wolves, and foxes; and are not tributary to any of their neighbours. The inhabitants of the Fox-Iſlands ſeem to have no knowledge of any country beyond Alaſhka, which is one of the moſt eaſterly iſlands yet diſcovered in theſe ſeas, and is probably not far diſtant from the continent of America.

Feaſts are very common among theſe iſlanders; and more particularly when the inhabitants of one iſland are viſited by thoſe of the others. The men of the village meet their gueſts, beating drums, and preceded by the women who ſing and dance. At the concluſion of the dance, the hoſts invite them to partake of the feaſts; after which ceremony, the former return firſt to their dwellings, place mats in order, and ſerve up their beſt proviſion. The gueſts next enter, take their places, and, after they are ſatisfied, the diverſions begin. Firſt, the children dance and caper, at the ſame time making a noiſe with their ſmall drums, while the owners of the huts of both ſexes ſing. Next, the men dance almoſt naked, tripping after one another, and beating drums of a larger ſize: when theſe are weary, they are relieved by the women, who dance in their cloaths, the men continuing in the mean time to ſing and beat their drums. At laſt the fire is put out which had been kindled for the ceremony. The manner of obtaining fire is by rubbing two pieces of dry wood againſt each other, or moſt commonly by ſtriking two flints together, and letting the ſparks fall upon ſome ſea-otter's hair mixed with ſulphur. If any ſorcerer is preſent, it is then his turn to play his tricks in the dark; if not, the gueſts immediately retire to their huts, which are made, on that occaſion, of their canoes and mats. The natives who have ſeveral wives do not with-hold them from their gueſts; but where the owner of the hut has himſelf but one wife, he then makes the offer of a female ſervant.

Their hunting-ſeaſon is principally from the end of October to the beginning of December; during which time they kill great numbers of young ſea-bears for their cloathing. They paſs all December in feaſtings and diverſions ſimilar to thoſe abovementioned: with this difference, however, that the men dance in wooden maſks, repreſenting various ſea-animals, and painted red, green, or black, with coarſe-coloured earths found upon theſe iſlands.

During theſe feſtivals, they viſit each other from village to village, and from iſland to iſland. The feaſts concluded, maſks and drums are broken to pieces, or depoſited in caverns among the rocks, and never afterwards made uſe of. In ſpring, they go out to kill old ſea-bears, ſea-lions, and whales. During ſummer, and even in winter when it is calm, they row out to ſea, and catch cod and other fiſh. Their hooks are of bone; and for lines they make uſe of a ſtring made of a long tenacious ſea-weed, which is ſometimes found in thoſe ſeas near 160 yards in length.

Whenever they are wounded in any encounter, or bruiſed by any accident, they apply a ſort of yellow root to the wound, and faſt for ſome time. When their head achs, they open a vein in that part with a ſtone-lancet. When they want to glue the points of their arrows to the ſhafts, they ſtrike their noſe till it bleeds, and uſe the blood as glue.

Murder is not puniſhed among them; for they have no judge. The following ceremonies are uſed in the burial of the dead. The bodies of poor people are wrapped up in their own cloaths, or in mats; then laid in a grave, and covered over with earth. The bodies of the rich are put, together with their cloaths and arms, in a ſmall boat made of the wood driven aſhore by the ſea: this boat is hung upon poles placed croſſwiſe; and the body is thus left to rot in the open air.

The cuſtoms and manners of the inhabitants of the Aleutian iſles are nearly ſimilar to thoſe of the inhabitants of the Fox-iſlands. The former indeed are rendered tributary and entirely ſubject to Ruſſia; and moſt of them have a ſlight acquaintance with the Ruſſian language, which they have learned from the crews of the different veſſels who have landed there.

KANISCA, a very ſtrong town of Lower Hungary, capital of the county of Selawar. It was taken by the imperialiſts in 1690. It is ſeated on the river Drave, in E. Long. 17. 37. N. Lat. 46. 23.

KAOLIN, the name of an earth which is uſed as one of the two ingredients in oriental porcelain. Some of this earth was brought from China, and examined by Mr Reaumur. He found that it was perfectly unfuſible by fire, and believed that it was a talky earth; but Mr Macquer obſerves, that it is more probably of an argillaceous nature, from its forming a tenacious paſte with the other ingredient called *petuntſe*, which has no tenacity. Mr Bomare ſays, that by analyſing ſome Chineſe kaolin, he found it was a compound earth conſiſting of clay, to which it owed its tenacity; of calcareous earth, which gave it a meally appearance; of ſparkling cryſtals of mica; and of ſmall gravel, or particles of quartz cryſtals. He ſays, that he has found a ſimilar earth upon a ſtratum of granite, and conjectures that it may be a decompoſed granite. This conjecture is the more probable, as kaolins are frequently found in the neighbourhood of granites. See Porcelain.

KAOUTCHOUCK. See Caoutchouc.

KARAT. See Caract.

KARLE, a Saxon word uſed in our laws, ſometimes ſimply for a man; and ſometimes, with an addition, for a ſervant or clown. Thus the Saxons call a ſeaman *buſcarle*, and a domeſtic ſervant *buſcarle*. From hence comes the modern word *churl*.

KARMATIANS, a ſect of Mohammedans who occaſioned great diſorders in the empire of the Arabs. See Bagdad, n° 49.

KASTRIL, or Kestril. See Falco.

KAUFFBEUREN, a free and imperial town of Germany, ſituated in the river Wardach, in E. Long. 10. 53. N. Lat. 47. 57.

KAY, Quay, or *Key*. See Key.

KEBLA, an appellation given by the Mahometans to that part of the world where the temple of Mecca is ſituated, towards which they are obliged to turn themſelves when they pray.

KECKERMAN (Bartholomew), a native of Dantzick, and profeſſor of philoſophy there about the beginning of the 17th century, compoſed ſyſtems of almoſt all the ſciences, in which he ſhews more method than genius.

KEDAR, (anc. geog.), a diſtrict in the deſart of the Saracens, (ſo called from *Cedar*, the ſon of Iſhmael, according to Jerome, who in another place ſays that Kedar was uninhabitable), on the north of Arabia Felix. *Kedareni*, the people; who dwelt in tents like the other Scenites (Pſalm cxx.), were rich in cattle (Iſaiah lx.), of a ſwarthy complexion (Canticles i.), and excellent at the bow (Iſaiah xxi.)

KEDES, (anc. geog.), a city of refuge and Levitical in the tribe of Naphthali, on the confines of Tyre and Galilee; (Joſephus). Jerome calls it a ſacerdotal city, ſituated on a mountain 20 miles from Tyre, near Paneas, and called *Cidiſſus*, taken by the king of Aſſyria.—Another K*edes* in the tribe of Iſſachar, (1 Chron. vii. 72.) which ſeems to be called *Kiſion*, (Joſhua xix.)

KEDGE, a ſmall anchor, uſed to keep a ſhip ſteady whilſt ſhe rides in a harbour or river, particularly at the turn of the tide, when ſhe might otherwiſe drive over her principal anchor, and entangle the ſtock or flukes with her ſlack-cable, ſo as to looſen it from the ground. This is accordingly prevented by a kedge-rope that hinders her from approaching it. The kedges are particularly uſeful in tranſporting a ſhip; i. e. removing her from one part of the harbour to another, by means of ropes which are faſtened to theſe anchors. They are generally furniſhed with an iron ſtock, which is eaſily diſplaced for the convenience of ſtowing them.

KEDRON, or Cedron, (anc. geog.) a town, which, from the defeat and purſuit of the Syrians (1 Macc. xvi.) appears to have ſtood on the road which led from the Higher India to Azotus: in this war it was burnt by the Jews.

Kedron, or *Cedron*, (anc. geog.) St John calls it a brook, but Joſephus a deep valley, between Jeruſalem and mount Olivet to the eaſt; called alſo *Kedron*, from its blackneſs. A brook only in winter, or in rainy weather, according to Maundrel.

KEEL, the principal piece of timber in a ſhip, which is uſually firſt laid on the blocks in building. If we compare the carcaſs of a ſhip to the ſkeleton of the human body, the keel may be conſidered as the back-bone, and the timbers as the ribs. It therefore ſupports and unites the whole fabric, ſince the ſtem and ſtern-poſt, which are elevated on its ends, are, in ſome meaſure, a continuation of the keel, and ſerve to connect and incloſe the extremities of the ſides by tranſoms; as the keel forms and unites the bottom by timbers.

The keel is generally compoſed of ſeveral thick pieces placed lengthways, which, after being ſcarfed together, are bolted, and clenched upon the upper ſide. When theſe pieces cannot be procured large enough to afford a ſufficient depth to the keel, there is a ſtrong thick piece of timber bolted to the bottom thereof, called the *falſe keel*, which is alſo very uſeful in preſerving the lower ſide of the main keel. In our largeſt ſhips of war, the falſe keel is generally compoſed of two pieces, which are called the *upper* and the *lower falſe keels*. See Midship-*Frame*.

The loweſt plank in a ſhip's bottom, called the *garboard-ſtreak*, has its inner-edge let into a groove or channel, cut longitudinally on the ſide of the keel: the depth of this channel is therefore regulated by the thickneſs of the garboard-ſtreak.

Keel is alſo a name given to a low flat-bottomed veſſel, uſed in the river Tyne to bring the coals down from Newcaſtle and the adjacent parts, in order to load the colliers for tranſportation.

Keel-*Hauling*, a puniſhment inflicted for various offences in the Dutch navy. It is performed by plunging the delinquent repeatedly under the ſhip's bottom on one ſide, and hoiſting him up on the other, after having paſſed under the keel. The blocks, or pullies, by which he is ſuſpended, are faſtened to the oppoſite extremities of the main-yard, and a weight of lead or iron is hung upon his legs, to ſink him to a competent depth. By this apparatus he is drawn cloſe up to the yard-arm, and thence let fall ſuddenly into the ſea, where, paſſing under the ſhip's bottom, he is hoiſted up on the oppoſite ſide of the veſſel. As this extraordinary ſentence is executed with a ſerenity of temper peculiar to the Dutch, the culprit is allowed ſufficient intervals to recover the ſenſe of pain, of which indeed he is frequently deprived during the operation. In truth, a temporary inſenſibility to his ſufferings ought by no means to be conſtrued into a diſreſpect of his judges, when we conſider that this puniſhment is ſuppoſed to have peculiar propriety in the depth of winter, whilſt the flakes of ice are floating on the ſtream; and that it is continued till the culprit is almoſt ſuffocated for want of air, benumbed with the cold of the water, or ſtunned with the blows his head receives by ſtriking the ſhip's bottom.

KEELSON, a piece of timber which may be properly defined the interior or counter-part of the keel, as it is laid upon the middle of the floor-timbers, immediately over the keel, and, like it, compoſed of ſeveral pieces ſcarfed together. In order to fit with more ſecurity upon the floor-timbers and crotches, it is notched about an inch and a half deep, oppoſite to each of thoſe pieces, and thereby firmly ſcored down upon them to that depth, where it is ſecured by ſpike-nails. The pieces of which it is formed are only half the breadth and thickneſs of thoſe of the keel.

The keelſon ſerves to bind and unite the floor-timbers to the keel. It is confined to the keel by long bolts, which, being driven from without through ſeveral of the timbers, are fore-locked or clenched upon rings on the upper-ſide of the keelſon.

KEEPER *of the Great Seal*, is a lord by his office, and ſtyled *lord keeper of the great ſeal of Great Britain*; he is always one of the privy-council. All grants, charters and commiſſions of the king under the great ſeal, paſs through the hands of the lord-keeper: for, without that ſeal, many of thoſe grants, &c. would be of no force; the king being, in the interpretation of the law, a corporation, and therefore paſſes nothing but by the great ſeal, which is alſo ſaid to be the public faith of the kingdom, being in the higheſt eſteem and reputation.

Whenever there is a lord-keeper, he is inveſted with the ſame place, authority, pre-eminence, juriſdiction, or execution of laws, as the lord-chancellor of Great-Britain is veſted with.

The lord-keeper is conſtituted by the delivery of the great ſeal, &c.

Keeper *of the Privy-ſeal*, is alſo a lord by his office, through whoſe hands all grants, pardons, &c. paſs before they come to the great ſeal; and even ſome things paſs his hands which do not paſs the great ſeal at all. This officer is alſo one of the privy-council, yet was anciently called *clerk of the privy-ſeal*. His duty is to put the ſeal to no grant, &c. without a proper warrant; nor with warrant where it is againſt law, or inconvenient, but ſhall firſt acquaint the king therewith.

KEIL, a very important fortreſs of Germany, ſeated on the banks of the Rhine, built by the French after a deſign of marſhal Vauban, for the defence of Straſburg. It was ceded to the empire in 1697, by the treaty of Ryſwick. The French retook it in 1703, and it was reſtored to the empire by the treaty of Reſtadt. E. Long. 7. 45. N. Lat. 48. 40.

KEILL (Dr John), a celebrated aſtronomer and mathematician, was born at Edinburgh in 1671, and ſtudied in the univerſity of that city. In 1694 he went to Oxford; where, being admitted of Baliol-college, he began to read lectures according to the Newtonian ſyſtem in his private chamber in that college. He is ſaid to bave been the firſt who taught Sir Iſaac Newton's principles by the experiments on which they are founded: and this, it ſeems, he did by an apparatus of inſtruments of his own providing, by which means he acquired a great reputation in the univerſity. The firſt ſpecimen he gave the public of his ſkill in mathematical and philoſophical knowledge, was his *Examination of Dr Burnet's theory of the earth*, with *Remarks on Mr Whiſton's theory*: and theſe theories being defended by their reſpective inventors, drew from Mr Keill *An examination of the reflections on the theory of the earth*, together with *A defence of the remarks on Mr Whiſton's new theory*. In 1701, he publiſhed his celebrated treatiſe, intitled, *Introductio ad veram phyſicam*, which only contains 14 lectures; but in the following editions he added two more. This work has been tranſlated into Engliſh, under the title of *An introduction to natural philoſophy*. Afterwards, being made fellow of the Royal Society, he publiſhed, in the Philoſophical Tranſactions, a paper of the laws of attraction; and being offended at a paſſage in the *Acta eruditorum* of Leipſic, warmly vindicated, againſt

Mr Leibnitz, Sir Iſaac Newton's right to the honour of the firſt invention of his method of fluxions. In 1709 he went to New-England, as treaſurer of the Palatines. About the year 1711, ſeveral objections being urged againſt Sir Iſaac Newton's philoſophy, in ſupport of Des Cartes's notions of a plenum, Mr Keill publiſhed a paper in the Philoſophical Tranſactions on the rarity of matter, and the tenuity of its compoſition. But, while he was engaged in this diſpute, queen Anne was pleaſed to appoint him her decypherer; and he continued in that place under king George I. till the year 1716. He had alſo the degree of doctor of phyſic conferred on him by the univerſity of Oxford, in 1713. He died in 1721. He publiſhed, beſides the works already mentioned, *Introductio ad veram aſtronomiam*, which was tranſlated into Engliſh by Dr Keill himſelf; and an edition of Commandinus's Euclid, with additions of his own.

Keill (James), M. D. an eminent phyſician, and brother of the former, was born in Scotland, about the year 1673; and having travelled abroad, read lectures of anatomy with great applauſe in the univerſities of Oxford and Cambridge, by the latter of which he had the degree of doctor of phyſic conferred upon him. In 1700 he ſettled at Northampton, where he had conſiderable practice as a phyſician; and died there of a cancer in the mouth, in 1719. He publiſhed, 1. An Engliſh tranſlation of Lemery's chemiſtry. 2. An account of animal ſecretion, the quantity of blood in the human body, and muſcular motion. 3. A treatiſe on anatomy. 4. Several pieces in the Philoſophical Tranſactions.

KEISERSBERG, a town of Alſace in France, and in the bailiwic of Haguenau, which has belonged to the French ever ſince the year 1548. It is ſeated in a pleaſant country, in E. Long. 7. 25. N. Lat. 48. 10.

KEISERSLAUERN, a town of Germany, in the Lower Palatinate, belonging to the elector Palatine; ſeated on the river Louter, in E. Long. 7. 51. N. Lat. 49. 22.

KEISERTOUL, a town of Switzerland, in the county of Baden, with a bridge over the Rhine, and a caſtle. It belongs to the biſhop of Conſtance, and is ſituated in E. Long. 8. 40. N. Lat. 47. 10.

KEISERWERT, a town of Germany in the circle of Weſtphalia, the dioceſe of Cologne, and the duchy of Berg; ſubject to the elector Palatine. The fortifications are demoliſhed. It is ſeated on the Rhine, in E. Long. 6. 49. N. Lat. 51. 16.

KEITH (James), field-marſhal in the Pruſſian ſervice, was the younger ſon of William Keith, earl-marſhal of Scotland; and was born in 1696. He was deſigned by his friends for the law; but his inclination led to arms, and the firſt occaſion of drawing his ſword was rather an unhappy one. When he was 18 years old, the rebellion broke out in Scotland; and, through the inſtigation of his mother, he joined James's party: he was wounded at the battle of Sheriff-muir, and made his eſcape to France. Here he applied himſelf to military ſtudies; and going to Madrid, he by the intereſt of the duke of Liria obtained a commiſſion in the Iriſh brigades, then commanded by the duke of Ormond. He afterwards attended the duke of Liria when he went ambaſſador to Muſcovy; and, being by him recommended to the czarina, was promoted to the rank of lieutenant-general, and inveſted with the order of the black eagle. He diſtinguiſhed himſelf by his valour and conduct in the Ruſſian ſervice, and had no inconſiderable ſhare in the revolution that raiſed Elizabeth the daughter of Peter the Great to the throne: he alſo ſerved in ſeveral embaſſies; but finding the honours of that country but a ſplendid kind of ſlavery, he left that court, and entered the Pruſſian ſervice. The king of Pruſſia made him field-marſhal of the Pruſſian armies, and governor of Berlin; and diſtinguiſhed him ſo far by his confidence, as to travel in diſguiſe with him over a great part of Germany, Poland, and Hungary. In buſineſs, he made him his chief counſellor; in his diverſions, his chief companion. The king was much pleaſed with an amuſement which the marſhal invented in imitation of the game of cheſs. The marſhal ordered ſeveral thouſand ſmall ſtatues of men in armour to be caſt by a founder; theſe he would ſet oppoſite to each other, and range them in battalia, in the ſame manner as if he had been drawing up an army; he would bring out a party from the wings or centre, and ſhew the advantage or diſadvantage reſulting from the different draughts which he made. In this manner the king and the marſhal often amuſed themſelves, and at the ſame time improved their military knowledge. This brave and experienced general, after many important ſervices in the late wars of that illuſtrious monarch, was killed in the unfortunate affair of Hohkerchen, in the year 1758.

KELLINGTON, or **Kilkhampton**, a town of Cornwall in England, which ſends two members to parliament. W. Long. 4. 38. N. Lat. 50. 36.

KELP, in the glaſs-trade, a term uſed for a ſort of potaſhes made uſe of in many of the glaſs-works, particularly for the green glaſs. It is the calcined aſhes of a plant called by the ſame name; and in ſome places, of ſea-thongs or laces, a ſort of thick-leaved fucus or ſea-wrack *. This plant is thrown on the rocks and ſhores in great abundance, and in the ſummer months is raked together and dried as hay in the ſun and wind, and afterwards burnt to the aſhes called *kelp*.

KELSO, a town of Roxburghſhire in Scotland, pleaſantly ſituated on the river Tweed, in W. Long. 1. 20. N. Lat. 55. 38. Of this town Mr Pennant gives the following deſcription. "It is built much after the manner of a Flemiſh town, with a ſquare and town-houſe. It contains about 2700 ſouls, has a very conſiderable market, and great quantities of corn are ſold here weekly by ſample. The pariſh-church is darkſome and inconvenient, being part of that belonging to the abbey; but a new one is building, in an octagonal form, 82 feet in diameter, ſupported by a circle of pillars.

"The abbey of Tyronenſians was a vaſt pile, and, to judge by the remains, of venerable magnificence. The walls are ornamented with falſe round arches, interſecting each other. Such interſections form a true Gothic arch; and may as probably have given riſe to that mode, as the arched ſhades of avenues. The ſteeple of the church is a vaſt tower. This houſe was founded by David I. when earl of Cumberland. He firſt

* See *Fucus*, in the Appendix.

firſt placed it at Selkirk, then removed it to Roxburgh, and finally, when he came to the crown, fixed it here in 1128. Its revenues were, in money, above 2000 l. Scots a-year. The abbot was allowed to wear a mitre and pontifical robes; to be exempt from epiſcopal juriſdiction, and permitted to be preſent at all general councils.

“ The environs of Kelſo are very fine: the lands conſiſt of gentle riſings, incloſed with hedges, and extremely fertile. They have much reaſon to boaſt of their proſpects. From the Chalkheugh is a fine view of the forks of the rivers, Roxburgh-hill, Sir John Douglas's neat ſeat, and, at a diſtance, Fleurus; and from Pinnacle-hill is ſeen a vaſt extent of country, highly cultivated, watered with long reaches of the Tweed, well wooded on each margin. Theſe borders ventured on cultivation much earlier than thoſe on the weſt or eaſt, and have made great progreſs in every ſpecies of rural œconomy. Turnips and cabbages, for the uſe of cattle, cover many large tracts; and potatoes appear in vaſt fields. Much wheat is raiſed in the neighbourhood, part of which is ſent up the frith of Forth, and part into England.

“ The fleeces here are very fine, and ſell from 12 to 14 ſhillings the ſtone of 24℔. and the picked kind from 18 to 20. The wool is ſent into Yorkſhire, to Linlithgow, or into Aberdeenſhire, for the ſtocking manufacture; and ſome is woven here into a cloth, called *plains*, and ſold into England to be dreſſed. Here is alſo a conſiderable manufacture of white leather, chiefly to ſupply the capital of Scotland.

“ From what I can collect, the country is greatly depopulated. In the reign of James VI. or a little before the Union, it is ſaid that this county could ſend out 15,000 fighting men: at preſent it could not raiſe 3000. But plundering in thoſe times was the trade of the borderers, which might occaſion the multitude of inhabitants.”

Over the Tweed at Kelſo is a fine ſtone bridge of ſix arches: but the river does not in this place divide the kingdoms of Scotland and England from each other; for the Scots poſſeſs the country for ſeveral miles to the ſouthward.

KEMPIS (Thomas à), a pious and learned regular canon, was born at the village of Kemp, in the dioceſe of Cologn, in 1380; and took his name from that village. He performed his ſtudies at Deventer, in the community of poor ſcholars eſtabliſhed by Gerard Groot; and there made a great progreſs in the ſciences. In 1399, he entered the monaſtery of the regular canons of Mount St Agnes, near Zwol, of which his brother was prior. Thomas à Kempis there diſtinguiſhed himſelf by his eminent piety, his reſpect for his ſuperiors, his charity to his brother canons, and his continual application to labour and prayer. He died in 1471, aged 70. The beſt editions of his works, which conſiſt of ſermons, ſpiritual treatiſes, and lives of holy men,are thoſe of Paris, in 1549, and of Antwerp, in 1607. The famous and well-known book *De Imitatione Chriſti*, which has been tranſlated into almoſt all the languages of the world, though it has almoſt always been numbered among the works of Thomas à Kempis, is alſo found printed under the name of *Gerſon*; and on the credit of ſome MSS. has been ſince aſcribed to the abbot Gerſon of the order of St Benedict. This has occaſioned a violent diſpute between the canons of St Auguſtine and the Benedictines: but while devout Chriſtians find ſpiritual comfort in the work, the name of the writer is of ſmall importance.

KEMPTEN, a free and imperial town of Germany, in Lower Suabia, and in Algow, and alſo in the territory of the abbot of Kempten, who is a prince of the empire, and has a voice in the diet. The inhabitants are Proteſtants; and it has been ſeveral times taken, but has always recovered its liberty. It is ſeated on the river Iller. E. Long. 10. 33. N. Lat. 47. 47.

KEMPTEN, a territory in the circle of Suabia, in Germany, between the biſhopric of Augſburg, and the barony of Walburg. It is about 17 miles long and broad; and has no conſiderable place but the towns of Kempten and Kauffbeuren, which are imperial.

KEN (Thomas), an eminent Engliſh biſhop in the 17th century, was bred at Wincheſter ſchool, whence he went to Oxford; and in 1669, was made a prebend of Wincheſter. In 1675, the year of the jubilee, he travelled to Rome; and uſed to ſay, He had reaſon to give God thanks for his travels, having returned more confirmed of the purity of the reformed religion than he was before. He was appointed by king Charles II. to attend the lord Dartmouth at the demoliſhing of Tangier; and at his return was made chaplain to his majeſty, as he was ſome time after to the princeſs of Orange, then reſiding in Holland. In 1685, he was conſecrated biſhop of Bath and Wells. The month following he attended king Charles II. at his death; and gave cloſe attendance at the royal bed for three whole days and nights, watching proper intervals to ſuggeſt pious and proper thoughts on ſo ſerious an occaſion. In the following reign he zealouſly oppoſed the progreſs of Popery; and in June 1688, he, with five other biſhops and the archbiſhop of Canterbury, was committed priſoner to the Tower of London for ſubſcribing a petition to his majeſty againſt the declaration of indulgence. Upon the Revolution, however, he refuſed to take the oaths to king William and Queen Mary, on which account he was deprived of his biſhopric. Her majeſty queen Anne beſtowed on him a yearly penſion of 200l. to his death in 1710. He publiſhed ſeveral pious books. His charity was ſo great, that when he was biſhop of Bath and Wells, having received a fine of 4000l. he gave a great part of it to the French Proteſtants.

KENDAL, a town of Weſtmoreland, ſeated in a valley, among hills, on the weſt ſide of the river Can or Ken, over which there are two ſtone bridges, and one of wood, which leads to the caſtle, now in ruins. It is a large handſome place; and has two long ſtreets, which croſs each other. The church is a ſpacious ſtructure, ſupported by five rows of pillars, and 12 chapels of eaſe belonging to it. The free-ſchool ſtands on the ſide of the church-yard; and is well endowed, having exhibitions to Queen's-college in Oxford. It is noted for its manufactures of cotton, druggets, hats, and ſtockings.—The caſtle is remarkable for being the birthplace of Catharine Par, the laſt wife of Henry VIII. The different branches of the woollen manufacture were eſtabliſhed here by certain Flemings as far back as the reign of Edward III. who encouraged them to ſettle both at Kendal and Colcheſter. W. Long. 2. 40.

N. Lat. 54. 15.

KENKS, in the ſea-language, doublings in a rope or cable, when handed in and out, ſo that it does not run eaſy; or when any rope makes turns or twiſts, and does not run free in the block, then it is ſaid to make kenks.

KENNEL, a place or little houſe for hounds; and, in a metaphorical ſenſe, uſed for the pack of hounds itſelf. To make a complete kennel, three conveniences ought to be obſerved, *viz.* a ſweet air, freſh water, and the morning-ſun; for which the following rules may be inſtructive.—The court ſhould be large; for the more ſpacious it is, the better it will be for the hounds to refreſh themſelves in: and it ſhould be well walled, or fenced about, to prevent their getting out, but not ſo high as to keep out the ſun or wind. The water, if poſſible, ſhould run through ſome part of the court or yard; or, for want thereof, have a well with a ſtone trough about a foot and a half high, always kept with freſh water, to the end the hounds may drink when they pleaſe; and at one end of the trough there muſt be a hole to let out the water for cleanſing it. Let the kennel be built in the higheſt part of the court, in which there ſhould be two rooms, one of which ſhould be larger than the other, with a large chimney to make a fire when need requires. This room ſhould be raiſed about three feet from the ground, and in the floor there ſhould be two gutters for the conveyance of the urine. There muſt be diſperſed up and down ſmall bedſteads raiſed a foot from the floor, with holes pierced through the planks for drawing away their urine. The other room muſt be for the huntſman to keep his poles, whips, ſalves, and the like neceſſaries; there ſhould alſo be a copper for the boiling, dreſſing, and ordering of their food, when they come home wet and weary. Be careful not to give them any drink in veſſels of copper; and as to the proportion and quality of allowance for food, it muſt be ordered with relation to the nature of the hounds and their ſizes: three buſhels of oats, with a buſhel and a half of wheat-bran, will ſerve ten couple and a half of middling-ſized hounds a week, giving them ſometimes beef broth, whey, flipt-milk, chippings of bread, bones, and ſometimes a little horſe-fleſh; for change of food creates a good appetite, and preſerves health. The oats and wheat-bran muſt be boiled and thickened with milk and butter-milk, with ſome chippings, or ſome broken meat boiled therein. With regard to horſe-fleſh, thoſe beſt ſkilled this way, think, of all their foods (provided it be given with diſcretion), horſe-fleſh the beſt, and hotteſt. As for dogs that are accuſtomed to hunt the hare, it is not good to give them any meat, becauſe it is ſaid to with-draw their ſcent or affections from the chace, as their fleſh is not very ſweet, nor their ſcent very ſtrong. If the huntſman perceives, that through long and frequent chaces the hounds fall away, he muſt be more careful in feeding and cheriſhing them with ſome good broth of boiled oxen or ſheeps hearts. On ſuch days as the hounds do not hunt, the beſt times to feed them are early, before ſun-riſing, and late in the evening, after ſun-ſet; and on the days they hunt, they ought to be rewarded as they come home, be it when it will, with a good ſupper; for nothing is a greater diſcouragement to a hound than to go to ſleep with an empty belly after hard labour. If you have more dead fleſh than you have preſent occaſion for, it may be preſerved a week or ten days ſweet, by burying it under ground.

To KENNEL, a term applied by fox-hunters to a fox when he lies in his hole.

KENNET (Dr White), a learned Engliſh writer and biſhop of Peterborough, in the 18th century, bred at St Edmund-hall, Oxford; where he ſoon diſtinguiſhed himſelf by his vigorous application to his ſtudies, and by his tranſlations of ſeveral books into Engliſh, and other pieces which he publiſhed. In 1695, our author publiſhed his Parochial Antiquities. A ſermon preached by him on the 30th of January 1703, at Aldgate, expoſed him to great clamour. It was printed under the title of *A compaſſionate inquiry into the cauſes of the civil war.* In 1706, he publiſhed his Caſe of Impropriations, and two other tracts on the ſame ſubject. In 1706, he publiſhed the third volume of The Complete Hiſtory of England, (the two former volumes compiled by Mr Hughes). In 1709, he publiſhed A Vindication of the Church and Clergy of England from ſome late reproaches rudely and unjuſtly caſt upon them; and A true Anſwer to Dr Sacheverel's Sermon. When the great point in Dr Sacheverell's trial, the change of the miniſtry, was gained, and very ſtrange addreſſes were made upon it, there was to be an artful addreſs from the biſhop and clergy of London, and they who would not ſubſcribe it were to be repreſented as enemies to the queen and the miniſtry. Dr Kennet fell under this imputation. He was expoſed to great odium as a low-church man, on account of his conduct and writings. When he was dean of Peterborough, a very uncommon method was taken to expoſe him by Dr Walton, rector of the church of White chapel: for in the altar-piece of that church, which was intended for a repreſentation of Chriſt and his 12 apoſtles eating the paſſover and laſt ſupper, Judas the traitor was drawn ſitting in an elbow-chair, dreſſed in a black garment, with a great deal of the air of Dr Kennet's face. It was generally ſaid, that the original ſketch was for a biſhop under Dr Walton's diſpleaſure; but the painter being apprehenſive of an action of *Scandalum Magnatum,* leave was given to drop the biſhop, and make the dean. This giving general offence, upon the complaint of others (for Dr Kennet never ſaw it, or ſeemed to regard it), the biſhop of London ordered the picture to be taken down. In 1713, he preſented the ſociety for propagating the goſpel with a great number of books, ſuitable to their deſign; publiſhed his *Bibliothecæ Americanæ Primordia,* and founded an antiquarian and hiſtorical library at Peterborough. In 1715, he publiſhed a ſermon, intitled, *The Witchcraft of the preſent Rebellion,* and afterward ſeveral other pieces. In 1717, he was engaged in a diſpute with Dr William Nicholſon, biſhop of Carliſle, relating to ſome alterations in the biſhop of Bangor's famous ſermon; and diſliked the proceedings of the convocation againſt that biſhop. Upon the death of Dr Cumberland biſhop of Peterborough, he was promoted to that ſee, to which he was conſecrated in 1718. He ſat in it more than ten years, and died in 1728. He was an excellent philologiſt, a good preacher, whether in Engliſh or Latin, Kennet, Kent.

tin, and well verſed in the hiſtories and antiquities of our nation.

Kennet (Baſil), a learned Engliſh writer, and brother to the preceding, was educated in Corpus Chriſti college in the univerſity of Oxford, where he became fellow. In 1706, he went over chaplain to the Engliſh factory at Leghorn; where he met with great oppoſition from the Papiſts, and was in danger from the inquiſition. He died in the year 1714. He publiſhed Lives of the Greek Poets; the Roman Antiquities; a volume of Sermons preached at Leghorn; A tranſlation into Engliſh of Puffendorf's Treatiſe of the Law of Nature and Nations. He was a man of moſt exemplary integrity, generoſity, piety, and modeſty.

KENT, one of the counties of England, ſituated at the ſouth-eaſt corner of the iſland, and from thence enjoying many advantages. The capacious æſtuary of the Thames waſhes its northern parts, as the ſea does the ſouth-eaſt; whence ſome, with no great impropriety, have ſtyled it a *peninſula*. In point of extent, this is the fifth ſhire in South Britain, little leſs in its dimenſions than the province of Holland; larger in ſize than the duchy of Juliers in Germany; and almoſt exactly equal to that of Modena in Italy. Kent is, with great appearance of truth, ſuppoſed to be ſo ſtyled from the ancient Britiſh word *kant*, ſignifying a *corner*, or, when applied to a country, an *head-land*. It is certain, that the Romans beſtowed the name of *Cantium* on the province, and on its moſt conſpicuous promontory the north Foreland; and, from the diſtrict they inhabited, the people were called *Cantii;* which has prevailed even to our times, when *Kent*, and *the men of Kent*, are the common appellatives. It is however, probable, that theſe Cantii were not the original inhabitants, but a latter colony from the oppoſite continent, eſtabliſhed here, like the Belgæ, not long before the Roman invaſion. At the time of Ceſar's coming, this ſpacious and fertile region was divided into four principalities, or, as they are, according to the manners of thoſe days, commonly called, *kingdoms*. It was his obſervation of theſe people, that they were particularly diſtinguiſhed by their civility and politeneſs; a character which their deſcendants have preſerved. When that wiſe people became maſters of the ſouthern parts of the iſland, this province received the moſt conſpicuous marks of their attention, as appears from the ſtations which they ſo prudently eſtabliſhed, while their government flouriſhed in its full vigour. The care they took of the ports on the ſea-coaſt as ſoon as it came to be in danger, and the ſeveral fortreſſes which they erected for the defence of their ſubjects againſt the ſudden attempts of barbarous invaders, are evidences of the ſame kind. Theſe forts, ſo prudently diſpoſed, and ſo well ſecured, were under the direction of a particular great officer, called *Littoris Saxonici Comes*, i. e. the Count of the Saxon ſhore; which office ſeems to have been preſerved by the Britiſh monarchs who governed here, after the Romans quitted the iſle. The Saxon kings of Kent diſcharged this truſt in their regal capacity, from the middle of the fifth to the beginning of the ninth century. Under the northern princes, this poſt was again revived, though with a change of title, in the *Lord Warden of the Cinque Ports*. Indeed, under all governments, the people of Kent have been eſpecially conſidered; as appears from their claim to the poſt of honour in our land-armies, and the privileges granted to their havens, in conſideration of their undertaking the defence of our channel.

Campbell's Political Survey.

Kent.

As to the climate of this county, it varies, according to the ſituation of places. In the low flat lands, and eſpecially in the marſhes, the air is heavy, moiſt, and unhealthy; and yet not to ſuch a degree as it has been ſometimes repreſented; for, with a little care and caution, ſtrangers, as well as natives, quickly reconcile their conſtitutions to the temperature even of theſe parts, and live in them without much inconveniency or apparent danger. But, in reference to the reſt of the county, the air is as thin, pure, and wholeſome, as in any part of Britain. There is no region more happily or more beautifully diverſified in regard to ſoil, ſo that every kind thereof is, ſomewhere or other, to be met with in its bounds; and in no ſhire are any of theſe ſoils more fertile than they are in this. The Weald yields variety of fine timber, particularly of cheſnut; the middle part has very rich arable land, annually bearing every ſpecies of grain in immenſe plenty, and theſe excellent in their ſeveral ſorts. There are alſo many beautiful orchards, which produce a variety of fine fruits, and more eſpecially apples and cherries, which were introduced here from Flanders, by one Richard Harris, who was the king's fruiterer, in the reign of Henry VIII. The flat country is renowned for its meadows; and Rumney-marſh has hardly its equal. We may, from this conciſe deſcription, very eaſily collect, that the natural products of Kent are numerous, and of great value. In the bowels of the earth they find, in ſeveral places, a rough hard ſerviceable ſtone for paving, which turns to ſome advantage; but not ſo much as their exquiſite fullers-earth, rich marl, and fine chalk, which are there in abundance. If we except iron ore, indeed, they have no mines; but there are prodigious heaps of copperas-ſtones thrown on the coaſt. The iſle of Shepey, and all the adjacent ſhore as far as Reculver, is juſtly famous for its wheat. Thanet is in no leſs credit for its barley, or rather was ſo; for now it produces, thro' the painful induſtry and ſkilful huſbandry of its inhabitants, copious crops of good wheat as well as barley. Horſes, black cattle, and ſheep, they have in great numbers, and remarkable in point of ſize; and hop-grounds in all parts of the county, which turn to very conſiderable account. To which we may add, weld, or, as ſome call it, *dyers-weed*, which is a very profitable commodity, and of which there grows much in the neighbourhood of Canterbury; alſo madder, which is, or has been, occaſionally cultivated. The rivers and ſea-coaſts abound with fiſh of different kinds. The excellency of its oyſters on the eaſtern ſhore, is celebrated by the Roman poets. Thoſe of Feverſham and Milton are not only in great eſteem at the London market, but are likewiſe ſent in great quantities to Holland.

The many rich commodities produced in this county, is the reaſon why moſt of our writers have repreſented it as in a manner void of manufactures; which, however, as appears upon a ſtrict and impartial examination, is very far from being the caſe. Of iron-works there were anciently many; and there are ſtill ſome, where kettles, bombs, bullets, cannon, and ſuch like, Kent.

are made. At Deptford, Sir Nicholas Criſpe had, in his life-time, a very famous copperas work; as, indeed, there that ingenious gentleman, one of the greateſt improvers and one of the moſt public-ſpirited perſons this nation ever bred, introduced ſeveral other inventions. Copperas was alſo formerly made, together with brimſtone, in the iſle of Shepey *. But the original, and for many ages the principal manufacture of this county, was broad cloath of different colours, eſtabliſhed chiefly at Cranbrook by king Edward III. who brought over Flemings to improve and perfect (the trade being introduced long before) his ſubjects in that important art. At this, and other places, it flouriſhed ſo much, that even at the cloſe of queen Eliſabeth's reign, and, according to ſome accounts, much later, the beſt for home conſumption, and the largeſt quantities for exportation, were wrought here; many fulling-mills being erected upon almoſt every river, and the greateſt plenty of excellent fullers-earth affording them ſingular aſſiſtance; inſomuch, that it is ſtill a tradition, that the yeomenry of this county, for which it has been ever famous, were moſtly the deſcendents of rich clothiers, who laid out the money acquired by their induſtry in the purchaſe of lands, which they tranſmitted, with their free and independant ſpirit, to their poſterity. The Duke of Alva's perſecution of the Proteſtants in the Low Countries, drove a multitude of Walloons over hither, who brought with them that ingenuity and application for which they had been always diſtinguiſhed. Theſe diligent and active people ſettled a manufactory of flannel or baize at Sandwich. By them the ſilk-looms were ſet up at Canterbury, where they ſtill ſubſiſt; and they alſo introduced the making of thread at Maidſtone, where it yet remains, and merits more notice and encouragement than hitherto it has met with.

Upon the rivert Dart, at the confluence of which with the Thames ſtands the town of Dartford, was ſet up, in the reign of queen Eliſabeth, the firſt mill for making white paper, by Mr John Spilman, a German, upon whom, long after, king James conferred the honour of knighthood; but king Charles more ſenſibly beſtowed upon this Sir John Spilman a patent, and a penſion of 200 l. a-year, as a reward of his invention, and for the ſupport of the manufacture. About the year 1590, Godfrey Box, a German, erected upon the ſame river the firſt ſlitting-mill which was ever uſed for making iron-wire; and alſo the firſt battery-mill for making copper-plates. Other new inventions, requiring the aſſiſtance of water, have been ſet up on other ſtreams; and a great variety of machines of this ſort ſtill ſubſiſt in different parts of this county. But theſe things are now ſo common, that it would be both tedious and uſeleſs to inſiſt upon them. Amongſt theſe, we may reckon the making gunpowder in ſeveral places. That manufacture, however, which is now the glory of this county, and indeed of Britain, is ſhip-building; more eſpecially at the royal yards; as at Woolwich, which was ſettled by Henry VIII. and ſome conſiderable ſhips built there. At preſent, there is not only a moſt complete eſtabliſhment for the building and equipping men of war, a rope-walk, foundery, and magazines; but alſo many private docks, in which prodigious buſineſs is carried on, and multitudes of people employed.

Kepler, Kerckgring

KEPLER (John), one of the greateſt aſtronomers of his age, was born at Wiel, in the country of Wirtemberg, in 1571. In the year 1595, he wrote an excellent book, which was printed at Tubingen the year following, under the title of *Prodromus diſſertationum de proportione orbium cœleſtium, deque cauſis cœlorum numeri, magnitudinis, motuumque periodicorum genuinis et propriis, &c.* Tycho Brahe having ſettled in Bohemia, and obtained from the emperor all ſorts of conveniencies for the perfecting of aſtronomy, was ſo paſſionately deſirous of having Kepler with him, and wrote ſo many letters to him on that ſubject, that he prevailed upon him to leave the univerſity of Gratz, and remove into Bohemia with his family and library, in the year 1600. Kepler in his journey was ſeized ſo violently with the quartan ague, that he could not do Tycho Brahe all the ſervices of which he was before capable. He was even a little diſſatisfied with the reſervedneſs which Tycho Brahe ſhewed towards him; for the latter did not communicate to him all he knew; and as he died in 1601, he did not give time to Kepler to be very uſeful to him, or to receive any conſiderable advantage under him. From that time Kepler enjoyed the title of *Mathematician to the emperor*, all his life; and gained more and more reputation by his works. The emperor Rodolphus ordered him to finiſh the tables of Tycho Brahe, which were to be called the *Rodolphine Tables*. Kepler applied himſelf to it vigorouſly: but unhappy are thoſe learned men who depend upon the good-humour of the intendants of the finances. The treaſurers were ſo ill-affected toward our author, that he could not publiſh theſe tables till 1627. He died at Ratiſbon, where he was ſoliciting the payment of the arrears of his penſion in 1630.

The principal works of this great aſtronomer are, 1. *Prodromus diſſertationum*, above mentioned, to which he has alſo given the title of *Myſterium Coſnographicum*; which he eſteemed more than any other of his works, and was for ſome time ſo charmed with it, that he ſaid he would not give up the honour of having invented what was contained in that book for the electorate of Saxony. 2. *Harmonia mundi*, with a defence of that treatiſe. 3. *De cometis, libri tres.* 4. *Epitome aſtronomiæ Copernicanæ.* 5. *Aſtronomia nova.* 6. *Chilias logarithmorum, &c.* 7. *Novo ſtereometria doliorum vinariorum, &c.* 8. *Dioptrice.* 9. *De vero natali anno Chriſti.* 10. *Ad Vitellionem Paralipomena, quibus Aſtronomiæ pars optica traditur, &c.* 11. *Somnium Lunariſve Aſtronomia*; in which he began to draw up that ſyſtem of comparative aſtronomy which was afterwards purſued by Kircher, Huygens, and Gregory. His death happened while the work was printing: upon which James Bartſchius, his ſon-in-law, undertook the care of the impreſſion; but was alſo interrupted by death: and Lewis Kepler his ſon, who was then a phyſician at Konigſberg in Pruſſia, was ſo much ſtartled at theſe diſaſters, that it was with the utmoſt difficulty he could be prevailed upon to attempt to finiſh it, leſt it ſhould prove fatal to him: he completed the taſk, however, without receiving any perſonal injury.

KERCKRING (Theodore), a famous phyſician of the 17th century, was born at Amſterdam, and acquired a great reputation by his diſcoveries and his works.

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* Philoſoph. Tranſact. N° xlii. p. 1056---1059.

Kerman, Kermes.

works. He found out the ſecret of ſoftening amber without depriving it of its tranſparency; and made uſe of it in covering the bodies of curious inſects, in order to preſerve them. He was a member of the Royal Society of London; and died in 1693 at Hamburg, where he had ſpent the greateſt part of his life, with the title of *reſident of the grand duke of Tuſcany.* His principal works are, 1. *Spicilegium anatomicum.* 2. *Anthropogeniæ ichnographia.* There is alſo attributed to him an anatomical work, printed in 1671, in folio.

KERMAN, the capital city of a province of that name in Perſia, ſeated in E. Long. 56. 30. N. Lat. 30. 0. The province lies in the ſouth part of Perſia, on the Perſian gulph. The ſheep of this country, towards the latter end of the ſpring, ſhed their wool, and become as naked as ſuckling pigs. The principal revenue of the province conſiſts in theſe fleeces.

KERMES, in zoology, the name of an inſect produced in the excreſcences of a ſpecies of the oak.

Kermes, among the Arabians, ſignifies a ſmall worm; and κοκκον among the Greeks, whence the Latin word *coccum*, both which mean a kernel or grain: for which reaſon, among the later Greeks, inſtead of the word κοκκον, the word σκωληξ, a *worm*, is ſubſtituted; for theſe grains are full of ſmall worms, the juice of which affords the ſcarlet colour and dye. Hence the worm is taken for the grain itſelf.

The kermes appears at firſt wrapped up in a membranaceous bladder, of the ſize of a pea, ſmooth and ſhining, of a browniſh red colour, and covered with a very fine aſh-coloured powder. This bag teems with a number of reddiſh eggs or inſects, which, being rubbed with the fingers, pour out a crimſon liquor. It is only met with in warm countries in the months of May and June. In the month of April this inſect becomes of the ſize and ſhape of a pea; and its eggs ſome time after burſt from the womb, and, ſoon turning into worms, run about the branches and leaves of the tree. They are of two ſexes, and the females have been hitherto deſcribed: but the males are very different from the former; and are a ſort of ſmall flies like gnats, with ſix feet, of which the four forward are ſhort, and the two backward long; divided into four joints, and armed with three crooked nails. There are two feelers on the head, a line and a half long, which are moveable, ſtreaked, and articulated. The tail at the back part of the body is half a line long, and forked. The whole body is covered with two tranſparent wings, and they leap about in the manner of fleas. The harveſt of the kermes is greater or leſs in proportion to the ſeverity of the winter. The women gather them before ſun-riſing, tearing them off with their nails, for fear there ſhould be any loſs from the hatching of the inſects. They ſprinkle them with vinegar, and lay them in the ſun to dry, where they acquire a red colour.

KERMES *Mineral*, ſo called from its colour, which reſembles that of vegetable kermes, is one of the moſt important antimonial preparations, both with regard to its chemical phenomena and to its medicinal uſes.

Kermes.

The uſe of kermes-mineral was not eſtabliſhed in medicine before the beginning of this century. Some chemiſts, indeed, amongſt others Glauber and Lemeri, had before that time mentioned in their works ſeveral preparations of antimony which approach more or leſs to kermes; but theſe preparations being little known, were confounded with many others which are entirely neglected, although much praiſed by their authors.—The fame of kermes was occaſioned by friar Simon, apothecary to the Chartreux friars. He received this preparation from a ſurgeon called *La Ligerie*, who had procured it from a German apothecary who had been a ſcholar of the famous Glauber. Friar Simon, from the commendations given to this new remedy by La Ligerie, adminiſtered it to a Chartreux friar, who was dangerouſly ill of a violent peripneumony, by which the friar was ſuddenly, and as it had been miraculouſly, cured. From that time the friar-apothecary publiſhed the virtue of his remedy. Several other remarkable cures were performed by means of kermes. The public believed in its medicinal qualities, and called it *powder of Chartreux*; becauſe it was prepared only in the apothecary's ſhop belonging to theſe monks. The reputation of kermes extended itſelf more and more; till at length the duke of Orleans, then regent of France, procured the publication of the proceſs by La Ligerie.

This proceſs conſiſts in boiling, during two hours, pulveriſed crude antimony in the fourth part of its weight of the liquor of nitre fixed by coals, and twice its weight of pure water: at the end of this time the liquor is to be decanted and filtrated, while boiling, through brown paper. It continues clear while it is boiling hot; but when it cools, it becomes turbid, acquires a red brick colour, and again becomes clear by the depoſition of a red ſediment, which is the kermes. The boiling may be thrice repeated, and each time the ſame quantity of water is to be added to the antimony, and a fourth part leſs of the liquor of fixed nitre. The ſeveral ſediments from theſe three boilings are to be added together, waſhed with clean water till the water acquires no taſte; and the kermes is then to be dried. La Ligerie directs, that aquavitæ ſhall be once or twice poured upon it and burnt, and the kermes dried again.

We now proceed to explain the nature of kermes, and the phenomena of its preparation.——Crude antimony is compoſed of regulus of antimony and common ſulphur, united naturally with each other, as in almoſt all metallic minerals. The fixed alkali with which the crude antimony is boiled, although it is diluted with much water, acts upon the ſulphur of the antimony, and forms with it liver of ſulphur; and as this compound is a ſolvent of all metallic matters, it diſſolves a certain quantity of the regulus of antimony. In this operation then a combination is formed of fixed alkali, of ſulphur, and of regulus of antimony. Of theſe three ſubſtances the fixed alkali only is ſoluble in water, and is the intermediate ſubſtance by which the ſulphur and regulus are ſuſpended in the water. But we are to obſerve, that the alkali becomes impregnated by this operation, and by boiling, with a larger quantity of regulus, and eſpecially of ſulphur, than can be ſuſpended in cold water; hence the decoction of kermes, which is clear, limpid, and colourleſs while boiling hot, becomes turbid and depoſites a ſediment while it cools.

This compound, therefore, like certain ſalts, may be kept diſſolved in larger quantity by hot than by cold water, and much of it is therefore depoſited by cooling.

Further, while the kermes is precipitating, the whole antimoniated liver of ſulphur, which is diſſolved by the boiling liquor, may be divided into two parts; one of which, that is the kermes, being overcharged with the regulus, and particularly with the ſulphur, contains but a little alkali, which it draws along with it during its depoſition. The other part, as it contains much more alkali, remains diſſolved even in the cold liquor, by means of this larger quantity of alkali. All theſe propoſitions are to be explained and demonſtrated by the following obſervations.

Firſt, when the decoction of kermes is cold, and has formed all its ſediment, if, without adding any thing to it, it be heated till it boil, it again entirely re-diſſolves the kermes; the ſediment diſappears; the liquor becomes clear, and by cold is again rendered turbid and depoſites ſediment as before. Thus the kermes may be made to precipitate and to re-diſſolve as often as we pleaſe.

Secondly, by digeſting kermes in aqua-regia, which diſſolves its alkali and regulus, the ſulphur is ſeparated pure. The acids of aqua-regia form a nitre and a febrifugal ſalt of Sylvius with the alkali of the kermes; and if a certain quantity of kermes be melted with black flux after having deſtroyed its ſulphur by roaſting, a true regulus of antimony may be obtained from it.

Theſe experiments, which were made by Mr Geoffroy, and the detail of which is found in memoirs given to the Academy in the years 1734 and 1735, upon the analyſis of kermes, ſhew evidently the preſence of ſulphur, of fixed alkali, and of regulus of antimony, in this compound. From Mr Geoffroy's experiments we find, that 72 grains of kermes contain about 16 or 17 grains of regulus, 13 or 14 grains of alkaline ſalt, and 40 or 41 grains of common ſulphur.

Thirdly, by repeating the boiling of the liquor upon the antimony, more and more kermes will be formed each time by cooling, as at firſt; and this experiment may be repeated a great many times. Mr Geoffroy ſays, that he repeated it 78 times, without any other addition than that of pure water to ſupply that which was loſt by evaporation; and that each time a conſiderable quantity of kermes was formed by cooling. This experiment proves, that the alkali tranſforms the antimony into kermes by overcharging itſelf with regulus and ſulphur, and at each precipitation the kermes does not retain and take with it but a very ſmall quantity of alkali.

Fourthly, if any acid be poured upon the liquor in which the kermes has been formed, and from which it has been entirely ſeparated by cooling, Mr Beaumè has obſerved, that this liquor is again rendered turbid, and that a ſecond ſediment is formed of a yellow reddiſh colour, which is nothing elſe than golden ſulphur of antimony; that is, regulus of antimony and ſulphur mixed together, but in very different proportions, and with very different ſtrengths of union, from thoſe in which they are found in the crude antimony.

After this precipitation, in the liquor a neutral ſalt is left, which is formed by the contained alkali and the precipitating acid. From this experiment we find, that in the liquor from which the kermes has been depoſited, a conſiderable quantity of antimoniated liver of ſulphur remains, which differs from kermes by containing a much larger proportion of alkali; ſo that it can keep diſſolved the regulus and ſulphur with which it is united, even when the liquor is cold.

In the proceſs for ſeveral antimonial preparations, a kermes, or compounds like it, are formed. This always happens when crude antimony is treated by fuſion with a quantity of alkaline ſalt, ſo that an antimoniated liver of ſulphur reſults from it, overcharged with regulus and ſulphur; that is, containing more of theſe two ſubſtances than it can keep diſſolved in cold water. If any of theſe combinations be boiled in water, a matter analogous to kermes is always depoſited by cooling. This happens, for inſtance, to the ſcoria of the regulus of antimony, and in an operation deſcribed by Mr Geoffroy to abridge the proceſs for making kermes by fuſion.

To make kermes by fuſion, Mr Geoffroy fuſes two parts of antimony with one part of alkaline ſalt; he powders this matter while yet hot, and keeps it during two hours in boiling water; he then filtrates it, and receives the liquor into more boiling water, from which, when it cools, about ſix gros of kermes is depoſited, when an ounce of antimony has been uſed. This method of making kermes is much more expeditious, but leſs perfect; for, as the author confeſſes, the kermes produced is not ſo fine and ſoft as that made in the ordinary method.

Mr Lemeri the elder mentions alſo, in his Treatiſe concerning Antimony, an operation from which his ſon pretends that kermes may be obtained. This operation conſiſts in digeſting, and afterwards boiling, powdered crude antimony in a very pure liquor of fixed nitre. This liquor, if it be in ſufficient quantity, is capable of diſſolving, quickly and entirely, powdered crude antimony; and we cannot doubt but that, by cooling, a conſiderable quantity of a ſubſtance very analogous to kermes will be produced. Nevertheleſs, none of theſe ſhort methods of making kermes is directed by diſpenſatories, or by the beſt books for deſcribing the preparations of chemical remedies.

Kermes is uſed in medicine only; and from it ſingularly excellent effects may be produced, when adminiſtered by able phyſicians. In kermes are united the exciting and evacuant virtues of the emetic preparations of antimony, with the tonic, dividing, aperitive, and reſolving properties of the liver of ſulphur; that is to ſay, that it is capable of anſwering two principal indications in the treatment of many acute and chronic diſeaſes. Properly managed, it may become an emetic, purgative, a diuretic, a ſudorific, or an expectorant, as is required, and it is always attenuating and reſolving. When ſeven or eight grains are taken at once, it chiefly acts upon the primæ viæ, generally as an emetic and as a purgative. A doſe of three or four grains is ſeldom emetic, and more frequently purgative. When taken in theſe quantities as an evacuant, a little of it paſſes alſo into the viæ ſecundæ & tertiæ. When it is adminiſtered in ſmaller doſes, it paſſes almoſt entirely into the lacteal, blood, and lymphatic veſſels. In theſe it occaſions ſuch ſpaſms and oſcillations

tions as it does in the primæ viæ ; ſo that it increaſes all ſecretions and excretions, but particularly thoſe of urine, ſweat, and expectoration, according to the doſe, to the nature of the diſeaſe, and to the diſpoſition of the patient. It produces very good effects in thoſe diſeaſes of the breaſt which proceed from fullneſs and obſtruction.

Kermes may be adminiſtered in linctuſes, in oily or in cordial potions, in any vehicle ; or incorporated in a bolus, with other ſuitable remedies. One precaution, hitherto little obſerved, is very neceſſary ; that is, not to join it with acid matters, if it is intended to act as kermes. Anti-acid and abſorbent ſubſtances ought to be joined with it, if the patient has an acid in the primæ viæ, or an aceſcent diſpoſition ; for as theſe acids ſaturate the alkali by which the kermes is rendered an antimoniated liver of ſulphur, and by which alone it differs from golden ſulphur of antimony, they accordingly render the kermes entirely ſimilar to the golden ſulphur of antimony, the properties of which are very different from thoſe of kermes.

KERN, or Kerne, a term in the ancient Iriſh militia, ſignifying a *foot-ſoldier*.—Cambden tells us, the armies of Ireland conſiſted of cavalry, called *galloglaſſes*; and infantry, lightly armed, called *kernes*.—The kernes bore ſwords, and darts ; to the laſt were fitted cords, by which they could recover them, after they had been lanched out.

Kernes, in our laws, ſignify idle perſons, or vagabonds.

KERRY, a county of Ireland, in the province of Munſter, bounded on the north by the river Shannon, which divides it from Clare; on the eaſt, by Limerick and Cork; on the ſouth, by another part of Cork; and on the weſt, by the Atlantic ocean. This county is diverſified with high hills and fruitful vales; and in the middle there is a lake called *Lough Lean*, which is ſeveral miles in compaſs, and falls into the ocean thro' a little river of the ſame name. Some of the mountains produce very fruitful paſtures, whoſe graſs is high and good. The ſheep and cattle feed there in the ſummer; but in the winter the ground becomes ſo ſpungy and boggy, that it will not bear a man. The coaſt of this county has ſeveral gulphs and promontories. That on the north has the name of the county; and is covered with ſuch high mountains, that they may be ſeen at 50 miles off. Theſe are called *Brandon Hills*. Near its extremity are two good havens; that on the north is called *Smirwick*, and that on the ſouth *Dingle*. The town ſo called has a good haven ; from whence it has its name, and is covered with a large rock. The bay of Dingle is long, broad, entering ſeveral miles into the country, and has two or three good havens ; that of Ventry is four miles to the weſt of Dingle, and that of Caſtlemagne is at the bottom of the bay. Ardart is the capital town, and is a biſhop's ſee. The ſecond promontory is Clancar, or Glencart, ſeated between the bay of Dingle and that of Maire ; it has a long chain of mountains, and Lough-Lean communicates as well with the bay of Dingle as of Maire, by two ſmall rivers which form an iſland. There is a ſmall iſland hereabouts called *Valencia*, defended by a fort. The bay of Maire has its name from a ſmall river ; and is narrower than that of Dingle, tho' it runs farther into the country.

KESSEL, a town of Upper Guelderland, in the Netherlands, with a handſome caſtle. It is the chief town in the territory of the ſame name, and ſeated on the river Meuſe, between Ruremond and Venlo, it being about five miles from each. It was ceded to the king of Pruſſia, by the treaty of Utrecht. E. Long. 6. 13. N. Lat. 41. 22.

KESSELDORF, a village of Germany, in the circle of Upper Saxony, three miles below Dreſden, remarkable for the battle gained by the king of Pruſſia over the Saxons, on the 15th of December 1745.

KESWICK, a town of Cumberland, ſituated on the ſide of a lake, in a fruitful plain, almoſt encompaſſed with mountains, called the *Derwent Fells*. It was formerly a town of good note, but now is much decayed. However, it is ſtill noted for its mines and miners, who have a convenient ſmelting-houſe on the ſide of the river Derwent, the ſtream of which is ſo managed, as to make it work the bellows, hammers, and forge, as alſo to ſaw boards. There is a work-houſe here for employing the poor of this pariſh, and that of Croſsthwait. W. Long. 3. 0. N. Lat. 54. 30.

KETTLE, in the art of war, a term the Dutch give to a battery of mortars, becauſe it is ſunk under ground.

Kettle-*Drums*, are formed of two large baſins of copper or braſs, rounded at the bottom, and covered over with vellum or goat-ſkin, which is kept faſt by a circle of iron, and by ſeveral holes faſtened to the body of the drum, and a like number of ſcrews to ſcrew up and down, and a key for the purpoſe. The two baſins are kept faſt together by two ſtraps of leather which go through two rings, and are faſtened the one before and the other behind the pommel of the kettle-drums ſaddle. They have each a banner of ſilk or damaſk, richly embroidered with the ſovereign's arms, or with thoſe of the colonel, and are fringed with ſilver or gold ; and, to preſerve them in bad weather, they have each a cover of leather. The drumſticks are of crab-tree or of any other hard wood, of eight or nine inches long, with two knobs on the ends, which beat the drum-head and cauſe the ſound. The kettle-drum with trumpets is the moſt martial ſound of any. Each regiment of horſe has a pair.

Kettle-*Drummer*, a man on horſeback appointed to beat the kettle-drums, from which he takes his name. He marches always at the head of the ſquadron, and his poſt is on the right when the ſquadron is drawn up.

KETTLEWELL (John), a learned divine, born in 1653, was deſcended from an ancient family in the North-riding of Yorkſhire, bred in Edmund-Hall Oxford, and elected fellow of Lincoln-college. In 1675, he went into orders ; but after the revolution was deprived of his living, on account of his refuſal to take the oaths to king William and queen Mary. He died of a conſumption in 1695. He publiſhed ſeveral works, which were collected and reprinted together in 1718, in 2 vols folio. He was a man of great candour, meekneſs, piety, and charity.

KETCH, a veſſel equipped with two maſts, viz. the main-maſt and mizen-maſt, and uſually from 100 to 250 tons burden.—Ketches are principally uſed as yachts, or as bomb-veſſels; the former of which are employed to convey princes of the blood, ambaſſadors, or other great perſonages, from one part to another; and the latter are uſed to bombard citadels, towns, or other fortreſſes. The bomb-ketches are therefore furniſhed with all the apparatus neceſſary for a vigorous bombardment; they are built remarkably ſtrong, as being fitted with a greater number of *riders* than any other veſſel of war; and indeed this reinforcement is abſolutely neceſſary to ſuſtain the violent ſhock produced by the diſcharge of their mortars, which would otherwiſe in a very ſhort time ſhatter them to pieces.

KEVELS, in ſhip-building, a frame compoſed of two pieces of timber, whoſe lower ends reſt in a ſort of ſtep or foot, nailed to the ſhip's ſide, from whence the upper ends branch outward into arms or horns, ſerving to belay the great ropes by which the bottoms of the main-ſail and fore-ſail are extended.

KEW, a village of Surry in England, oppoſite to Old Brentford, 10 miles weſt from London. Here is a ſeat which belonged to the late prince of Wales. Of late years a conſiderable extent of ground has been taken into the gardens of Kew, which are agreeably laid out in lawns, walks, and groves, embelliſhed with temples, alcoves, and a very lofty brick tower, in the Chineſe ſtyle of architecture. On Kew-green are a great number of elegant country-houſes, belonging to the royal family, and other perſons of diſtinction.

KEXHOLM, that part of Finland which borders upon Ruſſia. The lake Ladoga croſſes it, and divides it into two parts. By the treaty between Ruſſia and Sweden in 1721, the Swedes were obliged to abandon the beſt part to the Ruſſians. The country in general is full of lakes and marſhes, thinly inhabited, and badly cultivated. The lake abovementioned is 120 miles in length, and full of fiſh.

Kexholm, or *Carelgorod*, a town of Ruſſia, in a territory of the ſame name, not very large, but well fortified, and has a ſtrong caſtle. The houſes are built with wood. It formerly belonged to the Ruſſians, after which the Swedes had poſſeſſion of it for a whole century; but it was re-taken by the Ruſſians in 1710. Near it is a conſiderable ſalmon-fiſhery. It is ſeated on two iſlands on the north-weſt ſide of the lake Ladoga, in E. Long. 30. 25. N. Lat. 61. 12. Near it is another town called *New Kexholm*.

KEY, an inſtrument for the opening of locks. See Lock.

L. Molinus has a treatiſe of keys, *De clavibus veterum*, printed at Upſal: he derives the Latin name *clavis*, from the Greek κλειω, *claudo*, "I ſhut;" or from the adverb *clam*, "privately;" and adds, that the uſe of keys is yet unknown in ſome parts of Sweden.

The invention of keys is owing to one Theodore of Samos, according to Pliny and Polydore Virgil: but this muſt be a miſtake, the uſe of keys having been known before the ſiege of Troy; mention even ſeems made of them in the 19th chapter of Geneſis.

Molinus is of opinion, that keys at firſt only ſerved for the untying certain knots, wherewith they anciently ſecured their doors: but the Laconic keys, he maintains, were nearly akin in uſe to our own; they conſiſted of three ſingle teeth, and made the figure of an E; of which form there are ſtill ſome to be ſeen in the cabinets of the curious.

There was another key called βαλαναγρα, made in the manner of a male-ſcrew; which had its correſponding female in a bolt affixed to the door. *Key* is, hence, become a general name for ſeveral things ſerving to ſhut up or cloſe others.

Key, or *Key-ſtone, of an Arch or Vault*, is the laſt ſtone placed a-top thereof; which being wider and fuller at the top than bottom, wedges, as it were, and binds all the reſt. The key is different in the different orders: in the Tuſcan and Doric, it is a plain ſtone, only projecting; in the Ionic, it is cut, and waved ſomewhat after the manner of conſoles; in the Corinthian and Compoſite, it is a conſole, enriched with ſculpture, foliages, &c.

Key is alſo uſed for eccleſiaſtical juriſdiction; particularly for the power of excommunicating and abſolving. The Romaniſts ſay, the pope has the power of the keys, and can open and ſhut Paradiſe as he pleaſes; grounding their opinion on that expreſſion of Jeſus Chriſt to Peter, "I will give thee the keys of the "kingdom of heaven." In St Gregory we read, that it was the cuſtom heretofore for the popes to ſend a golden key to princes, wherein they incloſed a little of the filings of St Peter's chains, kept with a world of devotion at Rome; and that theſe keys were worn in the boſom, as being ſuppoſed to contain ſome wonderful virtues.

Key is alſo uſed for an index or explanation of a cipher. See Cipher.

Keys *of an Organ, Harpſichord, &c.* thoſe little pieces in the fore-part of thoſe inſtruments, by means whereof the jacks play, ſo as to ſtrike the ſtrings. Theſe are in number 28 or 29. In large organs there are ſeveral ſets of the keys, ſome to play the ſecondary organ, ſome for the main-body, ſome for the trumpet, and ſome for the echoing trumpet, &c.; in ſome there are but a part that play, and the reſt are only for ornament. There are 20 ſlits in the large keys, which make half-notes. See the article Organ, &c.

Key, in muſic, a certain fundamental note or tone, to which the whole piece, be it in cantata, ſonata, concerto, &c. is accommodated, and with which it uſually begins, but always ends.

Key, or *Quay*, a long wharf, uſually built of ſtone, by the ſide of a harbour or river, and having ſeveral ſtorehouſes for the convenience of lading and diſcharging merchant-ſhips. It is accordingly furniſhed with poſts and rings, whereby they are ſecured; together with cranes, capſterns, and other engines, to lift the goods into or out of the veſſels which lie along-ſide.

The verb *cajare*, in old writers, according to Scaliger, ſignifies to *keep in*, or *reſtrain*; and hence came our term *key* or *quay*, the ground where they are made being bound in with planks and poſts.

Keys are alſo certain ſunken rocks, lying near the ſurface of the water, particularly in the Weſt-Indies.

KEYSER's pills, a celebrated mercurial medicine, the method of preparing which was purchaſed by the French government, and has ſince been pub-publiſhed by M. Richard.

The firſt, and what, according to Mr Keyſer, is the moſt eſſential operation, conſiſts in ſeparating the mercury very exactly from all heterogeneous matter, by reducing it to an æthiops. This is effected by means of an hydraulic machine, a plan of which Mr Keyſer intended to have given to government before his death: but, although he did not live to accompliſh his reſolution, his family ſtill offer to do it when deſired. According to the deſcription given by M. Richard, this machine conſiſts of a number of buckets, in which mercury is triturated with water, till the water acquires a black colour. This water, upon ſtanding, depoſits a ſediment, which, being dried by a proper heat, is the æthiops required.

The ſecond proceſs conſiſts in revivifying the mercury by diſtillation, in freeing it from all oily matters by means of quick-lime, in detaching this quick-lime by repeated waſhings, and afterwards in drying it by means of a ſand heat.

The third operation conſiſts in the reduction of the mercury purified by this proceſs to a red calx, by means of heat. In conducting this operation, Mr Keyſer adviſes, that the mercury be put into glaſs matraſſes, a ſmall quantity only in each. For the proper degree of heat, he directs thoſe who would practiſe the operation, to conſult Lemery, and other chemiſts.

The fourth operation is, the diſſolution of the calcined mercury, obtained by the former proceſs, in diſtilled vinegar, by means of triture. A pound of this mercury may be diſſolved in eight pints of vinegar, by rubbing it, for an hour or two, in a mortar, which ſhould be kept ſolely for that purpoſe. Care muſt alſo be taken that the vinegar be not diſtilled in a metallic, but in a glaſs veſſel.

The fifth proceſs conſiſts in the intimate mixture of this vinegar, impregnated with mercury, with manna. Each pound of the vinegar, containing about two ounces of mercury, will require two pounds of manna. They muſt be rubbed together upon marble ſtones, till they acquire a uniform conſiſtence, which will be liquid to ſuch a degree as to paſs thro' a hair-cloth, for ſeparating the impurities of the manna. After being managed in this manner, it muſt be ſpread upon a marble ſlab, and left to dry there, without the aſſiſtance of fire, till it acquires ſuch a conſiſtence as not to run off upon the table being turned to its ſide. It muſt then be placed before the fire, and at the ſame time moved from one part of the ſtone to another, by means of a knife, furniſhed with a large pliant blade. By this means, it is perfectly prepared for forming the pills.

The ſixth and laſt proceſs conſiſts in the formation of the maſs thus prepared into pills. Theſe Mr Keyſer made to weigh either three grains, or a grain and a half, the firſt for robuſt, the laſt for delicate conſtitutions.

To this account given for the preparation of theſe pills, Mr Keyſer has added ſome reflections, by way of ſupplement. He obſerves, that, by the purification of the mercury from diſtillation, a great quantity of heterogeneous matter is ſeparated from it. This, however, by no means frees it completely from all foreign matter. And, as mercury purified, upon being calcined and diſſolved in vegetable acid, is a much more powerful medicine than mercury calcined without purification, he concludes, that repeated purifications would render it ſtill more active.

Another remark which he gives, reſpects the diſſolution of the mercurius calcinatus in the diſtilled vinegar. He obſerves, that the mercury thus diſſolved may be made to unite with running mercury, and to form a very ſingular product. He formerly mentioned, that a pound of this mercurius calcinatus was to be diſſolved in eight pints of vinegar. If to this be added two pounds of running mercury, and the agitation continued, a ſubſtance will ariſe to the ſurface in the form of cream. This being removed by the aſſiſtance of a wooden ſpoon, more will continue to riſe as long as the agitation is continued. The cream being dried, and incorporated with manna, in the proportion of one part of the cream to eight of manna, forms a very uſeful purgative, and is ſaid to be an effectual remedy againſt recent venereal complaints, particularly againſt chancres.

Mr Richard concludes his account of Keyſer's pills with obſerving, that he conſiders it to be, without exception, the moſt effectual remedy for the venereal diſeaſe hitherto diſcovered. But, before entering upon the detail, he remarks, that it is his opinion the proceſs may be much abridged, without diminiſhing the efficacy of the medicine. He judged it proper, however, to deliver to the public the method of preparing the pills in Mr Keyſer's own words; and he has not afterwards pointed out the improvements he propoſes.

KEYSLER (John George), a learned German antiquarian, was born at Thourneau, in 1689. After ſtudying at the univerſity of Halle, he was appointed preceptor to Charles Maximilian, and Chriſtian Charles, the young counts of Giech Buchau; with whom he travelled through the chief cities of Germany, France, and the Netherlands, gaining great reputation among the learned as he went along, by illuſtrating ſeveral monuments of antiquity, particularly ſome fragments of Celtic idols lately diſcovered in the cathedral of Paris. Having acquitted himſelf of this charge with great honour, he procured, in 1716, the education of two grandſons of Baron Bernſtorff firſt miniſter of ſtate to his Britannic majeſty as elector of Brunſwick Lunenburg. However, obtaining leave, in 1718, to viſit England, he was elected a fellow of the Royal Society for a learned eſſay *De Dea Nehelennia numine veterum Walachorum topico:* he gave alſo an explanation of the ancient monument on Saliſbury plain called *Stone-henge*, with *A diſſertation on the conſecrated miſletoe of the Druids.* Which detached eſſays, with others of the ſame kind, he publiſhed on his return to Hanover, under the title of *Antiquitates ſelectæ Septentrionales et Celticæ*, &c. He afterwards made the grand tour with the young barons, and to this tour we owe the publication of his travels; which were tranſlated into Engliſh, and publiſhed in 1756, in 4 vols 4to. Mr Keyſler, on his return, ſpent the remainder of his life under the patronage of his noble pupils, who committed their fine library and muſeum to his care, with a handſome income. He died in 1743.

KIAM, a great river of China, which takes its riſe near the weſtern frontier, croſſes the whole kingdom eaſtward, and falls into the bay or gulph of Nanking, a little below that city.

KIBURG, a town of the canton of Zurich in Switzerland, with a caſtle; ſeated on the river Theoff, in E. Long. 8. 50. N. Lat. 47. 20.

KIDDER (Dr Richard), a learned Engliſh biſhop, was born in Suſſex, and bred at Cambridge. In 1689, he was inſtalled dean of Peterborough; and in 1691, was nominated to the biſhopric of Bath and Wells, in the room of Dr Thomas Ken, who had been deprived for not taking the oaths to king William and queen Mary. He publiſhed, 1. The young man's duty. 2. A demonſtration of the Meſſiah, 3 vols 8vo. 3. A commentary on the five books of Moſes, 2 vols 8vo, and ſeveral other pious and valuable tracts. He was killed, with his lady, in his bed, by the fall of a ſtack of chimneys, at his houſe in Wells, during the great ſtorm in 1703. The biſhop, in the diſſertation prefixed to his commentary on the five books of Moſes, having reflected upon Monſieur Le Clerc, ſome letters paſſed between them in Latin, which are publiſhed by Le Clerc in his *Bibliotheque Choiſie*.

KIDDERMINSTER, or KEDDERMINSTER, a town of Worceſterſhire. It is governed by a bailiff, 12 capital burgeſſes, and 24 common-council-men. It has a good free-ſchool, and two alms-houſes; and drives a conſiderable trade in a manufacture called *Kidderminſter-ſtuffs*, and *carpets*. It is ſeated under a hill, on the river Stour, not far from the Severn; and is a compact town, and well inhabited. W. Long. 2. 15. N. Lat. 52. 28.

KIDNAPPING, the forcible abduction or ſtealing away of man, woman, or child, from their own country, and ſending them into another. This crime was capital by the Jewiſh law: "He that ſtealeth a man and ſelleth him, or if he be found in his hand, ſhall ſurely be put to death *. So likewiſe in the civil law, the offence of ſpiriting away and ſtealing men and children, which was called *plagium*, and the offenders *plagiarii*, was puniſhed with death. This is unqueſtionably a very heinous crime, as it robs the king of his ſubjects, baniſhes a man from his country, and may in its conſequences be productive of the moſt cruel and diſagreeable hardſhips; and therefore, the common law of England has puniſhed it with fine, impriſonment, and pillory. And alſo the ſtatute 11 and 12 W. III. *c.* 7. though principally intended againſt pirates, has a clauſe that extends to prevent the leaving of ſuch perſons abroad as are thus kidnapped or ſpirited away; by enacting, that if any captain of a merchant-veſſel ſhall (during his being abroad) force any perſon on ſhore, or wilfully leave him behind, or refuſe to bring home all ſuch men as he carried out, if able and deſirous to return, he ſhall ſuffer three months impriſonment.

KIDNEYS, in anatomy. See there, n° 362.

KIDNEY-*Bean*. See PHASEOLUS.

KIEL, a city of Germany, in the duchy of Holſtein, in the circle of Lower Saxony, and the reſidence of the duke of Holſtein Gottorp. It has a caſtle, and a univerſity founded in 1665; and there is a very celebrated fair held here. It is ſeated at the bottom of a bay of the Baltic Sea, called *Killerwick*, at the mouth of the river Schwentin, in E. Long. 10. 17. N. Lat. 54. 26.

KIGGELARIA, in botany, a genus of the decandria order, belonging to the diœcia claſs of plants. There is but one ſpecies, viz. the Africana. It hath an upright woody ſtem, and purpliſh branches, growing 15 or 18 feet high; oblong, ſawed, alternate leaves; and diœcious, greeniſh-white flowers, in cluſters from the ſides of the branches; ſucceeded by globular rough fruit, the ſize of cherries, containing the ſeeds, which ſeldom ripen here. As this is a native of warm climates, it muſt be conſtantly kept in a ſtove in this country. It is propagated by ſeeds, layers, or cuttings, though moſt readily by ſeeds.

KILARNEY, a ſmall town in the county of Kerry in Ireland, which gives name to a lake, one of the moſt beautiful, perhaps, in the world. This lake, which may not improperly be diſtinguiſhed into three, the upper, lower, and middle, excepting one narrow valley on the ſouth, through which a river runs into the upper lake, is ſurrounded with one continued range of lofty mountains, rocks, and precipices, the immenſe declivities of which are covered with woods intermixed with ever-greens, from nearly their tops down to the verge of the lakes; add to this the number of rivulets caſcading from channels ſkirted with trees of every kind down the ſides of theſe enormous mountains, ſome of them to the height of 100 yards. Over the lake are diſperſed a great number of iſlands of very different extent; and all of them of any ſize, (one only excepted, which is inhabited by an innumerable ſight of rabbits,) beautifully ornamented with trees of every kind, with a moſt delightful intermixture of ever-greens, as box, holly, yew, and the arbutus or ſtrawberry-tree. Hollies of a prodigious magnitude are found here, ſome of above two feet diameter in the body of the tree. The arbutus grows in great plenty and perfection on many of the iſlands; the largeſt of them are about ſix or ſeven inches in diameter, and 15 or 20 feet high. They appear in their greateſt beauty and perfection about November. There is a moſt enchanting proſpect from ſome of the ſurrounding mountains, particularly from a very lofty one called the *Turk*, becauſe its white chalky top looks like a Turkiſh turban. On the very ſummit of one of the Mangerton mountains, in the neighbourhood, is a ſmall round lake, of about a quarter of a mile diameter acroſs the top, called the *devil's punch-bowl*. From the ſurface of the lake to the top of the ſides of this vaſt concavity or bowl, may be about 300 yards; and when viewed from the circular top, it really has a moſt aſtoniſhing appearance. The depth of it, doubtleſs, is vaſtly great, but not, as the natives of it pretend, unfathomable. The diſcharge of the ſuperfluous waters of this bowl, through a chaſm or gap into the middle lake, forms one of the fineſt caſcades in the world, viſible for above 150 yards. The devil's punch-bowl, as it is called in our maps, is by the natives in the neighbourhood termed *Poulier Infrin*, that is, "the hole of hell." The echoes among the hills in the ſouthern and more incloſed parts of the great lake, but eſpecially in the winding, deep, and intricate valley leading from the lower to the upper lake, are equally delightful and aſtoniſhing. There are ſome cannon placed in the moſt advantageous ſituations by the lord Kenmare, a Roman-Catholic nobleman, on purpoſe for the entertainment of travellers, who generally provide themſelves with ammunition for loading them. The reports, on the diſcharge of theſe cannon, reſemble the neareſt of any thing in nature a moſt violent peal of thunder rolling among the mountains. Here alſo muſical inſtruments, eſpecially the horn and trumpet, afford the moſt delightful and raviſhing enter-

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* *Exod.* xxi. 16.

Kilarney, Kilda.

tertainment to the ear; and to a ſportſman nothing can equal the ſpirit and elevating joy of a ſtag-hunt among the woods and mountains about the lake of Kilarny, where the cry of the hounds, the harmony of the horns reſounding from the hills on every ſide, the univerſal ſhouts of joy along the valleys, and from the ſides of the mountains, re-echoing from hill to hill, and from rock to rock, gives the higheſt ſatiſfaction and delight that can poſſibly ariſe from the chace. The gentlemen who attend the hunt are generally in boats on the lake, during the diverſion; for to follow it by land, either on foot or horſeback, is impracticable. Among the high craggy inacceſſible heights that ſurround the lakes, there is one ſtupendous and frightful rock, the front of which, to the water, is a moſt horrible precipice, called the *eagles neſt*, from its being ſeldom without a neſt of them upon its top. On the eaſtern ſide is a rich and fertile plain for two or three miles, through which deſcends a river into the lower lake; and through a valley at the weſt end, the whole collection of waters diſcharge themſelves into the ſea. On the north-eaſt ſide ſtands the town of Kilarney, in a delightful ſituation; and, in the ſummer-time, from the number of viſitors to the lake, is a very cheerful lively town, it being as much the faſhion in Ireland to viſit this lake at that ſeaſon, as it is elſewhere to go to drink the waters at the public ſpas, or to bathe in the ſea. In the neighbourhood of the lake are a great many ſeats and villas, ruins, &c. Pearls of great value are ſometimes found about the lake; ſalmon alſo are caught in great plenty and perfection, and ſold at the moderate price of one penny per pound. The fiſhery is the property of the earl of Kenmare; to whom alſo belongs a great part, if not the whole, of the lake, with its beautiful iſlands. The bowels of the peninſula, between the upper and lower lakes, are fraught with mines of copper; and even ſilver, it is ſaid, hath been extracted from them. They are prodigiouſly deep, and have been worked a great way under the lake.

KILDA (St), one of the Hebrides, or weſtern iſlands of Scotland. It lies in the Atlantic ocean, about 58. 30. N. Lat.; and is about three Engliſh miles in length from eaſt to weſt, and its breadth from ſouth to north not leſs than two. The ground of St Kilda, like much the greateſt part of that over all the Highlands, is much better calculated for paſture than tillage.—Reſtrained by idleneſs, a fault or vice much more pardonable here than in any other part of Great Britain, or diſcouraged by the form of government under which they live, the people of the iſland ſtudy to rear up ſheep, and to kill wild-fowl, much more than to engage deeply in the more toilſome buſineſs of huſbandry.—All the ground hitherto cultivated in this iſland lies round the village. The ſoil is thin, full of gravel, and of conſequence very ſharp. This, tho' naturally poor, is, however, rendered extremely fertile, by the ſingular induſtry of very judicious huſbandmen: theſe prepare and manure every inch of their ground, ſo as to convert it into a kind of garden. All the inſtruments of agriculture they uſe, or indeed require, according to their ſyſtem, are a ſpade, a mall, and a rake or harrow. After turning up the ground with a ſpade, they rake or harrow it very carefully, removing every ſmall ſtone, every noxious root or growing weed that falls in their way, and pound down every ſtiff clod into duſt. It is certain that a ſmall number of acres well prepared in St Kilda, in this manner, will yield more profit to the huſbandman than a much greater number when roughly handled in a hurry, as is the caſe in the other Weſtern iſles. The people of St Kilda ſow and reap much earlier than any of their neighbours on the weſtern coaſt of Scotland. The heat of the ſun, reflected from the hills and rocks into a low valley facing the ſouth-eaſt, muſt, in the ſummer-time, be quite intenſe; and however rainy the climate is, the corn muſt, for theſe reaſons, grow very faſt, and ripen early.

Kilda.

The harveſt is commonly over at this place before the beginning of September; and ſhould it fall out otherwiſe, the whole crop would be almoſt deſtroyed by the equinoctial ſtorms. All the iſlanders on the weſtern coaſt have great reaſon to dread the fury of autumnal tempeſts: theſe, together with the exceſſive quantities of rain they have, generally, throughout ſeven or eight months of the year, are undoubtedly the moſt diſadvantageous and unhappy circumſtances of their lives.

Barley and oats are the only ſorts of grain known at St Kilda; nor does it ſeem calculated for any other. Fifty bolls of the former, old highland meaſure, are every year brought from thence to Harris; and all the weſtern iſlands hardly produce any thing ſo good of the kind. Potatoes have been introduced among that people only of late, and hitherto they have raiſed but ſmall quantities of them. The only appearance of a garden in this whole land, ſo the natives call their principal iſland in their own language, is no more than a very inconſiderable piece of ground, which is incloſed, and planted with ſome cabbages. On the eaſt ſide of the iſland, at the diſtance of a quarter of a mile from the bay, lies the village, where the whole body of this little people (the number amounting in 1764 to no more than 88) live together like the inhabitants of a town or city. It is certain that the inhabitants were much more numerous formerly than at preſent; and the iſland, if under proper regulations, might eaſily ſupport 300 ſouls. Martin, who viſited it about the end of the laſt century, found 180 perſons there; but about the year 1730, one of the people coming to the iſland of Harris, was ſeized with the ſmall-pox and died. Unluckily his clothes were carried away by one of his relations next year; and thus was the infection communicated, which made ſuch havock, that only four grown perſons were left alive. Their houſes are built in two rows, regular, and facing one another; with a tolerable cauſeway in the middle, which they call the *ſtreet*. Theſe habitations are made and contrived in a very uncommon manner. Every one of them is flat in the roof, or nearly ſo, much like the houſes of ſome oriental nations. That from any one of theſe the St Kildians have borrowed their manner of building, no man of ſenſe will entertain a ſuſpicion. They have been taught this leſſon by their own reaſon, improved by experience. The place in which their lot has fallen, is peculiarly ſubject to violent ſqualls and furious hurricanes: were their houſes raiſed higher than at preſent, they believe the firſt winter-ſtorm would

would bring them down about their ears. For this reaſon, the precaution they take in giving them roofs much flatter than ordinary, ſeems to be not altogether unneceſſary. The walls of theſe habitations are made of a rough gritty kind of ſtones, huddled up together in haſte, without either lime or mortar, from eight to nine feet high. In the heart of the walls are the beds, which are overlaid with flags, and large enough to contain three perſons. In the ſide of every bed is an opening, by way of door, which is much too narrow and low to anſwer that purpoſe. All their dwelling-houſes are divided into two apartments by partition-walls. In the diviſion next the door, which is much the largeſt, they have their cattle ſtalled during the whole winter-ſeaſon; the other ſerves for kitchen, hall, and bed-room.

It will be readily expected, that a race of men and women, bred in St Kilda, muſt be a very ſlovenly generation, and every way inelegant. It is indeed impoſſible to defend them from this imputation. Their method of preparing a ſort of manure, to them indeed of vaſt uſe, proves that they are very indelicate. After having burnt a conſiderable quantity of dried turf, they ſpread the aſhes with the niceſt care over the floor of that apartment in which they eat and ſleep. Theſe aſhes, ſo exactly laid out, they cover with a rich friable ſort of earth; over this bed of earth they ſcatter a proportionable heap of that duſt into which peats are apt to crumble away: this done, they water, tread, and beat the whole compoſt into a hard floor, on which they immediately make new fires very large, and never extinguiſhed till they have a ſufficient ſtock of new aſhes on hand. The ſame operations are repeated with a never-failing punctuality, till they are juſt ready to ſow their barley; by that time the walls of their houſes are ſunk down, or, to ſpeak more properly, the floors riſen, about four or five feet.

To have room enough for accumulating heaps of this compoſt one above another, the ancient St Kildians had ingenuity enough to contrive their beds within the linings of their walls; and it was for the ſame reaſon they took care to raiſe theſe walls to an height far from being common in the other weſtern iſlands. The manure produced in this way muſt undoubtedly be good, though probably rather ſharp than of long duration, as it is ſcattered in ſmall quantities upon the ſurface of the ground. Be that as it will, thoſe who practiſe this art are abundantly laviſh in its praiſes. They call it a *commodity ineſtimably precious;* and one may venture to affirm, that a genuine St Kildian would ſcruple to barter it away for all the diamonds in Braſil and Golconda.

It is certain that cleanlineſs muſt contribute greatly to health, and of courſe longevity; but in ſpite of that inſtance of indelicacy now given, and many more which might have been added, the people of this iſland are not more ſhort-lived than other men. – Their total want of thoſe articles of luxury, which have ſo natural a tendency to deſtroy the conſtitution of the human body, and their moderate exerciſes, will, together with ſome other circumſtances, keep the balance of life equal enough between them and thoſe who are abſolute ſtrangers to ſlovenlineſs.

Beſides the dwelling-houſes already deſcribed, there are a prodigious number of little cells, diſperſed over all the iſland; which conſiſt entirely of ſtones, without any the ſmalleſt help of timber. Theſe cells are from twelve to eighteen feet in length, and a little more than ſeven in height. Their breadth at the foundation is nearly equal to the height. Every ſtone hangs above that immediately below, not perpendicularly, but inclines forward, ſo as to be nearer the oppoſite ſide of the grotto, and thus by imperceptible degrees till the two higheſt courſes are near enough to be covered by a ſingle flag at the top. To hinder the rain from falling down between the interſtices above, the upper part of the building is overlaid with turf, which looks like a fine greenſward while new. The inhabitants ſecure their peats, eggs, and wild-fowl, within theſe ſmall repoſitories: every St Kildian has his ſhare of them, in proportion to the extent of land he poſſeſſes, or the rent he pays to the ſteward. From the conſtruction of theſe cells, and the toil they muſt have coſt before they could have been finiſhed, it ſeems plain, that thoſe who put them together, were, if not more ingenious than their neighbours in the adjacent iſlands, at leaſt more induſtrious than their own ſucceſſors.

The St Kilda method of catching wild-fowl is very entertaining. The men are divided into fowling-parties, each of which conſiſts generally of four perſons diſtinguiſhed by their agility and ſkill. Each party muſt have at leaſt one rope about thirty fathoms long; this rope is made out of a ſtrong raw cow-hide, ſalted for that very purpoſe, and cut circularly into three thongs, all of equal length; theſe thongs being cloſely twiſted together, form a three-fold cord, able to ſuſtain a great weight, and durable enough to laſt for about two generations: to prevent the injuries it would otherwiſe receive from the ſharp edges of the rocks, againſt which they muſt frequently ſtrike, the cord is lined with ſheep-ſkins, dreſſed in much the ſame manner.

This rope is a piece of furniture indiſpenſably neceſſary, and the moſt valuable implement a man of ſubſtance can be poſſeſſed of in St Kilda. In the teſtament of a father, it makes the very firſt article in favour of his eldeſt ſon: ſhould it happen to fall to a daughter's ſhare, in default of male heirs, it is reckoned equal in value to the two beſt cows in the iſland.

By the help of ſuch ropes, the people of the greateſt proweſs and experience here traverſe and examine rocks prodigiouſly high. Linked together in couples, each having either end of the cord faſtened about his waiſt, they go frequently through the moſt dreadful precipices: when one of the two deſcends, his colleague plants himſelf on a ſtrong ſhelf, and takes care to have ſuch ſure footing there, that if his fellow-adventurer makes a falſe ſtep, and tumbles over, he may be able to ſave him.

The following anecdote of the preſent ſteward of St Kilda's deputy, will give the reader a ſpecimen of the dangers they undergo, and, at the ſame time, of the uncommon ſtrength of the St Kildians. This man, obſerving his colleague loſe his hold, and tumbling down from above, placed himſelf ſo firmly upon the ſhelf where he ſtood, that he ſuſtained the weight of his friend, after falling the whole length of the rope. Undoubtedly theſe are ſtupendous adventures, and equal to any thing in the feats of chivalry. Mr Macaulay gives an inſtance of the dexterity of the inhabitants of St Kilda in catching wild-fowl, to which he was an eye-witneſs. Two noted heroes were drawn out from among all the ableſt men of the community: one of them fixed himſelf on a craggy ſhelf; his companion went down ſixty fathoms below him; and after having darted himſelf away from the face of a moſt alarming precipice, having over the ocean, he began to play his gambols; he ſung merrily, and laughed very heartily: after having performed ſeveral antic tricks, and given all the entertainment his art could afford, he returned in triumph, and full of his own merit, with a large ſtring of fowls about his neck, and a number of eggs in his boſom. This method of fowling reſembles that of the Norwegians, as deſcribed by biſhop Pontoppidan.

KILDARE, a town of Ireland, and capital of a county of the ſame name, with a biſhop's ſee, and the title of an earldom. W. Long. 7. 0. N. Lat. 53. 10.

Kildare, a county of Ireland, in the province of Leinſter, which is 37 miles in length, and 24 in breadth; and is bounded on the eaſt by Dublin and Wicklow, on the weſt by King and Queen's county, on the north by Eaſt-Meath, and on the ſouth by Catherlogh. It is a rich plentiful country, and the capital town is of the ſame name. It contains near 9000 houſes, 100 pariſhes, 10 baronies, and four boroughs. It ſends 10 members to parliament.

KILDERKIN, a liquid meaſure, containing two firkins.

KILIANUS (Cornelius), a native of Brabant, diſtinguiſhed himſelf as an excellent corrector of the preſs at the printing-houſe of Plantin for 50 years. He likewiſe wrote ſeveral books which are eſteemed. His apology for correctors againſt authors, an epigram of 18 verſes, is a proof of his abilities in Latin poetry.

KILKENNY, a county of Ireland, in the province of Leinſter, bounded on the ſouth by the county of Waterford, on the north by the Queen's county; on the weſt by the county of Tipperary, on the eaſt by the counties of Wexford and Catherlogh, and on the north-weſt by Upper Offory. The greateſt length of this country from north to ſouth is 40 miles, the breadth from eaſt to weſt 20; and it contains 10 baronies. It is one of the moſt healthful, pleaſant, and populous counties of Ireland. The members ſent by it to parliament are 16, *viz.* two for the county, two for Kilkenny, and two a-piece for Iriſh-town, or St Kennis, Gowran, Thomaſtown, Callan, Inniſtiock, and Knocktopher. This county is divided, as it were, into two parts, by the river Neor or Nura, which has its ſource in thoſe lofty mountains called the *Slieubloom* or *Blandinehills*.

Kilkenny, the capital of a county of the ſame name in Ireland, ſituated in W. Long. 7. 15. N. Lat. 52. 30. takes its name from the cell or church of Canic, who was an eminent hermit in this country. It is the ſeat of the biſhop of Offory, which was tranſlated from Agabo, in Offory, about the end of Henry IId's reign, by biſhop O'Dullany. The city is divided into the Engliſh and Iriſh towns. The Engliſh town is much the newer and moſt conſiderable; the other, (which is alſo called *St Kenny's* or *Canic's*, from the cathedral dedicated to that ſaint, which ſtands upon an eminence (where there is a moſt delightful proſpect), being only a kind of ſuburbs. Both together make one of the largeſt, moſt wealthy, populous, and trading towns in the kingdom. Here are barracks for a troop of horſe and four companies of foot; and a well endowed free-ſchool, called the *college*. The ſupreme council of the rebels under the pope's nuncio ſat at Kilkenny during the time of the general maſſacre. The city is pleaſantly ſituated on the Neor, a navigable river that diſcharges itſelf into the harbour of Waterford. It is ſaid of Kilkenny, that its air is without fog, its water without mud, its fire without ſmoke, and its ſtreets paved with marble. The two latter are, indeed, matter of fact; for they have, in the neighbourhood, a kind of coal, that burns from firſt to laſt without ſmoke, and pretty much reſembles the Welſh coal. Moſt of the ſtreets alſo are actually paved with a very good ſort of black marble, of which they have large quarries near the town, which takes a fine poliſh, and is beautifully intermixed with white granite. The air too is good and healthy, though not remarkably clearer than in many other parts of the kingdom. Here is the ancient ſeat of the Ormond family, which is an ornament to the city; and the neighbouring country is well cultivated and very fertile.

About two miles from this city, in the neighbourhood of the park-houſe of Donmore, formerly occupied by the duke of Ormond, are a number of caves as curious, perhaps, as any mentioned in hiſtory, except thoſe of ANTIPAROS in the Archipelago: we ſhall preſent the reader with a deſcription of them taken on the ſpot, by an ingenious gentleman of Dublin. "After a difficult deſcent of about 100 feet, the entrance into this ſubterranean world is gained. The appearance of the firſt cavern is uncommonly awful; and gives riſe to an idea of a Gothic ſtructure, grand in ruin. The ſolemnity of this place is not a little increaſed by the gaiety of thoſe ſcenes that preſent themſelves on every ſide previous to our entering it. The floor is uneven, and ſtones of various ſizes are promiſcuouſly diſperſed upon it. The ſides are compoſed of ragged work; in ſome parts covered with moſs, and in others curiouſly froſted; and from the roof, which is a kind of arch, ſeveral huge rocks project beyond each other, that ſeem to threaten inſtant ruin. The circumference of this cave is not leſs than 200 feet, and its height about 50. Here is a ſmall but continual dropping of water from the ceiling, and a few petrifactions reſembling icicles. This place has its inhabitants; for immediately on entering into it, you are ſurpriſed with a confuſed noiſe, which is occaſioned by a multitude of wild pigeons. Hence there is a paſſage towards the left, where, by a ſmall aſcent, a kind of hole is gained, like to, but larger than, the mouth of an oven, which introduces to a place, where, by the help of candles, day-light being entirely excluded, a broken and ſurpriſing ſcene of monſtrous ſtones, heaped on each other, chequered with various colours, inequality of rocks overhead, and an infinity of ſtalactical ſtones, preſents itſelf. It would be matter of much difficulty, or rather impracticable, to walk over this apartment, had not nature, as if ſtudious for the ſafety of the curious, cauſed ſorts of branches to ſhoot from the ſurface of the rocks, which are remarkably ſmooth, very unequal, and always damp. Theſe branches are from four to ſix inches in length, and nearly as thick. They are uſeful in the ſummits of the rocks to prevent ſlipping; and in the ſides are ladders, whereby to deſcend and aſcend with tolerable facility. This aſtoniſhing amfractuous paſſage leads to a place far more curious than any of the reſt. On entering into it, one is almoſt induced to believe himſelf ſituated in an ancient temple, decorated with all the expence of art; yet, notwithſtanding the beauty and ſplendor that catches the eye on every ſide, there is ſomething of ſolemnity in the faſhion of the place, which muſt be felt by the moſt ordinary ſpectator. The floor in ſome parts is covered with a cryſtalline ſubſtance; the ſides in many places are incruſted with the ſame, wrought in a mode not unlike the Gothic ſtyle of ornament; and the top is almoſt entirely covered with inverted pyramids of the like elegantly white and lucid matter. At the points of theſe ſtalactical ſtreets are perpetually hanging drops of pellucid water; for when one falls, another ſucceeds. Theſe pendent gems contribute not a little to the glory of the roof, which, when the place is properly illuminated, appears as if formed of the pureſt cryſtal. Here are three extraordinary and beautiful congelations, which, without the aid of a ſtrong imagination, may be taken for an organ, altar, and croſs. The former, except when ſtrictly examined, appears to be a regular work of art, and is of a conſiderable ſize; the ſecond is of a ſimple form, rather long than ſquare; and the third reaches from the floor to the roof, which muſt be about 20 feet. Theſe curious figures are owing to water that falls from the upper parts of the cave to the ground, which coagulated into ſtone from time to time, until at length it acquired thoſe forms which are now ſo pleaſing; or to an exſudation or exſtillation of petrifying juices out of the earth; or perhaps they partake of the nature of ſpar, which is a kind of rock-plant. The former ſeems to be the moſt probable ſuppoſition; as theſe figures, in colour and conſiſtence, appear exactly like the icicles on the top, which are only ſeen from the wet parts of the caverns; and in this place there is a greater oozing of water, and a much larger number of petrifactions, than in any other. When this curious apartment has been ſufficiently examined, the guides lead you for a conſiderable way through winding places, until a glimmering light agreeably ſurpriſes. Here the journey of above a quarter of a mile, through thoſe parts, is ended: but, upon returning into the firſt cavern, the entrance into other apartments, leſs curious indeed, but as extenſive as thoſe we have deſcribed, offers itſelf. The paſſages into ſome of thoſe are ſo very low, that there is a neceſſity of creeping through them: by theſe we proceed until the noiſe of a ſubterranean river is heard, but farther none have ventured.

KILLICRANKIE, a noted paſs of Argyleſhire, in the Highlands of Scotland. It is formed by the lofty mountains impending over the water of Garrie, which ruſhes through in a deep, darkſome, and horrid channel beneath. In the laſt century this was a paſs of much danger and difficulty; a path hanging over a tremendous precipice threatened deſtruction to the leaſt falſe ſtep of the traveller: at preſent a fine road formed by the ſoldiery lent by government, and encouraged by an additional 6d. per day, gives an eaſy acceſs to the remote Highlands; and the two ſides are joined by a fine arch.

Near the north end of this paſs in its open and unimproved ſtate was fought, in the year 1689, the battle of Killicranky, between the adherents of James II. under Viſcount Dundee, and of William III. under general Mackay. Dundee's army was very much inferior to that of Mackay's. When he came in ſight of the latter, he found them formed in eight battalions, ready for action. They conſiſted of 4500 foot, and two troops of horſe. The Highlanders, under Dundee, amounted to little more than half that number. Theſe he ranged inſtantly in order of battle. Maclean, with his tribe, formed the right wing. The Macdonalds of Sky, under their chieftain's eldeſt ſon, formed the left. The Camerons, the Macdonalds of Glengary, the followers of Clanronald, and a few Iriſh auxiliaries, were in the centre. A troop of horſe were placed behind, under Sir William Wallace. The officers ſent by James from Ireland were diſtributed through all the line. His whole army ſtood in ſight of the enemy for ſeveral hours on the ſteep ſide of a hill, which faced the narrow plain where Mackay had formed his line. Dundee wiſhed for the approach of night; a ſeaſon ſuited for either victory or flight.

At five of the clock in the afternoon, a kind of ſlight ſkirmiſh began between the right wing of the Highlanders and the left of the enemy. But neither army wiſhing to change their ground, the firing was diſcontinued for three hours. Dundee, in the mean time, flew from tribe to tribe, and animated them to action. At eight of the clock he gave the ſignal for battle; and charged the enemy in perſon, at the head of the horſe. The Highlanders, in deep columns, ruſhed ſuddenly down the hill. They kept their ſhot till they were within a pike's length of the enemy; and, having fired their muſkets, fell upon them ſword in hand. Mackay's left wing could not for a moment ſuſtain the ſhock. They were driven by the Macleans with great ſlaughter from the field. The Macdonalds, on the left of the Highlanders, were not equally ſucceſsful. Colonel Haſting's regiment of foot ſtood their ground. They even forced the Macdonalds to retreat. Maclean, with a few of his tribe, and Sir Evan Cameron at the head of his clan, fell ſuddenly on the flank of this gallant regiment, and forced them to give way. The ſlaughter ended not with the battle. Two thouſand fell in the field and the flight. The tents, baggage, artillery, and proviſions of the enemy, and even king William's Dutch ſtandard, which was carried by Mackay's regiment, fell into the hands of the Highlanders. The victory was now complete. But the Highlanders loſt their gallant leader. Perceiving the unexpected reſiſtance of Colonel Haſting's regiment, and the confuſion of the Macdonalds, Dundee rode rapidly to the left wing. As he was raiſing his arm, and pointing to the Camerons to advance, he received a ball in his ſide. The wound proved mortal, and with Dundee fell all the hopes of king James at that time.

KILLIGREW (William), eldeſt ſon of Sir Robert Killigrew knight, was born in 1605. He was gentleman-uſher of the privy-chamber to king Char. I. and, on the reſtoration, to Charles II. When the latter married the princeſs Catharine of Portugal, he was created vice-chamberlain; in which ſtation he continued 22 years, and died in 1693. He was the author of four plays, which, though now thrown aſide, were much applauded by the poets of that time, particularly by Mr Waller; and in the decline of life he publiſhed ſome pious reflections on the inſtability of human happineſs, when our views are not directed to a future ſtate.

Killigrew (Thomas), brother of the former, was born in 1611; and, in proceſs of time, diſtinguiſhed himſelf by his uncommon natural parts. He was page of honour to king Charles I. and groom of the bed-chamber to Charles II. with whom he ſuffered many years exile; during which he applied his leiſure hours to the ſtudy of poetry, and to the compoſition of ſeveral plays. After the reſtoration, he continued in high favour with the king, and had frequently acceſs to him when he was denied to the firſt peers in the realm; and being a man of great wit and livelineſs of parts, and having from his long intimacy with that monarch, and being continually about his perſon during his troubles, acquired a freedom and familiarity with him, which even the pomp of majeſty afterwards could not check in him, he ſometimes, by way of jeſt, which king Charles was ever fond of, if genuine, even though himſelf was the object of the ſatire, would adventure bold truths which ſcarcely any one beſides would have dared even to hint at. One ſtory in particular is related of him, which, if true, is a ſtrong proof of the great lengths he would ſometimes proceed in his freedoms of this kind, which is as follows:—When the king's unbounded paſſion for women had given his miſtreſs ſuch an aſcendant over him, that, like the effeminate Perſian monarch, he was much fitter to have handled a diſtaff than to wield a ſceptre, and for the converſation of his concubines utterly neglected the moſt important affairs of ſtate, Mr Killigrew went to pay his Majeſty a viſit in his private apartments, habited like a pilgrim who was bent on a long journey. The king, ſurpriſed at the oddity of his appearance, immediately aſked him what was the meaning of it, and whither he was going? "To hell," bluntly replied the wag. "Prithee, (ſaid the king), what can your errand be to that place?" "To fetch back Oliver Cromwell, (rejoined he), that he may take ſome care of the affairs of England, for his ſucceſſor takes none at all." One more ſtory is related of him, which is not barren of humour. King Charles's fondneſs for pleaſure, to which he almoſt always made buſineſs give way, uſed frequently to delay affairs of conſequence from his majeſty's diſappointing the council of his preſence when met for the diſpatch of buſineſs, which neglect gave great diſguſt and offence to many of thoſe who were treated with this ſeeming diſreſpect. On one of theſe occaſions the duke of Lauderdale, who was naturally impetuous and turbulent, quitted the council-chamber in a violent paſſion; and, meeting Mr Killigrew preſently after, expreſſed himſelf on the occaſion in very diſreſpectful terms of his majeſty. Killigrew begged his grace to moderate his paſſion, and offered to lay him a wager of 100l. that he himſelf would prevail on his majeſty to come to council in half an hour. The duke, ſurprized at the boldneſs of the aſſertion, and warmed by his reſentment againſt the king, accepted the wager; on which Killigrew immediately went to the king, and, without ceremony, told him what had happened; adding theſe words, "I know that your majeſty hates Lauderdale, though the neceſſity of your affairs compels you to carry an outward appearance of civility: now, if you chooſe to get rid of a man who is thus diſagreeable to you, you need only go this once to council; for I know his covetous diſpoſition ſo perfectly, that I am well perſuaded, rather than pay this hundred pounds, he would hang himſelf out of the way, and never plague you more." The king was ſo pleaſed with the archneſs of this obſervation, that he immediately replied, "Well then, Killigrew, I poſitively will go;" and kept his word accordingly.—Killigrew died in 1682, and was buried in Weſtminſter-abbey.

Killigrew (Anne), "a Grace for beauty, and a Muſe for wit," as Mr Wood ſays, was the daughter of Dr Henry Killigrew, brother of the two foregoing, and was born a little before the reſtoration. She gave early indications of genius, and became eminent in the arts both of poetry and painting. She drew the duke of York, and his ducheſs to whom ſhe was maid of honour, as well as ſeveral other portraits and hiſtory-pieces; and crowned all her other accompliſhments with unblemiſhed virtue and exemplary piety. Mr Dryden ſeems quite laviſh in her praiſe, though Wood aſſures us he has ſaid no more of her than ſhe was equal if not ſuperior to. This amiable young woman died of the ſmall-pox in 1685, and the year after her poems were publiſhed in a thin 4to volume.

KILMARNOCK, a populous and flouriſhing town of Ayrſhire in Scotland, famous for its manufacture of broad cloth and hardware. It gave the title of earl to the noble family of Boyd, reſiding in this neighbourhood. This title was forfeited by the late earl, who, by engaging in the rebellion of 1745, was deprived of his honours, and loſt his life on the ſcaffold. His ſon, however, who ſerved in the king's army, afterwards ſucceeded to the earldom of Errol, a title much more ancient and honourable.

KIMBOLTON, a town of Huntingdonſhire, ſeated in a bottom; and noted for the caſtle of Kimbolton, the ſeat of the duke of Mancheſter. W. Long. 0. 15. N. Lat. 52. 18.

KIMCHI (David), a Jewiſh rabbi, famous as a commentator on the Old Teſtament, lived at the cloſe of the 12th and beginning of the 13th centuries. He was a Spaniard by birth, ſon of rabbi Joſeph Kimchi, and brother of rabbi Moſes Kimchi, both men of eminent learning among the Jews: but he exceeded them both, being the beſt Hebrew grammarian the Jews ever had. He wrote a Grammar and Dictionary of that language; out of the former of which Buxtorf made his *Theſaurus linguæ Hebreæ*, and his *Lexicon linguæ Hebreæ* out of the latter. His writings have been held in ſuch eſtimation among the Jews, that no one can arrive at any reputation in letters and theology without ſtudying them.

KINDRED, in law, perſons related to one another, whereof the law reckons three degrees or lines, viz. the deſcending, aſcending, and collateral line. See CONSANGUINITY and DESCENT.

On there being no kindred in the deſcending line, the inheritance paſſes in the collateral one.

KING, in the general acceptation of the word, is a perſon who has a ſupreme authority, with the power of levying taxes, making laws, and enforcing an obedience to them: but in Britain, which is a limited monarchy, the power of the king is greatly reſtrained; which is ſo far from diminiſhing his honour, that it adds a glory to his crown; for while other kings are abſolute monarchs over innumerable multitudes of ſlaves, the king of Britain has the diſtinguiſhed glory of governing a free people, the leaſt of whom is protected by the laws: he has great prerogatives, and a boundleſs power in doing good; and is at the ſame time only reſtrained from acting inconſiſtently with his own happineſs, and that of his people.

To underſtand the royal rights and authority, we muſt conſider the king under ſix diſtinct views. 1. With regard to his title. 2. His royal family. 3. His councils. 4. His duties. 5. His prerogative. 6. His revenue.

I. His title. For this, ſee HEREDITARY *Right*, and SUCCESSION.

II. His royal family. See ROYAL *Family*.

III. His councils. See COUNCIL.

IV. His duties. By our conſtitution, there are certain duties incumbent on the king; in conſideration of which, his dignity and prerogative are eſtabliſhed by the laws of the land: it being a maxim in the law, that protection and ſubjection are reciprocal. And theſe reciprocal duties are what Sir William Blackſtone apprehends were meant by the convention in 1688, when they declared that king James had broken the original contract between king and people. But however, as the terms of that original contract were in ſome meaſure diſputed, being alleged to exiſt principally in theory, and to be only deducible by reaſon and the rules of natural law, in which deduction different underſtandings might very conſiderably differ; it was, after the revolution, judged proper to declare theſe duties expreſsly, and to reduce that contract to a plain certainty. So that, whatever doubts might be formerly raiſed by weak and ſcrupulous minds about the exiſtence of ſuch an original contract, they muſt now entirely ceaſe; eſpecially with regard to every prince who hath reigned ſince the year 1688.

The principal duty of the king is, To govern his people according to law. *Nec regibus infinita aut libera poteſtas*, was the conſtitution of our German anceſtors on the continent. And this is not only conſonant to the principles of nature, of liberty, of reaſon, and of ſociety; but has always been eſteemed an expreſs part of the common law of England, even when prerogative was at the higheſt. “The king,” ſaith Bracton, who wrote under Henry III. “ought not to be ſubject to man; but to God, and to the law; for the law maketh the king. Let the king therefore render to the law, what the law has inveſted in him with regard to others; dominion, and power: for he is not truly king, where will and pleaſure rules, and not the law.” And again: “The king hath a ſuperior, namely God; and alſo the law, by which he was made a king.” Thus Bracton: and Forteſcue alſo, having firſt well diſtinguiſhed between a monarchy abſolutely and deſpotically regal, which is introduced by conqueſt and violence, and a political or civil monarchy, which ariſes from mutual conſent, (of which laſt ſpecies he aſſerts the government of England to be), immediately lays it down as a principle, that “the king of England muſt rule his people according to the decrees of the laws thereof; inſomuch that he is bound by an oath at his coronation to the obſervance and keeping of his own laws.” But to obviate all doubts and difficulties concerning this matter, it is expreſsly declared by ſtatute 12 & 13 W. III. c. 2. “that the laws of England are the birthright of the people thereof; and all the kings and queens who ſhall aſcend the throne of this realm ought to adminiſter the government of the ſame according to the ſaid laws, and all their officers and miniſters ought to ſerve them reſpectively according to the ſame: and therefore all the other laws and ſtatutes of this realm, for ſecuring the eſtabliſhed religion, and the rights and liberties of the people thereof, and all other laws and ſtatutes of the ſame now in force, are by his majeſty, by and with the advice and conſent of the lords ſpiritual and temporal, and commons, and by authority of the ſame, ratified and confirmed accordingly.”

And, as to the terms of the original contract between king and people, theſe, it is apprehended, are now couched in the coronation-oath, which by the ſtatute 1 W. & M. ſt. 1. c. 6. is to be adminiſtered to every king and queen who ſhall ſucceed to the imperial crown of theſe realms, by one of the archbiſhops or biſhops of the realm, in the preſence of all the people; who on their parts do reciprocally take the oath of allegiance to the crown. This coronation-oath is conceived in the following terms.

“*The archbiſhop or biſhop ſhall ſay*, Will you ſolemnly promiſe and ſwear to govern the people of this kingdom of Britain, and the dominions thereto belonging, according to the ſtatutes in parliament agreed, and the laws and cuſtoms of the ſame?—*The king or queen ſhall ſay*, I ſolemnly promiſe ſo to do.

“*Archbiſhop or biſhop*. Will you to your power cauſe law and juſtice, in mercy, to be executed in all your judgments?—*King or queen*. I will.

“*Archbiſhop or biſhop*. Will you to the utmoſt of your power maintain the laws of God, the true profeſſion of the goſpel, and the Proteſtant reformed religion eſtabliſhed by the law? And will you preſerve unto the biſhops and clergy of this realm, and to the churches committed to their charge, all ſuch rights and privileges as by law do or ſhall appertain unto them, or any of them?—*King or queen*. All this I promiſe to do.

“*After this the king or queen, laying his or her hand upon the holy goſpel, ſhall ſay*, The things which I have here before promiſed, I will perform and keep: ſo help me God. *And then ſhall kiſs the book*.”

This is the form of the coronation-oath, as it is now preſcribed by our laws; the principal articles of which appear to be at leaſt as ancient as the mirror of juſtices, and even as the time of Bracton: but the wording of it was changed at the revolution, becauſe (as the ſtatute alleges) the oath itſelf had been framed in doubtful words and expreſſions, with relation to ancient laws and conſtitutions at this time unknown. However, in what form ſoever it be conceived, this is moſt indiſputably a fundamental and original expreſs contract; though, doubtleſs, the duty of protection is impliedly as much incumbent on the ſovereign before coronation as after: in the ſame manner as allegiance,

giance to the king becomes the duty of the ſubject immediately on the deſcent of the crown, before he has taken the oath of allegiance, or whether he ever takes it at all. This reciprocal duty of the ſubject will be conſidered in its proper place. At preſent we are only to obſerve, that in the king's part of this original contract are expreſſed all the duties which a monarch can owe to his people, viz. to govern according to law; to execute judgment in mercy; and to maintain the eſtabliſhed religion. And, with reſpect to the latter of theſe three branches, we may farther remark, that by the act of union, 5 Ann. c. 8. two preceding ſtatutes are recited and confirmed; the one of the parliament of Scotland, the other of the parliament of England: which enact; the former, that every king at his acceſſion ſhall take and ſubſcribe an oath, to preſerve the Proteſtant religion, and preſbyterian church-government in Scotland; the latter, that at his coronation he ſhall take and ſubſcribe a ſimilar oath, to preſerve the ſettlement of the church of England, within England, Ireland, Wales, and Berwick, and the territories thereunto belonging.

V. His prerogative. See PREROGATIVE.

VI. His revenue. See REVENUE.

Having in the preceding articles chalked out all the principal outlines of this vaſt title of the law, the ſupreme executive magiſtrate, or the king's majeſty, conſidered in his ſeveral capacities and points of view; it may not be improper to take a ſhort comparative review of the power of the executive magiſtrate, or prerogative of the crown, as it ſtood in former days, and as it ſtands at preſent. And we cannot but obſerve, that moſt of the laws for aſcertaining, limiting, and reſtraining this prerogative have been made within the compaſs of little more than a century paſt; from the petition of right in 3 Car. I. to the preſent time. So that the powers of the crown are now to all appearance greatly curtailed and diminiſhed ſince the reign of king James I. particularly by the abolition of the ſtar-chamber and high-commiſſion courts in the reign of Charles I. and by the diſclaiming of martial law, and the power of levying taxes on the ſubject, by the ſame prince: by the diſuſe of foreſt-laws for a century paſt: and by the many excellent proviſions enacted under Charles II.; eſpecially the abolition of military tenures, purveyance, and pre-emption; the *habeas corpus* act; and the act to prevent the diſcontinuance of parliaments for above three years: and, ſince the revolution, by the ſtrong and emphatical words in which our liberties are aſſerted in the bill of rights, and act of ſettlement; by the act for triennial, ſince turned into ſeptennial, elections; by the excluſion of certain officers from the houſe of commons; by rendering the ſeats of the judges permanent, and their ſalaries independent; and by reſtraining the king's pardon from obſtructing parliamentary impeachments. Beſides all this, if we conſider how the crown is impoveriſhed and ſtripped of all its ancient revenues, ſo that it greatly depends on the liberality of parliament for its neceſſary ſupport and maintenance, we may perhaps be led to think, that the balance is inclined pretty ſtrongly to the popular ſcale, and that the executive magiſtrate has neither independence nor power enough left, to form that check upon the lords and commons which the founders of our conſtitution intended.

But, on the other hand, it is to be conſidered, that every prince, in the firſt parliament after his acceſſion, has by long uſage a truly royal addition to his hereditary revenue ſettled upon him for his life; and has never any occaſion to apply to parliament for ſupplies, but upon ſome public neceſſity of the whole realm. This reſtores to him that conſtitutional independence, which at his firſt acceſſion ſeems, it muſt be owned, to be wanting. And then, with regard to power, we may find perhaps that the hands of government are at leaſt ſufficiently ſtrengthened; and that a Britiſh monarch is now in no danger of being overborne by either the nobility or the people. The inſtruments of power are not perhaps ſo open and avowed as they formerly were, and therefore are the leſs liable to jealous and invidious reflections; but they are not the weaker upon that account. In ſhort, our national debt and taxes (beſides the inconveniencies beforementioned), have alſo in their natural conſequences thrown ſuch a weight of power into the executive ſcale of government, as we cannot think was intended by our patriot anceſtors; who glorioſly ſtruggled for the abolition of the then formidable parts of the prerogative, and by an unaccountable want of foreſight eſtabliſhed this ſyſtem in their ſtead. The entire collection and management of ſo vaſt a revenue, being placed in the hands of the crown, have given riſe to ſuch a number of new officers, created by and removable at the royal pleaſure, that they have extended the influence of government to every corner of the nation. Witneſs the commiſſioners, and the multitude of dependents on the cuſtoms, in every port of the kingdom; the commiſſioners of exciſe, and their numerous ſubalterns, in every inland diſtrict; the poſt-maſters, and their ſervants, planted in every town, and upon every public road; the commiſſioners of the ſtamps, and their diſtributors, which are full as ſcattered and full as numerous; the officers of the ſalt-duty, which, tho' a ſpecies of exciſe, and conducted the ſame manner, are yet made a diſtinct corps from the ordinary managers of that revenue; the ſurveyors of houſes and windws; the receivers of the land-tax; the managers of lotteries; and the commiſſioners of hackney-coaches: all which are either mediately or immediately appointed by the crown, and removeable at pleaſure without any reaſon aſſigned: theſe, it requires but little penetration to ſee, muſt give that power, on which they depend for ſubſiſtence, an influence moſt amazingly extenſive. To this may be added the frequent opportunities of conferring particular obligations, by preference in loans, ſubſcriptions, tickets, remittances, and other money-tranſactions, which will greatly increaſe this influence; and that over thoſe perſons whoſe attachment, on account of their wealth, is frequently the moſt deſirable. All this is the natural, though perhaps the unforeſeen, conſequence of erecting our funds of credit, and, to ſupport them, eſtabliſhing our perpetual taxes: the whole of which is entirely new ſince the reſtoration in 1660; and by far the greateſt part ſince the revolution in 1688. And the ſame may be ſaid with regard to the officers in our numerous army, and the places which the army has created. All which put together give the executive power ſo perſuaſive an energy with reſpect to the perſons themſelves, and ſo prevailing an intereſt with their friends and families, as will amply make amends for the loſs of external prerogative.

But, though this profuſion of offices ſhould have no effect on individuals, there is ſtill another newly acquired branch of power; and that is, not the influence only, but the force, of a diſciplined army: paid indeed ultimately by the people, but immediately by the crown: raiſed by the crown, officered by the crown, commanded by the crown. They are kept on foot, it is true, only from year to year, and that by the power of parliament: but during that year, they muſt by the nature of our conſtitution, if raiſed at all, be at the abſolute diſpoſal of the crown. And there need but few words to demonſtrate how great a truſt is thereby repoſed in the prince by his people: A truſt, that is more than equivalent to a thouſand little troubleſome prerogatives.

Add to all this, that, beſides the civil liſt, the immenſe revenue of almoſt ſeven millions ſterling, which is annually paid to the creditors of the public, or carried to the ſinking fund, is firſt depoſited in the royal exchequer, and thence iſſued out to the reſpective offices of payment. This revenue the people can never refuſe to raiſe, becauſe it is made perpetual by act of parliament: which alſo, when well conſidered, will appear to be a truſt of great delicacy and high importance.

Upon the whole, therefore, it ſeems clear, that, whatever may have become of the *nominal*, the real power of the crown has not been too far weakened by any tranſactions in the laſt century. Much is indeed given up; but much is alſo acquired. The ſtern commands of prerogative have yielded to the milder voice of influence: the ſlaviſh and exploded doctrine of non-reſiſtance has given way to a military eſtabliſhment by law; and to the diſuſe of parliaments has ſucceeded a parliamentary truſt of an immenſe perpetual revenue. When, indeed, by the free operation of the ſinking fund, our national debts ſhall be leſſened; when the poſture of foreign affairs, and the univerſal introduction of a well-planned and national militia, will ſuffer our formidable army to be thinned and regulated; and when (in conſequence of all) our taxes ſhall be gradually reduced; this adventitious power of the crown will ſlowly and imperceptibly diminiſh, as it ſlowly and imperceptibly roſe. But, till that ſhall happen, it will be our eſpecial duty, as good ſubjects and good Engliſhmen, to reverence the crown, and yet guard againſt corrupt and ſervile influences from thoſe who are intruſted with its authority; to be loyal, yet free; obedient, and yet independent; and above every thing, to hope that we may long, very long, continue to be governed by a ſovereign, who, in all thoſe public acts that have perſonally proceeded from himſelf, hath manifeſted the higheſt veneration for the free conſtitution of Britain; hath already in more than one inſtance remarkably ſtrengthened its outworks; and will therefore never harbour a thought, or adopt a perſuaſion, in any the remoteſt degree detrimental to public liberty.

King (Dr John), a learned Engliſh biſhop in the 17th century, bred at Weſtminſter-ſchool, and afterward at Chriſt-church Oxford. He was appointed chaplain to queen Elizabeth. In 1605, he was made dean of Chriſt-church, and was for ſeveral years vice-chancellor of Oxford. In 1611, he was advanced to the biſhopric of London. Beſides his *Lectures upon Jonah*, delivered at York, he publiſhed ſeveral ſermons. King James I. uſed to ſtyle him *the king of preachers*; and lord chief juſtice Coke often declared, that *he was the beſt ſpeaker in the ſtar-chamber in his time.* He was ſo conſtant in preaching after he was a biſhop, that, unleſs he was hindered by want of health, he omitted no Sunday whereon he did not viſit ſome pulpit in London or near it. Soon after his death, the Papiſts reported, that he died a member of their church. But the falſity of this ſtory was ſufficiently expoſed by his ſon Mr Henry King, in a ſermon at St Paul's croſs ſoon after; by biſhop Godwin in the *Appendix* to his *Commentarius de præſulibus Angliæ*, printed in 1622; and by Mr John Gee, in his book intitled, *The foot out of the ſnare.*

King (Dr Henry), biſhop of Chicheſter, eldeſt ſon of the former, was born in 1591, and educated at Oxford. He became an eminent preacher, and chaplain to king James I. and Charles I. In 1638, he was made dean of Rocheſter; and, in 1641, was advanced to the ſee of Chicheſter. Upon the breaking out of the civil wars, and the diſſolution of epiſcopacy, he was treated with great ſeverity by the friends to the parliament; but recovered his biſhopric at the reſtoration. This worthy prelate, who had a moſt amiable character, died in 1699; and was interred at his cathedral of Chicheſter, where a monument was erected to his memory. He publiſhed, 1. The pſalms of David turned into metre. 2. Poems, elegies, paradoxes, and ſonnets. 3. Several ſermons, and other works.

King (Dr William), a facetious Engliſh writer in the beginning of the 18th century, was well deſcended, being allied to the noble families of Clarendon and Rocheſter. He was elected a ſtudent of Chriſt-church from Weſtminſter-ſchool in 1681, aged 18. He afterward entered upon the law line, and took the degree of doctor of civil law. He ſoon acquired a conſiderable reputation as a civilian, and was in great practice. He attended the earl of Pembroke, lord lieutenant of Ireland, into that kingdom, where he was appointed judge-advocate, ſole commiſſioner of the prizes, keeper of the records, vicar-general to the lord primate of Ireland; was countenanced by perſons of the higheſt rank, and might have made a fortune. But ſo far was he from heaping up riches, that he returned to England with no other treaſure than a few merry poems and humorous eſſays, and retired to his ſtudents place at Chriſt-church. He died on Chriſtmas-day in 1712, and was interred in the cloiſters of Weſtminſter-abbey. His writings are pretty numerous. The principal are, *Animadverſions on a pretended account of Denmark*, wrote by Mr Moleſworth, afterwards lord Moleſworth. The writing of theſe procured Dr King the place of ſecretary to princeſs Anne of Denmark. 2. Dialogues of the dead. 3. The art of love, in imitation of Ovid *De arte amandi*. 4. A volume of poems. 5. Uſeful tranſactions. 6. An hiſtorical account of the heathen gods and heroes. 7. Several tranſlations.—As to the character of Dr King, he naturally hated buſineſs, eſpecially that of an advocate; but made an excellent judge when appointed one of the court of delegates. His chief pleaſure conſiſted in trifles; and he was never happier than when he thought he was hid from the world. Yet he loved company, provided they were ſuch as tallied with his humour. He would ſay a great many ill-natured things, but never do one. He was made up of tenderneſs and pity, and tears would fall from him on the ſmalleſt occaſion. His education had been ſtrict, and he was naturally of a religious diſpoſition.

King (Dr William), archbiſhop of Dublin in the 18th century, was deſcended from an ancient family in the north of Scotland, but born in the county of Antrim in the north of Ireland. In 1674, he went into prieſts orders. In 1679, he was promoted by his patron, Dr Parker, archbiſhop of Dublin, to the chancellorſhip of St Patrick. In 1687, Peter Manby, dean of Londonderry, having publiſhed at London in 4to, a pamphlet intitled *Conſiderations which obliged* Peter Manby *dean of Londonderry to embrace the Catholic religion*, our author immediately wrote an anſwer. Mr Manby, encouraged by the court, and aſſiſted by the moſt learned champions of the church of Rome, publiſhed a reply under this title, *A reformed catechiſm, in two dialogues concerning the Engliſh reformation,* &c. *in reply to Mr King's anſwer,* &c. Our author ſoon rejoined in *A vindication of the anſwer.* Mr Manby dropped the controverſy; but diſperſed a looſe ſheet of paper, artfully written, with this title, *A letter to a friend, ſhewing the vanity of this opinion, that every men's ſenſe and reaſon are to guide him in matters of faith.* This Dr King refuted in "A vindication of the Chriſtian religion and reformation, againſt the attempts of a letter, &c." In 1689, he was twice confined in the tower by order of king James II. and the ſame year commenced doctor of divinity. In 1690, upon king's James's retreat to France after the battle at the Boyne, he was advanced to the ſee of Derry. In 1692, he publiſhed at London in 4to, *The ſtate of the proteſtants of Ireland under the late king James's government,* &c. "A hiſtory, (ſays biſhop Burnet,) as truly as it is finely written." He had by him at his death atteſted vouchers of every particular fact alleged in this book, which are now in the hands of his relations. However, it was ſoon attacked by Mr Charles Leſly. In 1693, our author finding the great number of Proteſtant diſſenters, in his dioceſe of Derry, increaſed by a vaſt addition of colonies from Scotland, in order to perſuade them to conformity to the eſtabliſhed church, publiſhed *A diſcourſe concerning the inventions of men in the worſhip of God.* Mr Joſeph Boyſe, a diſſenting miniſter, wrote an anſwer. The biſhop anſwered Mr Boyſe. The latter replied. The biſhop rejoined. In 1702, he publiſhed at Dublin in 4to, his celebrated treatiſe *De origine mali.* Mr Edmund Law, M. A. fellow of Chriſt's-college in Cambridge, afterward publiſhed a complete tranſlation of this, with very valuable notes, in 4to. In the ſecond edition he has inſerted, by way of notes, a large collection of the author's papers on the ſame ſubject, which he had received from his relations after the publication of the former edition. Our author, in this excellent treatiſe, has many curious obſervations. He aſſerts and proves, that there is more moral good in the earth than moral evil. A ſermon by our author, preached at Dublin in 1709, was publiſhed under the title of *Divine predeſtination and foreknowledge conſiſtent with the freedom of man's will.* This was attacked by Anthony Collins, eſq; in a pamphlet intitled, "*A vindication of the divine attributes;* in ſome remarks on the archbiſhop of Dublin's ſermon intitled, *Divine predeſtination,* &c." He publiſhed likewiſe, *A diſcourſe concerning the conſecration of churches; ſhewing what is meant by dedicating them, with the grounds of that office.* He died in 1729.

King (Dr William), late principal of St Mary's-hall Oxford, ſon of the reverend Peregrine King, was born at Stepney in Middleſex, in the year 1685. He was made doctor of laws in 1715, was ſecretary to the duke of Ormond, and earl of Arran, as chancellors of the univerſity; and was made principal of St Mary's-hall on the death of Dr Hudſon in 1719. When he ſtood candidate for member of parliament for the univerſity, he reſigned his office of ſecretary, but enjoyed his other preferment, and it was all he did enjoy, to the time of his death. Dr Clark, who oppoſed him, carried the election; and after this diſappointment, he, in the year 1727, went over to Ireland, where he is ſaid to have written an epic poem, called *The toaſt*, which was a political ſatire, printed and given away to his friends, but never ſold. On the dedication of Dr Radcliff's library in 1749, he ſpoke a Latin oration in the theatre at Oxford, which was received with the higheſt acclamations; but it was otherwiſe when printed, he being attacked in ſeveral pamphlets on account of it. Again, at the memorable conteſted election in Oxfordſhire 1755, his attachment to the old intereſt drew on him the reſentment of the new, and he was libelled in newſpapers and pamphlets, againſt which he defended himſelf in an *Apology*, and warmly retaliated on his adverſaries. He wrote ſeveral other things, and died in 1762. He was a polite ſcholar, an excellent orator, an elegant and eaſy writer, and eſteemed by the firſt men of his time for his learning and wit.

King (Peter), lord high-chancellor of Great Britain, was deſcended of a good family of that name in Somerſetſhire, and ſon to an eminent grocer and ſalter in the city of Exeter in Devonſhire. He was born at Exeter in 1669, and bred up for ſome years to his father's buſineſs; but his inclination to learning was ſo ſtrong, that he laid out all the money he could ſpare in books, and devoted every moment of his leiſure hours to ſtudy: ſo that he became an excellent ſcholar before the world ſuſpected any ſuch thing; and gave the public a proof of his ſkill in church-hiſtory, in his *Inquiry into the conſtitution, diſcipline, unity, and worſhip, of the primitive church, that flouriſhed within the firſt 300 years after Chriſt,* London, 1691, in 8vo. This was written with a view to promote the ſcheme of a comprehenſion of the diſſenters. He afterwards publiſhed the ſecond part of the *Inquiry into the conſtitution,* &c.; and having deſired, in his preface, to be ſhewn, either publicly or privately, any miſtakes he might have made, that requeſt was firſt complied with by Mr Edmund Elys; between whom and our author there paſſed ſeveral letters upon the ſubject, in 1692, which were publiſhed by Mr Elys in 1694, 8vo, under the title of *Letters on ſeveral ſubjects.* But the moſt formal and elaborate anſwer to the *Inquiry* appeared afterwards in a work entitled, *Original draught of the primitive church.*

His acquaintance with Mr Locke, to whom he was related, and who left him half his library at his death, was of great advantage to him: by his advice, after he had ſtudied ſome time in Holland, he applied himſelf to the ſtudy of the law; in which profeſſion his learning and diligence made him ſoon taken notice of. In the two laſt parliaments during the reign of king William, and in five parliaments during the reign of queen Anne, he ſerved as burgeſs for Beer-Alſton in Devonſhire. In 1702, he publiſhed at London, in 8vo, without his name, his *Hiſtory of the apoſtles creed*, with critical obſervations on its ſeveral articles; which is highly eſteemed. In 1708, he was choſen recorder of the city of London; and in 1710, was one of the members of the houſe of commons at the trial of Dr Sacheverell. In 1714, he was appointed lord chief juſtice of the common-pleas; and, the April following, was made one of the privy-council. In 1715, he was created a peer, by the title of *Lord King, baron of Ockham in Surry*, and appointed lord high chancellor of Great Britain; in which poſt he continued till 1733, when he reſigned; and in 1734 died at Ockham in Surrey.

KING *at Arms*, or *of Arms*, is an officer of great antiquity, and anciently of great authority, whoſe buſineſs is to direct the heralds, preſide at their chapters, and have the juriſdiction of armoury.

In England there are three kings of arms, viz. garter, clarencieux, and norroy.

Garter, principal KING *at-arms*, was inſtituted by Henry V. His buſineſs is to attend the knights of the garter at their aſſemblies, to marſhal the ſolemnities at the funerals of the higheſt nobility, and to carry the garter to kings and princes beyond the ſea; on which occaſion he uſed to be joined in commiſſion with ſome principal peer of the kingdom. See GARTER.

Clarencieux KING *at Arms*, is ſo called from the duke of Clarence, to whom he firſt belonged. His office is to marſhal and diſpoſe the funerals of all the inferior nobility, as baronets, knights, eſquires, and gentlemen, on the ſouth ſide of the Trent. See CLARENCIEUX.

Norroy KING *at Arms*, is to do the ſame on the north ſide of the river Trent.

Theſe two laſt are alſo called *provincial heralds*, in regard they divide the kingdom between them into provinces. By charter, they have power to viſit noblemens families, to ſet down their pedigrees, diſtinguiſh their arms, appoint perſons their arms, and, with garter, to direct the other heralds.

Anciently, the kings at arms were created, and ſolemnly crowned, by the kings of England themſelves; but of later days, the earl marſhal has a ſpecial commiſſion, at every creation, to perſonate the king.

Lyon KING *at Arms*, for Scotland, is the ſecond king at arms for Great Britain; he is inveſted and crowned with great ſolemnity. To him belongs the publiſhing the king's proclamations, marſhalling funerals, reverſing arms, &c. See LYON.

KING's-*Bench*. This court (the nature of which was partly explained before) is divided into a *crown* ſide and a *plea* ſide. See *King's*-BENCH. And on the crown ſide, or crown office, it takes cognizance of all criminal cauſes, from high treaſon down to the moſt trivial miſdemeanour or breach of the peace. Into this court alſo indictments from all inferior courts may be removed by writ of *certiorari*; and tried either at bar, or at *niſi prius*, by a jury of the county out of which the indictment is brought. The judges of this court are the ſupreme coroners of the kingdom. And the court itſelf is the principal court of criminal juriſdiction known to the laws of England. For which reaſon, by the coming of the court of King's bench into any county, (as it was removed to Oxford on account of the ſickneſs in 1665), all former commiſſions of *oyer* and *terminer*, and general gaol-delivery, are at once abſorbed and determined *ipſo facto*: in the ſame manner as, by the old Gothic and Saxon conſtitutions, *Jure vetuſto obtinuit, quieviſſe omnia inferiora judicia, dicente jus rege.* Into this court of King's bench hath reverted all that was good and ſalutary of the *ſtar-chamber*. See STAR-*Chamber*.

KINGDOM, the territories or extent of country ſubject to a king.

KINGDOMS, in natural hiſtory. Moſt naturaliſts and chemiſts divide all natural bodies into three great claſſes, which they call *kingdoms*. Theſe are the *mineral*, the *vegetable*, and the *animal* kingdoms.

This great and firſt diviſion is founded on this conſideration, that any plant or vegetable which is produced, which grows, which is organized, which contains a ſeed, and which produces its like, ſeems to be a being very diſtinct and different from a ſtone or a metal, in which we at moſt obſerve only a regular arrangement of parts, but not a true organization, and which contains no ſeed by which it is capable of reproduction; and another foundation of this diviſion is, that an animal differs no leſs from a ſimple plant, by ſenſation, by the uſe of its ſenſes, and by the power of voluntary motion which it poſſeſſes, while theſe qualities do not belong to any thing which is merely vegetable.

But notwithſtanding theſe ſo diſtinctive marks, philoſophers pretend, that this diviſion of natural bodies into claſſes is only ideal. They affirm, that, by obſerving nature attentively, we may perceive, that all her productions are connected together by an uninterrupted chain; and that by ſurveying the ſeveral beings, we muſt be convinced, that any one being differs very little from ſome other two between which it ſeems to be placed; ſo that we may deſcend from the moſt perfect animal to the rudeſt mineral by inſenſible degrees, and without finding any interval from which a diviſion might be made. The opinions of naturaliſts are therefore divided upon this ſubject; and each opinion ſeems to be founded upon obſervations, analogies, and reaſonings, more or leſs concluſive.

If we avoid inveſtigating extremes, however, the diſtinctive marks muſt be acknowledged ſufficiently obvious to juſtify the triple diviſion above mentioned, and to diſcriminate the individuals of each.

For a general view of the operations or conduct of nature in theſe her three kingdoms, ſee the article NATURE. For a particular conſideration of them,—(in the animal-kingdom), ſee ZOOLOGY, ANIMAL, BRUTE, BIRD, ORNITHOLOGY, FISH, COMPARATIVE *Anatomy*, and the different animals under their reſpective names;—(in the vegetable kingdom), BOTANY, PLANT, AGRICULTURE, VEGETATION, DEFOLIATION, FRONDESCENTIA, GEMMATIO, FRUIT, LEAF, GERMINATION, &c. and the different plants under their reſpective names;—(in the mineral kingdom), Mineralogy, Metallurgy, and the different ſtones and metals under their reſpective names.

In what remains of this article we ſhall conſider natural bodies only in a chemical view; that is to ſay, relatively to the ſeveral principles which we obtain in the analyſis of thoſe bodies. In the decompoſition of all beings truly living, organiſed, and containing within themſelves a ſeed by which they may be reproduced, ſuch as vegetables and animals, we always obtain an inflammable, fat, or oily ſubſtance; and on the contrary, we do not find the ſmalleſt trace of this principle in any ſubſtance purely mineral, not even in ſulphur, which is the moſt inflammable of all theſe ſubſtances. On the other ſide, if we carefully examine and compare with each other the analogous principles obtained from the three kingdoms; ſuch as the ſaline ſubſtances obtained in the analyſis of animals, vegetables, and minerals; we ſhall eaſily perceive, that all the ſaline matter which comes from the vegetable or animal kingdoms is altered by oil, while all the ſaline matter which comes from the mineral kingdom is entirely free from oil.

We ought to obſerve here, that becauſe any matter is found in one or more individuals of any kingdom, we muſt not therefore conclude, that it belongs to the kingdom of ſuch individuals; for we may be convinced, from a ſlight obſervation of nature, that by a thouſand combinations, and particular circumſtances, ſubſtances of quite different claſſes or kingdoms are daily found mixed and confounded together. Thus, for example, within the earth, and even at great depths, that is, in the region appropriated to minerals, ſometimes ſubſtances are found evidently oily, ſuch as all bitumens: but we at the ſame time can prove, and all the obſervations of natural hiſtory prove, that theſe oily ſubſtances are only accidentally within the earth, and that they proceed from the vegetable or animal bodies which have been buried in the earth by ſome of thoſe great revolutions which have happened from time to time upon the ſurface of our globe. Alſo in decompoſing ſeveral vegetables and animals, ſalts are obtained; ſuch as common ſalt, Glauber's ſalt, and others, which contain nothing oily, and which are conſequently matters evidently mineral. But, on the other ſide, we are certain that theſe mineral ſalts are extraneous to the animals and vegetables in which they are found; that they are only introduced into theſe living bodies, becauſe they happen to be mixed with the matters which have been applied to them as aliments, and that they ought not to be numbered amongſt their principles. The proof of this is, that not only the quantity of theſe mineral ſalts is not uniform in animals and vegetables; but alſo, that not a particle of ſuch ſalts is contained in ſome plants and animals equally ſtrong and healthy, and of the ſame ſpecies as thoſe in which theſe ſalts have generally been obſerved.

In the ſecond place, we obſerve, that oils do only exiſt in the proximate principles of vegetables and animals; that is, in thoſe of their principles which enter immediately into their compoſition, when theſe principles have not been altered by further decompoſitions, and conſequently when they ſtill preſerve their animal or vegetable character; for by a natural putrefaction continued during a long time, or by chemical operations, not only the materials of which animal and vegetable bodies are formed may be deprived entirely of oil, but alſo this oil may itſelf be entirely deſtroyed or decompoſed. Theſe ſubſtances in that ſtate contain nothing by which they can be diſtinguiſhed from minerals. The earths, for example, of vegetables and animals, when they are deprived, by a ſufficient calcination, of all inflammable matter, have been thought to become entirely ſimilar to the calcareous and argillaceous earths found within the globe, and which may be conſidered as mineral ſubſtances, although probably they have been formerly a part of animal and vegetable bodies. See Bones, in the APPENDIX.

Hence we conclude, that, when we conſider natural bodies in a chemical view, we ought to divide them into two great claſſes. The firſt claſs is of ſubſtances inanimate, unorganiſed, and the principles of which have a degree of ſimplicity which is eſſential to them: theſe are minerals. The other claſs contains all thoſe bodies which not only have been diſtinctly organiſed, but which alſo contain an oily matter, which is no where to be found in ſubſtances which have not made part of animate bodies, and which, by combining with all the other principles of theſe animate bodies, diſtinguiſhes theſe principles from thoſe of minerals by a leſs degree of ſimplicity. This ſecond claſs contains vegetables and animals. We ought alſo to remark, that the oil contained in vegetable and animal ſubſtances, renders them ſuſceptible of fermentation, properly ſo called, which cannot by any means take place in any mineral.

We ſhall now proceed to examine, if, by comparing the principles obtained in the decompoſition of vegetables with thoſe obtained in the decompoſition of animals, we can find ſome eſſential character by which theſe two kingdoms may be chemically diſtinguiſhed, in the ſame manner as we have ſeen that both of them may be diſtinguiſhed from minerals. From experiments we indeed learn, that the principles of vegetables differ evidently enough from thoſe of animals; that in general the ſaline principles of the former are acid, and are transformable in great meaſure into fixed alkali by incineration, while the principle of the latter are volatile alkalis, or eaſily changeable into theſe; that vegetables are much farther removed from putrefaction than animals; laſtly, that oils truly animal have a character different from vegetable oils, and are in general more attenuated, or at leaſt more diſpoſed to be attenuated and volatiliſed. But we muſt at the ſame time confeſs, that theſe differences are not clear and deciſive, like thoſe betwixt theſe two kingdoms and the mineral kingdom; for we do not find any eſſential principle, either in animals or in vegetables, which is not alſo to be found in the other. In ſome plants, chiefly the cruciform, as much volatile alkali, as little fixed alkali, and as much diſpoſition to putrify, are found as in animal matters; and thence we conclude, that if theſe two great claſſes of natural bodies differ chemically from each other, this difference proceeds only from the quantities or proportions of their ſeveral principles and properties, and not from any thing diſtinct and peculiar; nor is it ſimilar to the manner in which both vegetable and animal ſubſtances differ from minerals, namely, by containing an oil, and poſſeſſing a fermentable quality. Beſides, the degrees of the chemical differences betwixt theſe three great claſſes of natural bodies are found to be the ſame, in whatever manner we conſider them or compare them together. See CHEMISTRY, *paſſim*.

Books of KINGS, two canonical books of the Old Teſtament, ſo called becauſe they contain the hiſtory of the kings of Iſrael and Judah, from the beginning of the reign of Solomon, down to the Babyloniſh captivity, for the ſpace of near 600 years.—It is probable that theſe books were compoſed by Ezra, who extracted them out of the public records, which were kept of what paſſed in that nation.

KING's-*County*, a county of the province of Leinſter in Ireland, taking its name from king Philip of Spain, huſband to queen Mary. It is bounded on the north by Weſt Meath; on the ſouth by Tipperary and Queen's county, from which it is divided by the Barrow; and part of Tipperary and Galway on the weſt, from which it is ſeparated by the Shannon. The length of it is about 40 miles, and the breadth about 20. This county was formerly full of bogs, but is now well drained and inhabited. It contains 11 baronies, and ſends ſix members to parliament, viz. two for the county, and four for Philip's-town and Banatur.

KING's-*Evil*. See (the *Index* ſubjoined to) MEDICINE.

KINGHORN, a town the county of Fiſe in Scotland, on the frith of Forth, directly oppoſite to Leith. Here is a manufacture of thread-ſtockings knit by the women; the men, being chiefly mariners, are employed in coaſting ſhips, in the fiſhery, or the paſſage-boats from hence to Leith, from which the town of Kinghorn derives conſiderable advantage. This place gives a ſecond title to the earl of Strathmore.

KINGSTON, a town of Surry in England, ſituated in W. Long. 0. 21. N. Lat. 51. 28. It takes it name from having been the reſidence of many of the Saxon kings, ſome of whom were crowned here. It is ſituated on the river Thames, over which there is here a wooden bridge of 20 arches, and here the ſummer aſſizes are generally held. Medals and coins of ſeveral Roman emperors are often found about this place; and eaſt from it, upon a gravelly hill, was a burying-place of the Romans. There are ſeveral ſprings in the neighbourhood, whence water is conveyed in leaden-pipes under the Thames to Hampton-court. From another ſpring in a cellar near the town, flows a brook ſo large, that it has a bridge over it at Kingſton. The town is large; and has a good market for corn, a free-ſchool erected and endowed by queen Elizabeth, an alms-houſe founded by alderman Cleave of London, a ſpacious church with eight bells. In this church the pictures of Athelſtan, Ethelred I. and II. Edwin, and Edward the Martyr, who were crowned here, and of king John, who gave the town its firſt charter, are preſerved.

KINGSTON, a town of Ireland, in the province of Leinſter, and capital of King's county. W. Long. 7. 20. N. Lat. 53. 15. It is otherwiſe called *Philips-Town*.

KINGSTON, a town of Jamaica, in America, ſeated on the north ſide of the bay of Port-royal. It was built after the great earthquake in 1692; and is now a large thriving place, about a mile in length, and half a mile in breadth. It is laid out into little ſquares and croſs-ſtreets, and has one church. The Jews have two ſynagogues here, and the Quakers a meeting-houſe. It is a place of good trade; and is much reſorted to by merchants and ſeamen, becauſe moſt of the ſhips come to load and unload their cargoes here. W. Long. 75. 52. N. Lat. 17. 40.

KINGTON, or KYNETON, a pretty large town in Herefordſhire, with a good trade in narrow cloths. W. Long. 3. 5. N. Lat. 52. 10.

KINROSS, a town of the county of Fiſe in Scotland, ſituated in W. Long. 3. 7. N. Lat. 56. 15. on the weſt ſide of Lochleven, a freſh-water lake about 10 miles in compaſs, abounding with pike, trout, perch, and water-fowl. In the lake are two iſlands; on one of which appear the ruins of a priory, heretofore poſſeſſed by the Culdees; the other is famous for the caſtle in which queen Mary was impriſoned by her rebellious ſubjects. See (*Hiſtory* of) SCOTLAND.

KINSALE, a town of the county of Cork in Ireland, ſituated at the mouth of the river Ban, or Bandon, in W. Long. 8. 20. N. Lat. 51. 32. It is reckoned the third town in the kingdom, and inferior only to Cork in point of trade. Vaſt quantities of proviſions are ſhipped off from hence to Flanders, Holland, France, and the Weſt Indies. The port indeed is barred, but ſhips of any burden may get over the bar at high water. On a point of land, called the *old head of Kinſale*, is a light-houſe to guide ſhips in the night to the mouth of the river. The town is neat, well built, wealthy, and extremely well fortified with lines and outworks. About two miles below the town are two ſtrong forts, one on each ſide the river, which ſecure it againſt all attempts by ſea. Kinſale gives the title of *baron* to the very ancient family of Courcy.

KINTORE, a royal borough of Aberdeenſhire in Scotland, ſituated on the river Don, in W. Long. 2. 5. N. Lat. 57. 38. It gives the title of *earl* to a branch of the noble family of Keith, but in other reſpects is inconſiderable.

KINTYRE, or CANTYRE, from *Cantierre*, ſignifying a "headland;" the ſouthern diviſion of the ſhire of Argyle in Scotland. It is a peninſula, ſtretching 37 miles from north to ſouth, and ſeven miles in bredath. It is moſtly plain, arable, and populous; inhabited promiſcuouſly by Highlanders and Lowlanders; the latter being invited to ſettle in this place by the Argyle family, that the lands might be the better cultivated. It gives the title of *marquis* to the duke, and is by Lochfyn divided from Argyle Proper. This loch is an inlet from the ſea, about 60 miles in length and four in breadth, affording heretofore an excellent herring-fiſhery. There are many paltry villages in this country, but no town of any conſequence except Campbeltown.

KIOF, or KIOW, a conſiderable town of Poland, and capital of the Ukrain, in the palatinate of the ſame name, with an archbiſhop's-ſee and a caſtle. It belongs to Ruſſia, and carries on a conſiderable trade. It is divided into the Old and New Town; and ſeated on the river Nieper, in E. Long. 31. 51. N. Lat. 50. 12.

KIPPING (Henry), in Latin *Kippingius*, a learned German Lutheran, born at Boſtock; where, after having received the degree of maſter of arts, he was met by ſome ſoldiers, who preſſed him into the ſervice. This, however, did not prevent his following his ſtudies. One day while he was upon duty, holding his muſket in one hand, and the poet Statius in the other, a Swediſh counſellor, who perceived him in that attitude, came up to him, entered into diſcourſe with him, and then taking him to his houſe, made him his librarian, and procured him the under-rector of the college of Bremen, where he died in 1678. He wrote many works in Latin; the principal of which are, 1. A treatiſe on the antiquities of the Romans. 2. Another on the works of Creation. 3. Several diſſertations on the Old and New Teſtament, &c.

KIRCH (Chriſtian Frederic), of Berlin, a celebrated aſtronomer, was born at Guben in 1694; and acquired great reputation in the obſervatories of Dantzic and Berlin. Godfrey Kirch his father, and Mary his mother, acquired conſiderable reputation by their aſtronomical obſervations. This family correſponded with all the learned ſocieties of Europe; and their aſtronomical works are in high repute.

KIRCHER (Athanaſius), a famous philoſopher and mathematician, was born at Fulde in 1601. In 1618 he entered into the ſociety of the Jeſuits; and taught philoſophy, mathematics, the Hebrew and Syriac languages, in the univerſity of Wirtſburg, with great applauſe till the year 1631. He went to France, on account of the ravages committed by the Swedes in Franconia, and lived ſome time at Avignon. He was afterwards called to Rome, where he taught mathematics in the Roman college, collected a rich cabinet of machines and antiquities, and died in 1680.—The quantity of his works is immenſe; amounting to 22 vols in folio, 11 in 4to, and 3 in 8vo; enough to employ a man for a great part of his life even to tranſcribe them. Moſt of them are rather curious than uſeful; many of them viſionary and fanciful; and if they are not always accompanied with the greateſt exactneſs and preciſion, the reader, it is preſumed, will not be aſtoniſhed. The principal of his works are, 1. *Præluſiones magneticæ.* 2. *Primitiæ gnomonicæ catoptricæ.* 3. *Ars magna lucis & umbræ.* 4. *Muſurgia univerſalis.* 5. *Obeliſcus Pamphilius.* 6. *Oedipus Ægyptiacus,* four volumes, folio. 7. *Itinerarium extaticum.* 8. *Obeliſcus Ægyptianus,* in four volumes, folio. 9. *Mundus ſubterraneus.* 10. *China illuſtrata.*

KIRCHMAN (John), an eminent German divine, was born at Lubec, in 1575. He ſtudied in ſeveral places of Germany; in 1602 was made profeſſor of poetry at Roſtock, and in 1613 rector of the univerſity at Lubec. He exerciſed this laſt employment with an extraordinary application, during the reſt of his life; and died in 1643. He wrote ſeveral works; the moſt eſteemed of which are, 1. *De funeribus Romanorum.* 2. *De annulis liber ſingularis.*

KIRIATHAIM, (anc. geog.), one of the towns built by the Reubenites; reckoned to the tribe of Reuben (Joſhua xiii.), 12 miles to the weſt of Midaba. The ancient reſidence of the giants called *Emim.*

KIRIATH-ARBA. See HEBRON.

KIRK, a Saxon term, ſignifying the ſame with church.

KIRK-*Oſwald,* a market-town of Cumberland, 12 miles ſouth of Carliſle.

KIRK-*Seſſions,* an inferior church-judicatory in Scotland, conſiſting of the miniſters, elders, and deacons of a pariſh. It regulates matters relating to public worſhip, catechiſing, viſitations, &c. and judges in caſe of fornication and leſſer ſcandals.

KIRKALDY, a town of the county of Fife in Scotland, two miles to the north-eaſt of Kinghorn. It is a royal borough, the ſeat of a preſbytery, and gives the title of *baron* to the earl of Melvill. The town is populous, well built, and extends a mile in length from eaſt to weſt, enjoying a tolerable ſhare of trade by exporting its own produce and manufactures of corn, coal, linen, and ſalt. W. Long. 3. 0. N. Lat. 56. 8.

KIRKCUDBRIGHT, beginning at the middle of Dumfries-ſhire in Scotland, makes a conſiderable part of Galloway, of which the earls of Nithiſdale were hereditary ſtewards. The face of the country exhibits the appearance of one continued heath, producing nothing but paſture for ſheep and ſmall black cattle, which are generally ſold in England; yet theſe duſky moors are interſected with pleaſant valleys, and adorned with a great number of caſtles belonging to private gentlemen, every houſe being ſurrounded with an agreeable plantation. It is watered by the river Dee; which, taking its riſe from the mountains near Carrick, runs through a tract of land about 70 miles in length, and, entering the Iriſh ſea, forms the harbour of Kirkcudbright, a ſmall inconſiderable borough, admirably ſituated for the fiſhery and other branches of commerce, which are almoſt totally neglected thro' the poverty and indolence of the inhabitants. There is no other town of any conſequence in this ſtewartry.

KIRSTENIUS (Peter), profeſſor of phyſic at Upſal, and phyſician-extraordinary to the queen of Sweden, was born at Breſlaw in 1577. He ſtudied Greek, Latin, Hebrew, Syriac, natural philoſophy, anatomy, botany, and other ſciences. Being told that a man could not diſtinguiſh himſelf in phyſic, unleſs he underſtood Avicenna, he applied himſelf to the ſtudy of Arabic; and not only to read Avicenna, but alſo Meſue, Rhaſis, Abenzoar, Abukaſis, and Averroes. He viſited Spain, Italy, England, and did not return home from his travels till after ſeven years. He was choſen by the magiſtrates of Breſlaw to have the direction of their college and of their ſchools. A fit of ſickneſs having obliged him to reſign that difficult employment, with which he was alſo much diſguſted, he applied himſelf chiefly to the practice of phyſic, and went with his family into Pruſſia. Here he obtained the friendſhip and eſteem of the chancellor Oxenſtiern, whom he accompanied into Sweden; where he was made profeſſor of phyſic in the univerſity of Upſal, and phyſician to the queen. He died in 1640. It is ſaid in his epitaph, that he underſtood 26 languages. He wrote many works; among which are, 1. *Liber ſecundus Canonis Avicennæ, typis Arabicis, ex MSS. editus, et ad verbum in Latinum tranſlatus,* in folio. 2. *De vero uſu et abuſu Medicinæ.* 3. *Grammatica Arabica,* folio. 4. *Vitæ quatuor Evangeliſtarum, ex antiquiſſimo codice MSS. Arabico erutæ,* in folio. 5. *Notæ in Evangelium S. Matthæi, ex collatione textuum Arabicorum, Syriacorum, Ægyptiacorum, Græcorum, & Latinorum,* in folio, &c.

He ought not to be confounded with *George Kerſtenius,* another learned phyſician and naturaliſt, who was born at Stettin, and died in 1660; and alſo wrote ſeveral works which are eſteemed.

KIT-KAT club, an aſſociation of above 30 noblemen and gentlemen of diſtinguiſhed merit, formed in 1703, purely to unite their zeal in favour of the proteſtant ſucceſſion in the houſe of Hanover. Their name was derived from Chriſtopher Kat a paſtry-cook, near the tavern where they met in King's-ſtreet Weſtminſter, who often ſupplied them with tarts. Old Jacob Tonſon was their bookſeller; and that family is in poſſeſſion of a picture of the original members of this famous club, painted by Sir Godfrey Kneller. The deſign of theſe gentlemen was to recommend and encourage true loyalty by the powerful influence of wit and humour; and Sir Samuel Garth diſtinguiſhed himſelf by the extempore epigrams he made on their toaſts, which were inſcribed on their drinking-glaſſes.

KIRKWALL, the capital of the Orkneys, ſituated in the iſland of Pomona, in W. Long. 0. 25. N. 58. 33. It is built upon an inlet of the ſea, near the middle of the iſland, having a very ſafe road and harbour for ſhipping. It is a royal borough, governed by a provoſt, four bailiffs, and a common-council. It was formerly poſſeſſed by the Norwegians, who beſtowed upon it the name of *Crucoviaca*. From king James III. of Scotland, they obtained a new charter, empowering them to elect their own magiſtrates yearly, to hold borough-courts, arreſt, impriſon, make laws and ordinances for the right government of the town; to have a weekly market, and three fairs annually at certain fixed terms: he moreover granted to them ſome lands adjoining to the town, with the cuſtoms and ſhore-dues, the power of a pit and gallows, and exempted them from the expence of ſending commiſſioners to parliament. This charter has been confirmed by ſucceeding monarchs. At preſent Kirkwall is the ſeat of juſtice, where the ſteward, ſheriff, and commiſſary, hold their ſeveral courts of juriſdiction: Here is likewiſe a public grammar-ſchool, endowed with a competent ſalary for the maſter. The town conſiſts of one narrow ſtreet about a mile in length; the houſes are chiefly covered with ſlate, tho' not at all remarkable for neatneſs and convenience.—The principal edifices are the cathedral church, and the biſhop's palace. The former, called *St Magnus*, from Magnus king of Norway, the ſuppoſed founder of the town, is a large gothic ſtructure: the roof is ſupported by 14 pillars on each ſide, and the ſpire is built upon four large columns. The gates are decorated with a kind of Moſaic work, of red and white ſtones elegantly carved and flowered. By the ruins of the king's caſtle, or citadel, it appears to have been a ſtrong and ſtately fortreſs. At the north end of the town there is a ſort of fortification built by the Engliſh in the time of Oliver Cromwell. It is ſurrounded with a ditch and rampart, and ſtill mounted with ſome cannon for the defence of the harbour.

KITCHEN, the room in a houſe where the proviſions are cooked.

Army Kitchen, is a ſpace of about 16 or 18 feet diameter, with a ditch ſurrounding it three feet wide; the oppoſite bank of which ſerves as a ſeat for the men who dreſs the victuals. The kitchens of the flank companies are contiguous to the outline of the camp; and the intermediate ſpace is generally diſtributed equally for the remaining kitchens; and as each tent forms a meſs, each kitchen muſt have as many fire-places as there are tents in the company.

Kitchen-*Garden*, a piece of ground laid out for the cultivation of fruit, herbs, pulſe, and other vegetables uſed in the kitchen.

A kitchen-garden ought to be ſituated on one ſide of the houſe, near the ſtables, from whence the dung may be eaſily conveyed into it; and after having built the wall, borders ſhould be made under them; which, according to Miller, ought to be eight or ten feet broad: upon thoſe borders expoſed to the ſouth, many ſorts of early plants may be ſown; and upon thoſe expoſed to the north, you may have ſome late crops, taking care not to plant any ſort of deep-rooting plants, eſpecially beans and peaſe, too near the fruit-trees. You ſhould next proceed to divide the ground into quarters: the beſt figures for theſe is a ſquare, or an oblong, if the ground will admit of it; otherwiſe they may be of that ſhape which will be moſt advantageous to the ground: the ſize of theſe quarters ſhould be proportioned to that of the garden; if they are too ſmall, your ground will be loſt in walks, and the quarters being incloſed by eſpaliers of fruit-trees, the plants will draw up ſlender, for want of a more open expoſure. The walks ſhould alſo be proportioned to the ſize of the ground: theſe in a ſmall garden ſhould be ſix feet broad, but in a large one ten; and on each ſide of the walk there ſhould be allowed a border three or four feet wide, between it and the eſpalier; and in theſe borders may be ſown ſome ſmall ſalads, or any other herbs that do not take deep root or continue long: but theſe quarters ſhould not be ſown or planted with the ſame crop two years together. In one of theſe quarters, ſituated neareſt to the ſtables, and beſt defended from the cold winds, ſhould be the hot-beds, for early cucumbers, melons, &c. and to theſe there ſhould be a paſſage from the ſtables, and a gate through which a ſmall cart may enter. The moſt important points of general culture conſiſt in well digging and manuring the ſoil; and giving a proper diſtance to each plant, according to their different growths: as alſo in keeping them clear from weeds; for which purpoſe, you ſhould always obſerve to keep your dung-hills clear from them, otherwiſe their ſeeds will be conſtantly brought in and ſpread with the dung.

KLEIST (Edward Chriſtian de), a celebrated German poet, and a ſoldier of diſtinguiſhed bravery, was born at Zeblin, in Pomerania, in 1715. At nine years of age he was ſent to purſue his ſtudies at Cron in Poland; and he afterwards ſtudied at Dantzick and Konigſberg. Having finiſhed his ſtudies, he went to viſit his relations in Denmark, who invited him to ſettle there; and having in vain endeavoured to obtain preferment in the law, at 21 years of age accepted of a poſt in the Daniſh army. He then applied himſelf to the ſtudy of all the ſciences that have a relation to military affairs, with the ſame aſſiduity as he had before ſtudied civil law. In 1740, at the beginning of the reign of Frederic king of Pruſſia, Mr de Kleiſt went to Berlin, and was preſented to his Majeſty, who made him Lieutenant of his brother prince Henry's regiment; and he was in all the campaigns

Kleiſt.

paigns which diſtinguiſhed the five firſt years of the king of Pruſſia's reign. In 1749 he obtained the poſt of captain; and in that year publiſhed his excellent poem on the Spring. Before the breaking out of the laſt war, the king choſe him, with ſome other officers at Potſdam, companion to the young prince Frederic-William of Pruſſia, and to eat at his table. In the firſt campaign, in 1756, he was nominated major of Hauſen's regiment; which being in garriſon at Leipſic, he had time to finiſh ſeveral new poems. After the battle of Roſbach, the king gave him, by an order in his own hand-writing, the inſpection of the great hoſpital eſtabliſhed at Leipſic. And on this occaſion his humanity was celebrated by the ſick and wounded of both parties, and his diſintereſtedneſs was equally admired by all the inhabitants of that city. In 1758, prince Henry coming to Leipſic, Mr Kleiſt deſired to ſerve in his army with the regiment of Hauſen, which was readily granted. Opportunities of diſtinguiſhing himſelf could not be wanting under that great officer, and he always communicated his courage to the battalion under his command. He alſo ſerved that prince at the beginning of the campaign of 1759, when he was with him in Franconia, and in all the expeditions of that army, till he was detached with the troops under general de Fink to join the king's army. On the 12th of Auguſt was fought the bloody battle of Kunerſdorf, in which he fell. He attacked the flank of the Ruſſians, and aſſiſted in gaining three batteries. In theſe bloody attacks he received twelve contuſions; and the two firſt fingers of his right hand being wounded, he was forced to hold his ſword in the left. His poſt of major obliged him to remain behind the ranks; but he no ſooner perceived the commander of the battalion wounded and carried away, than he inſtantly put himſelf at the head of his troop. He led his battalion in the midſt of the terrible fire of the enemies artillery, againſt the fourth battery. He called up the colours of the regiment; and, taking an enſign by the arm, led him on. Here he received a ball in his left arm; when, being no longer able to hold his ſword in his left hand, he took it again in the right, and held it with the two laſt fingers and his thumb. He ſtill puſhed forward, and was within thirty ſteps of the battery when his right leg was ſhattered by the wadding of one of the great guns; and he fell from his horſe, crying to his men, “My “boys, don't abandon your king.” By the aſſiſtance of thoſe who ſurrounded him, he endeavoured twice to remount his horſe; but his ſtrength forſook him, and he fainted. He was then carried behind the line; where a ſurgeon, attempting to dreſs his wounds, was ſhot dead. The Coſſacs arriving ſoon after, ſtripped Mr Kleiſt naked, and threw him into a mirey place; where ſome Ruſſian huſſars found him in the night, and laid him upon ſome ſtraw near the fire of the grand guard, covered him with a cloak, put a hat on his head, and gave him ſome bread and water. In the morning one of them offered him a piece of ſilver, which he refuſed; on which he toſſed it upon the cloak that covered him, and then departed with his companions. Soon after the Coſſacs returned, and took all that the generous huſſars had given him. Thus he again lay naked on the earth; and in that cruel ſituation continued till noon, when he was known by a Ruſſian officer, who cauſed him to be conveyed in a waggon to Franckfort on the Oder; where he arrived in the evening, in a very weak ſtate, and was inſtantly put into the hands of the ſurgeons. But the fractured bones ſeparating, broke an artery, and he died by the loſs of blood. The city of Franckfort being then in the hands of the enemy, they buried this Pruſſian hero with all military honours: the governor, a great number of the Ruſſian officers, the magiſtrates of the city, with the profeſſors and the ſtudents, formed the proceſſion, preceded by the funeral muſic. Mr Kleiſt's poems, which are greatly admired, are elegantly printed in the German tongue, in 2 volumes 8vo.

Knareſborough || Knee.

KNARESBOROUGH, a town in the Weſt Riding of Yorkſhire in England. It is an ancient borough by preſcription, governed by a bailiff, who, with the burgeſſes, elects the members of parliament, and its market is excellent for corn. This town is noted for its petrifying well, and three medicinal ſprings; one being a kind of vitriolic ſpaw, another ſulphureous, and the other a cold bath, being all within a few miles. The adjacent fields afford great plenty of liquorice. It is ſeated on a rough ragged rock, by the river Nid, and is adorned with a caſtle. W. Long. 1. 6. N. Lat. 54. 0.

KNAPDALE, one of the diviſions of Argyleſhire in Scotland. It is parted from Cowal on the eaſt by Lochfyn, borders with Kintyre on the ſouth, with Lorn on the north, by Braidalbin on the north-eaſt, and on the weſt by the Hebrides. Its length from north to ſouth does not exceed 20 miles, and the breadth in ſome places may amount to 13. It is joined to Kintyre by a neck of land not above a mile broad, over which the country people draw their boats, to avoid ſailing round Kintyre. This part of Knapdale abounds with lakes, ſome of them containing little iſlands, on which there are caſtles belonging to different proprietors. The ground is more adapted for paſturage than grain; but that on the ſide of Lochow is fruitful in both.

KNAPSACK, in a military ſenſe, a rough leather bag which a ſoldier carries on his back, and which contains all his neceſſaries. Square knapſacks are moſt convenient; and ſhould be made with a diviſion to hold the ſhoes, black-ball and bruſhes, ſeparate from the linen. White goat-ſkins are the beſt.

KNAVE, an old Saxon word, which had at firſt a ſenſe of ſimplicity and innocence, for it ſignified a *boy*: Sax. *cnapa*, whence a *knave-child*, i. e. a boy, diſtinguiſhed from a girl, in ſeveral old writers; afterwards it was taken for a ſervant-boy, and at length for any ſervant-man. Alſo it was applied to a miniſter or officer that bore the ſhield or weapon of his ſuperior; as *field-knapa*, whom the Latins call *armiger*, and the French *eſcuyer*, 14 Edw. III. c. 3. And it was ſometimes of old made uſe of as a titular addition; as *Joannis C. filius Willielmi C. de Derby, knave, &c.* 22 Hen. VII. c. 37. The word is now perverted to the hardeſt meaning, viz. *a falſe deceitful fellow*.

KNAVESHIP, in Scots law, one of the names of the ſmall duties payable in thirlage to the miller's ſervants, called *ſequels*.

KNEE, in anatomy, the articulation of the thigh and leg bones.

Knee.

Knee, in a ſhip, a crooked piece of timber, having two branches, or arms, and generally uſed to connect the beams of a ſhip with her ſides or timbers.

The branches of the knees form an angle of greater or ſmaller extent, according to the mutual ſituation of the pieces which they are deſigned to unite. One branch is ſecurely bolted to one of the deck-beams, whilſt the other is in the ſame manner attached to a correſponding timber in the ſhip's ſide, as repreſented by E in the plate of Midship-*Frame*.

Beſides the great utility of knees in connecting the beams and timbers into one compact frame, they contribute greatly to the ſtrength and ſolidity of the ſhip, in the different parts of her frame to which they are bolted; and thereby enable her, with greater firmneſs, to reſiſt the effects of a turbulent ſea.

In fixing of theſe pieces, it is occaſionally neceſſary to give an oblique direction to the vertical or ſide branch, in order to avoid the range of an adjacent gun-port, or, becauſe the knee may be ſo ſhaped as to require this diſpoſition; it being ſometimes difficult to procure ſo great a variety of knees as may be neceſſary in the conſtruction of a number of ſhips of war.

In France, the ſcarcity of theſe pieces has obliged their ſhip-wrights frequently to form their knees of iron.

Knees are either ſaid to be *lodging* or *hanging*. The former are fixed horizontally in the ſhip's frame, having one arm bolted to the beam, and the other acroſs two or three timbers, as repreſented in the Deck, Pl. LXXXIII. The latter are fixed vertically, as we have deſcribed above. See alſo Ship-*Building*, Deck, and Midship-*Frame*.

Knee *of the Head*, a large flat piece of timber, fixed edgeways upon the fore-part of a ſhip's ſtem, and ſupporting the ornamental figure or image placed under the bowſprit. See Ship-*Building*.

The *knee of the head*, which may properly be defined a continuation of the ſtem, as being prolonged from the ſtem forwards, is extremely broad at the upper-part, and accordingly compoſed of ſeveral pieces united into one, YY, (*Pieces of the Hull, in* Ship-*Building* Plates). It is let into the head, and ſecured to the ſhip's bows by ſtrong knees fixed horizontally upon both, and called *the cheeks of the head*. The heel of it is ſcarfed to the upper-end of the fore-foot; and it is faſtened to the ſtem above by a knee, called *a ſtandard*, expreſſed by & in the plate.

Beſides ſupporting the figure of the head, this piece is otherwiſe uſeful, as ſerving to ſecure the boom, or bumkin, by which the fore-tack is extended to windward; and, by its great breadth, preventing the ſhip from falling to leeward when cloſe-hauled, ſo much as ſhe would otherwiſe do. It alſo affords a greater ſecurity to the bowſprit, by increaſing the angle of the bob-ſtay, ſo as to make it act more perpendicularly on the bowſprit.

The *knee of the head* is a phraſe peculiar to ſhip-wrights; as this piece is always called the *cut-water* by ſeamen, if we except a few, who, affecting to be wiſer than their brethren, have adopted this expreſſion probably on the preſumption that the other is a cant-phraſe or vulgariſm.

Carling **Knees**, in a ſhip, thoſe timbers which extend from the ſhip to the hatch-way, and bear up the deck on both ſides.

Kneller || Knight.

KNELLER (Sir Godfrey), a painter, whoſe fame is well eſtabliſhed in theſe kingdoms. He was born at Lubeck in 1648; and received his firſt inſtructions in the ſchool of Rembrandt, but became afterwards a diſciple of Ferdinand Bol. When he had gained as much knowledge as that ſchool afforded him, he travelled to Rome, where he fixed his particular attention on Titian and the Caracci. He afterwards viſited Venice, and diſtinguiſhed himſelf ſo effectually in that city by his hiſtorical pictures, and portraits of the noble families there, that his reputation became conſiderable in Italy. By the advice of ſome friends he came at laſt to England, where it was his good fortune to gain the favour of the duke of Monmouth: by his recommendation, he drew the picture of king Charles II. more than once; who was ſo taken with his ſkill in doing it, that he uſed to come and ſit to him at his houſe in Covent-garden piazza. The death of Sir Peter Lely left him without a competitor in England, and from that time his fortune and fame were thoroughly eſtabliſhed. No painter could have more inceſſant employment, and no painter could be more diſtinguiſhed by public honour. He was ſtate-painter to Charles II. James II. William III. queen Anne, and George I. equally eſteemed and reſpected by them all: the emperor Leopold made him a knight of the Roman empire, and king George I. created him a baronet. Moſt of the nobility and gentry had their likeneſſes taken by him, and no painter excelled him in a ſure outline, or in the graceful diſpoſition of his figures: his works were celebrated by the beſt poets in his time. He built himſelf an elegant houſe at Whitton near Hampton-court, where he ſpent the latter part of his life; and died in 1726.

KNIFE, a well-known inſtrument, made for cutting.——All ſorts of knives are prohibited to be imported.

KNIGHT (*eques*), among the Romans, a perſon of the ſecond degree of nobility, following immediately that of the ſenators.

Part of the ceremony whereby this honour was conferred, was the giving of an horſe; for each had an horſe at the public charge, and received the ſtipend of a horſeman to ſerve in the wars.

When the knights were taken in among the ſenators, they reſigned the privilege of having an horſe kept for them at the charge of the public: then it became neceſſary, in order to be a knight, that they ſhould have a certain revenue, that their poverty might not diſgrace the order; and when they failed of the preſcribed revenue, they were expunged out of the liſt of knights, and thruſt down among the Plebeians. Ten thouſand crowns is compouted to have been the revenue required.

The knights at length grow ſo very powerful, that they became a balance between the power of the ſenate and people: they neglected the exerciſes of war, and betook themſelves principally to civil employments in Rome.

Knight, or *Cnecht* (Germ.), in feodal hiſtory, was originally an appellation or title given by the ancient Germans to their youth after being admitted to the privilege of bearing arms.

The paſſion for arms among the Germanic ſtates, as deſcribed by Dr Stuart *, was carried to extremity. It was amidſt ſcenes of death and peril that the young were educated: It was by valour and feats of proweſs that the ambitious ſignalized their manhood. All the honours they knew were allotted to the brave. The ſword opened the path to glory. It was in the field that the ingenuous and the noble flattered moſt their pride, and acquired an aſcendancy. The ſtrength of their bodies, and the vigour of their counſels, ſurrounded them with warriors, and lifted them to command.

But, among theſe nations, when the individual felt the call of valour, and wiſhed to try his ſtrength againſt an enemy, he could not of his own authority take the lance and the javelin. The admiſſion of their youth to the privilege of bearing arms, was a matter of too much importance to be left to chance or their own choice. A form was invented by which they were advanced to that honour.

The council of the diſtrict, or of the canton to which the candidate belonged, was aſſembled. His age and his qualifications were inquired into; and, if he was deemed worthy of being admitted to the privileges of a ſoldier, a chieftain, his father, or one of his kindred, adorned him with the ſhield and the lance. In conſequence of this ſolemnity, he prepared to diſtinguiſh himſelf; his mind opened to the cares of the public; and the domeſtic concerns, or the offices of the family from which he had ſprung, were no longer the objects of his attention. To this ceremony, ſo ſimple and ſo intereſting, the inſtitution of *knighthood* is indebted for its riſe.

Knighthood, however, as a ſyſtem, known under the denomination of CHIVALRY, is to be dated only from the 11th century. All Europe being reduced to a ſtate of anarchy and confuſion on the decline of the houſe of Charlemagne, every proprietor of a manor or lordſhip became a petty ſovereign; the manſion-houſe was fortified by a moat, defended by a guard, and called a *caſtle*. The governor had a party of 700 or 800 men at his command; and with theſe he uſed frequently to make excurſions, which commonly ended in a battle with the lord of ſome petty ſtate of the ſame kind, whoſe caſtle was then pillaged, and the women and treaſures borne off by the conqueror. During this ſtate of univerſal hoſtility, there was no friendly communications between the provinces, nor any high roads from one part of the kingdom to another: the wealthy traders, who then travelled from place to place with their merchandize and their families, were in perpetual danger; the lord of almoſt every caſtle extorted ſomething from them on the road; and at laſt, ſome one more rapacious than the reſt, ſeized upon the whole of the cargo, and bore off the women for his own uſe.

Thus caſtles became the warehouſes of all kinds of rich merchandize, and the priſons of the diſtreſſed females whoſe fathers or lovers had been plundered or ſlain, and who being, therefore, ſeldom diſpoſed to take the thief or murderer into favour, were in continual danger of a rape.

But as ſome are always diſtinguiſhed by virtue in the moſt general defection, it happened that many lords inſenſibly aſſociated to repreſs theſe ſallies of violence and rapine, to ſecure property, and protect the ladies. Among theſe were many lords of great fiefs; and the aſſociation was at length ſtrengthened by a ſolemn vow, and received the ſanction of a religious ceremony. As the firſt knights were men of the higheſt rank, and the largeſt poſſeſſions, ſuch having moſt to loſe, and the leaſt temptation to ſteal, the fraternity was regarded with a kind of reverence, even by thoſe againſt whom it was formed. Admiſſion into the order was deemed the higheſt honour; many extraordinary qualifications were required in a candidate, and many new ceremonies were added at his creation. After having faſted from ſun-riſe, confeſſed himſelf, and received the ſacrament, he was dreſſed in a white tunic, and placed by himſelf at a ſide-table, where he was neither to ſpeak, to ſmile, nor to eat; while the knights and ladies, who were to perform the principal parts of the ceremony, were eating, drinking, and making merry at the great table. At night his armour was conveyed to the church where the ceremony was performed; and here having watched it till the morning, he advanced with his ſword hanging about his neck, and received the benediction of the prieſt. He then kneeled down before the lady who was to put on his armour, who being aſſiſted by perſons of the firſt rank, buckled on his ſpurs, put an helmet on his head, and accoutred him with a coat of mail, a cuiraſs, bracelets, cuiſſes, and gauntlets.

Being thus armed cap-a-pee, the knight who dubbed him ſtruck him three times over the ſhoulder, with the flat ſide of his ſword, in the name of God, St Michael, and St George. He was then obliged to watch all night in all his armour, with his ſword girded, and his lance in his hand. From this time the knight devoted himſelf to the redreſs of thoſe wrongs which "patient merit of the unworthy takes;" to ſecure merchants from the rapacious cruelty of banditti, and women from raviſhers, to whoſe power they were, by the particular confuſion of the times, continually expoſed.

From this view of the origin of chivalry, it will be eaſy to account for the caſtle, the moat, and the bridge, which are found in romances; and as to the dwarf, he was a conſtant appendage to the rank and fortune of thoſe times, and no caſtle therefore could be without him. The dwarf and the buffoon were then introduced to kill time, as the card-table is at preſent. It will alſo be eaſy to account for the multitude of captive ladies, whom the knights, upon ſeizing a caſtle, ſet at liberty; and for the prodigious quantities of uſeleſs gold and ſilver veſſels, rich ſtuffs, and other merchandize, with which many apartments in theſe caſtles are ſaid to have been filled.

The principal lords who entered into the confraternity of knights, uſed to ſend their ſons to each other, to be educated, far from their parents, in the myſtery of chivalry. Theſe youths, before they arrived at the age of 21, were called *bachelors*, or *bas chevaliers*, inferior knights, and at that age were qualified to receive the order.

So honourable was the origin of an inſtitution, commonly conſidered as the reſult of caprice, and the ſource of extravagance; but which, on the contrary, roſe naturally from the ſtate of ſociety in thoſe times, and had a very ſerious effect in refining the manners of the European nations. Valour, humanity, courteſy, juſtice, honour, were its characteriſtics: and to theſe were added religion; which, by infuſing a large portion of enthuſiaſtic zeal, carried them all to a romantic exceſs, wonderfully ſuited to the genius of the age, and productive of the greateſt and moſt permanent effects both upon policy and manners. War was carried on with leſs ferocity, when humanity, no leſs than courage, came to be deemed the ornament of knighthood, and knighthood a diſtinction ſuperior to royalty, and an honour which princes were proud to receive from the hands of private gentlemen: more gentle and poliſhed manners were introduced, when courteſy was recommended as the moſt amiable of knightly virtues, and every knight devoted himſelf to the ſervice of a lady: violence and oppreſſion decreaſed, when it was accounted meritorious to check and to puniſh them: a ſcrupulous adherence to truth, with the moſt religious attention to fulfil every engagement, but particularly thoſe between the ſexes as more eaſily violated, became the diſtinguiſhing character of a gentleman, becauſe chivalry was regarded as the ſchool of honour, and inculcated the moſt delicate ſenſibility with reſpect to that point; and valour, ſeconded by ſo many motives of love, religion, and virtue, became altogether irreſiſtible.

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* View of Society in Europe, p. 46.

That the ſpirit of chivalry ſometimes roſe to an extravagant height, and had often a pernicious tendency, muſt however be allowed. In Spain, under the influence of a romantic gallantry, it gave birth to a ſeries of wild adventures, which have been deſervedly ridiculed: in the train of Norman ambition, it extinguiſhed the liberties of England, and deluged Italy in blood; and at the call of ſuperſtition, and as the engine of papal power, it deſolated Aſia under the banner of the croſs. But theſe ought not to be conſidered as arguments againſt an inſtitution laudable in itſelf, and neceſſary at the time of its foundation: and thoſe who pretend to deſpiſe it, the advocates of ancient barbariſm and ancient ruſticity, ought to remember, that chivalry not only firſt taught mankind to carry the civilities of peace into the operations war, and to mingle politeneſs with the uſe of the ſword; but rouſed the ſoul from its lethargy, invigorated the human character even while it ſoftened it, and produced exploits which antiquity cannot parallel. Nor ought they to forget, that it gave variety, elegance, and pleaſure, to the intercourſe of life, by making woman a more eſſential part of ſociety; and is therefore entitled to our gratitude, though the point of honour, and the refinements in gallantry, its more doubtful effects, ſhould be excluded from the improvement of modern manners. For,

To illuſtrate this topic more particularly, we may obſerve, that women, among the ancient Greeks and Romans, ſeem to have been conſidered merely as objects of ſenſuality, or of domeſtic conveniency: they were devoted to a ſtate of ſecluſion and obſcurity, had few attentions paid them, and were permitted to take as little ſhare in the converſation, as in the general commerce of life. But the northern nations, who paid a kind of devotion to the ſofter ſex, even in their native foreſts, had no ſooner ſettled themſelves in the provinces of the Roman empire, than the female character began to aſſume new conſequence. Thoſe fierce barbarians, who ſeemed to thirſt only for blood, who involved in one undiſtinguiſhing ruin the monuments of ancient grandeur and ancient ingenuity, and who devoted to the flames the knowledge of ages, always forbore to offer any violence to the women. They brought along with them the reſpectful gallantry of the north, which had power even to reſtrain their ſavage ferocity; and they introduced into the weſt of Europe, a generoſity of ſentiment, and a complaiſance toward the ladies, to which the moſt poliſhed nations of antiquity were ſtrangers.—Theſe ſentiments of generous gallantry were foſtered by the inſtitution of chivalry, which lifted woman yet higher in the ſcale of life. Inſtead of being nobody in ſociety, ſhe became its *primum mobile*. Every knight devoting himſelf to danger, declared himſelf the humble ſervant of ſome lady, and that lady was often the object of his love. Her honour was ſuppoſed to be intimately connected with his, and her ſmile was the reward of his valour: for her he attacked, for her he defended, and for her he ſhed his blood. Courage, animated by ſo powerful a motive, loſt ſight of every thing but enterpriſe: incredible toils were cheerfully endured; incredible actions were performed; and adventures ſeemingly fabulous were more than realized. The effect was reciprocal. Women, proud of their influence, became worthy of the heroiſm which they had inſpired: they were not to be approached but by the high-minded and the brave; and men then could only be admitted to the boſom of the chaſte fair, after proving their fidelity and affection by years of perſeverance and of peril.

Again, as to the change which took place in the operations of war, it may be obſerved, that the perfect hero of antiquity was ſuperior to fear, but he made uſe of every artifice to annoy his enemy: impelled by animoſity and hoſtile paſſion, like the ſavage in the American woods, he was only anxious of attaining his end, without regarding whether fraud or force were the means. But the true knight or modern hero of the middle ages, who ſeems in all his rencounters to have had his eye on the judicial combat, or judgment of God, had an equal contempt for ſtratagem and danger. He diſdained to take advantage of his enemy: he deſired only to ſee him, and to combat him upon equal terms, truſting that heaven would declare in behalf of the juſt; and as he profeſſed only to vindicate the cauſe of religion, of injured beauty or oppreſſed innocence, he was further confirmed in this enthuſiaſtic opinion by his own heated imagination. Strongly perſuaded that the deciſion muſt be in his favour, he fought as if under the influence of divine inſpiration, rather than of military ardour. Thus the ſyſtem of chivalry, by a ſingular combination of manners, blended the heroic and ſanctified characters, united devotion and valour, zeal and gallantry, and reconciled the love of God and of the ladies.

Chivalry flouriſhed moſt during the time of the croiſades. From theſe holy wars it followed, that new fraternities of knighthood were invented: hence the knights of the Holy Sepulchre, the Hoſpitallers, Templars, and an infinite number of religious orders. Various other orders were at length inſtituted by ſovereign princes: the Garter, by Edward III. of England; the Golden Fleece, by Philip the Good, duke of Burgundy; and St Michael, by Lewis XI. of France. From this time ancient chivalry declined to

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Knight-Service.

an empty name; when ſovereign princes eſtabliſhed regular companies in their armies, knights-bannerets were no more, though it was ſtill thought an honour to be dubbed by a great prince or victorious hero; and all who profeſſed arms without knighthood, aſſumed the title of *eſquire*.

There is ſcarce a prince in Europe that has not thought fit to inſtitute an order of knighthood; and the ſimple title of *knight*, which the kings of Britain confer on private ſubjects, is a derivation from ancient chivalry, although very remote from its ſource. See *Knight*-BATCHELOR.

KNIGHT-*Service*, (*ſervitium militare*, and in law-French *chivalry*); a ſpecies of TENURE, the origin and nature of which are explained under the articles CHIVALRY, and FEODAL *Syſtem*, n° 13,—21.

The knights produced by this tenure differed moſt eſſentially from the knights deſcribed in the preceding article; though the difference ſeems not to have been accurately attended to by authors (A). The one claſs of knights was of a high antiquity; the other was not heard of till the invention of a fee. The adorning with arms and the blow of the ſword, made the act of the creation of the ancient knight; the new knight was conſtituted by an inveſtment in a piece of land. The former was the member of an order of dignity which had particular privileges and diſtinctions; the latter was the receiver of a feudal grant. Knighthood was an honour; knight-ſervice a tenure. The firſt communicated ſplendour to an army; the laſt gave it ſtrength and numbers. The knight of honour might ſerve in any ſtation whatever; the knight of tenure was in the rank of a ſoldier.—It is true, at the ſame time, that every noble and baron were knights of tenure, as they held their lands by knight-ſervice. But the number of fees they poſſeſſed, and their creation into rank, ſeparated them widely from the ſimple individuals, to whom they gave out grants of their lands, and who were merely the knights of tenure. It is no leſs true, that the ſovereign, without conferring nobility, might give even a ſingle fee to a tenant; and ſuch vaſſals *in capite* of the crown, as well as the vaſſals of ſingle fees from a ſubject, were the mere knights of tenure. But the former, in reſpect of their holding from the crown, were to be called to take upon themſelves the knighthood of honour; a condition, in which they might riſe from the ranks, and be promoted to offices and command. And, as to the vaſſals *in capite* of the crown, who had many fees, their wealth, of itſelf, ſufficiently diſtinguiſhed them beyond the ſtate of the mere knights of tenure. In fact, they poſſeſſed an authority over men who were of this laſt deſcription; for, in proportion to their lands, were the fees they gave out, and the knights they commanded.

Knight-Service.

By the tenure of knight-ſervice, the greateſt part of the lands in England were holden, and that principally of the king *in capite*, till the middle of the laſt century; and which was created, as Sir Edward Coke expreſsly teſtifies, for a military purpoſe; viz. for defence of the realm by the king's own principal ſubjects, which was judged to be much better than to truſt to hirelings or foreigners. The deſcription here given is that of knight-ſervice proper; which was to attend the king in his wars. There were alſo ſome other ſpecies of knight-ſervice; ſo called, though improperly, becauſe the ſervice or render was of a free and honourable nature, and equally uncertain as to the time of rendering as that of knight-ſervice proper, and becauſe they were attended with ſimilar fruits and conſequences. Such was the tenure by *grand ſerjeanty*, *per magnum ſervitium*, whereby the tenant was bound, inſtead of ſerving the king *generally* in his wars, to do ſome ſpecial honorary ſervice to the king in perſon; as to carry his banner, his ſword, or the like; or be his butler, champion, or other officer, at his coronation.

Blackſt. Comment.

(A) "The terms *knight* and *chivaler*, (Dr Stuart* obſerves), denoted both the knight of *honour* and knight of *tenure*; and *chivalry* was uſed to expreſs both *knighthood* and *knight-ſervice*. Hence, it has proceeded, that theſe perſons and theſe ſtates have been confounded. Yet the marks of their difference are ſo ſtrong and pointed, that one muſt wonder that writers ſhould miſtake them. It is not, however, mean and common compilers only who have been deceived. Sir Edward Coke, notwithſtanding his diſtinguiſhing head, is of this number. When eſtimating the value of the knight's fee at L. 20 *per annum*, he appeals to the ſtatute *de militibus*, *an.* 1 Ed. II. and, by the ſenſe of his illuſtration, he conceives, that the knights alluded to there, were the ſame with the poſſeſſors of knight's fees: and they, no doubt, had knight's fees; but a knight's fee might be enjoyed not only by the tenants *in capite* of the crown, but by the tenants of a vaſſal, or by the tenants of a ſub-vaſſal. Now, to theſe the ſtatute makes no alluſion. It did not mean to annex knighthood to every land-holder in the kingdom who had a knight's fee; but to encourage arms, by requiring the tenants *in capite* of the crown to take to them the dignity. He thus confounds *knighthood* and the *knight's fee*. COKE on Littleton, p. 69.

* *View of Society in Europe*, p. 346.

"If I am not deceived, Sir William Blackſtone has fallen into the ſame miſtake, and has added to it. Speaking of the knights of honour, or the *equites aurati* from the gilt ſpurs they wore, he thus expreſſes himſelf: 'They are 'alſo called, in our law, *milites*, becauſe they formed a part, or indeed the whole, of the royal army, in virtue of 'their feodal tenures; one condition of which was, that every one who held a knight's fee (which in Henry II.'s 'time amounted to L. 20 *per annum*), was obliged to be knighted, and attend the king in his wars, or fined for his 'non-compliance. The exertion of this prerogative, as an expedient to raiſe money, in the reign of Charles I. gave 'great offence, though warranted by law and the recent example of queen Elizabeth: but it was, at the reſtoration, 'together with all other military branches of the feodal law, aboliſhed; and this kind of knighthood has, ſince that 'time, fallen into great diſrepute.' Book I. ch. 12.

"After what has been ſaid, I need hardly obſerve, that this learned and able writer has confounded the knight of *honour* and the knight of *tenure*; and that the requiſition to take knighthood was not made to *every* poſſeſſor of a knight's fee, but to the tenants of knight's fees held *in capite* of the crown, who had merely a ſufficiency to maintain the dignity, and were thence diſpoſed not to take it. The idea that the whole force of the royal army conſiſted of knights of honour, or dubbed knights, is ſo extraordinary a circumſtance, that it might have ſhown, of itſelf, to this eminent writer, the ſource of his error. Had every ſoldier in the feudal army received the inveſtiture of arms? could he wear a ſeal, ſurpaſs in ſilk and dreſs, uſe enſigns-armorial, and enjoy all the other privileges of knighthood? But, while I hazard theſe remarks, my reader will obſerve, that it is with the greateſt deference I diſſent from Sir William Blackſtone, whoſe abilities are the object of a moſt general and deſerved admiration." [*N. B.* The reader will pleaſe to advert, that this error has been copied by us from that author, under the article *Knight*-BATCHELOR.]

tion. It was, in moſt other reſpects, like knight-ſervice; only he was not bound to pay aid, or eſcuage; and, when tenant by knight-ſervice paid five pounds for a relief on every knight's fee, tenant by grand-ſerjeanty paid one year's value of his land, were it much or little. Tenure by *cornage*, which was to wind a horn when the Scots or other enemies entered the land, in order to warn the king's ſubjects, was (like other ſervices of the ſame nature) a ſpecies of grand-ſerjeanty.

Theſe ſervices, both of chivalry and grand-ſerjeanty, were all perſonal, and uncertain as to their quantity or duration. But, the perſonal attendance in knight-ſervice growing troubleſome and inconvenient in many reſpects, the tenants found means of compounding for it; by firſt ſending others in their ſtead, and in proceſs of time making a pecuniary ſatisfaction to the lords in lieu of it. This pecuniary ſatisfaction at laſt came to be levied by aſſeſſments, at ſo much for every knight's fee; and therefore this kind of tenure was called *ſcutagium* in Latin, or *ſervitium ſcuti; ſcutum* being then a well-known denomination of money: and in like manner it was called, in our Norman French, *eſcuage;* being indeed a pecuniary, inſtead of a military, ſervice. The firſt time this appears to have been taken was in the 5 Hen. II. on account of his expedition to Toulouſe; but it ſoon came to be ſo univerſal, that perſonal attendance fell quite into diſuſe. Hence we find in our ancient hiſtories, that, from this period, when our kings went to war, they levied ſcutages on their tenants, that is, on all the landholders of the kingdom, to defray their expences, and to hire troops: and theſe aſſeſſments, in the time of Henry II. ſeem to have been made arbitrarily, and at the king's pleaſure. Which prerogative being greatly abuſed by his ſucceſſors, it became matter of national clamour; and king John was obliged to conſent, by his *magna carta*, that no ſcutage ſhould be impoſed without conſent of parliament. But this clauſe was omitted in his ſon Henry III.'s charter; where we only find, that ſcutages or eſcuage ſhould be taken as they were uſed to be taken in the time of Henry II.; that is, in a reaſonable and moderate manner. Yet afterwards, by ſtatute 25 Edw. I. c. 5. & 6. and many ſubſequent ſtatutes, it was enacted, that the king ſhould take no aids or taſks but by the common aſſent of the realm. Hence it is held in our old books, that eſcuage or ſcutage could not be levied but by conſent of parliament; ſuch ſcutages being indeed the groundwork of all ſucceeding ſubſidies, and the land-tax of later times.

Since, therefore, eſcuage differed from knight-ſervice in nothing but as a compenſation differs from actual ſervice, knight ſervice is frequently confounded with it. And thus Littleton muſt be underſtood, when he tells us, that tenant by homage, fealty, and eſcage, was tenant by knight-ſervice: that is, that this tenure (being ſubſervient to the military policy of the nation) was reſpected as a tenure in chivalry. But as the actual ſervice was uncertain, and depended upon emergencies, ſo it was neceſſary that this pecuniary compenſation ſhould be equally uncertain, and depend on the aſſeſſments of the legiſlature ſuited to thoſe emergencies. For had the eſcuage been a ſettled invariable ſum, payable at certain times, it had been neither more nor leſs than a mere pecuniary rent; and the tenure, inſtead of knight-ſervice, would have then been of another kind, called SOCAGE.

By the degenerating of knight-ſervice, or perſonal military duty, into eſcuage, or pecuniary aſſeſſments, all the advantages (either promiſed or real) of the feodal conſtitutions were deſtroyed, and nothing but the hardſhips remained. Inſtead of forming a national militia compoſed of barons, knights, and gentlemen, bound by their intereſt, their honour, and their oaths, to defend their king and country, the whole of this ſyſtem of tenures now tended to nothing elſe but a wretched means of raiſing money to pay an army of occaſional mercenaries. In the mean time the families of all our nobility and gentry groaned under the intolerable burdens (in conſequence of the fiction adopted after the conqueſt) were introduced and laid upon them by the ſubtlety and fineſſe of the Norman lawyers. For, beſides the ſcutages to which they were liable in defect of perſonal attendance, which, however, were aſſeſſed by themſelves in parliament, they might be called upon by the king or lord paramount for *aids*, whenever his eldeſt ſon was to be knighted, or his eldeſt daughter married; not to forget the ranſom of his own perſon. The heir, on the death of his anceſtor, if of full age, was plundered of the firſt emoluments ariſing from his inheritance, by way of *relief* and *primer ſeiſin;* and, if under age, of the whole of his eſtate during infancy. And then, as Sir Thomas Smith very feelingly complains, "when he came to his own, after he was out of *wardſhip*, his woods decayed, houſes fallen down, ſtock waſted and gone, lands let forth and ploughed to be barren," to make amends, he was yet to pay half a year's profits as a fine for ſuing out his *livery;* and alſo the price or value of his *marriage*, if he refuſed ſuch wife as his lord and guardian had bartered for, and impoſed upon him; or twice that value, if he married another woman. Add to this, the untimely and expenſive honour of *knighthood*, to make his poverty more completely ſplendid. And when, by theſe deductions, his fortune was ſo ſhattered and ruined, that perhaps he was obliged to ſell his patrimony, he had not even that poor privilege allowed him, without paying an exorbitant fine for a *licence* of *alienation*.

A ſlavery ſo complicated, and ſo extenſive as this, called aloud for a remedy in a nation that boaſted of her freedom. Palliatives were from time to time applied by ſucceſſive acts of parliament, which aſſuaged ſome temporary grievances. Till at length the humanity of king James I. conſented, for a proper equivalent, to aboliſh them all; though the plan then proceeded not to effect; in like manner as he had formed a ſcheme, and began to put it in execution, for removing the feodal grievance of heritable juriſdictions in Scotland, which has ſince been purſued and effected by the ſtatute 20 Geo. II. c. 43. King James's plan for exchanging our military tenures ſeems to have been nearly the ſame as that which has been ſince purſued; only with this difference, that by way of compenſation for the loſs which the crown and other lords would ſuſtain, an annual fee-farm rent ſhould be ſettled and inſeparably annexed to the crown, and aſſured to the inferior lords, payable out of every knight's fee within their reſpective ſeignories. An expedient, ſeemingly much better than the hereditary exciſe which was afterwards made the principal equivalent for theſe conceſſions. For at length the military tenures, with all their heavy appendages, were deſtroyed at one blow by the ſtatute 12 Car. II. c. 24. which enacts, "that the court of ward or liveries, and all wardſhips, liveries, primer ſeiſins, and ouſterlemains, values and forfeitures of marriages, by reaſon of any tenure of the king or others, be totally taken away. And that all fines for alienations, tenures by homage, knights-ſervice, and eſcuage, and alſo aids for marrying the daughter or knighting the ſon, and all tenures of the king *in capite*, be likewiſe taken away. And that all ſorts of tenures, held of the king or others, be turned into free and common ſocage; ſave only tenures in frankalmoign, copyholds, and the honorary ſervices (without the ſlaviſh part) of grandſergeanty." A ſtatute, which was a greater acquiſition to the civil property of this kingdom than even *magna carta* itſelf: ſince that only pruned the luxuriances that had grown out of the military tenures, and thereby preſerved them in vigour; but the ſtatute of king Charles extirpated the whole, and demoliſhed both root and branches.

Knights-*Errant*. During the prevalence of chivalry, the ardour of redreſſing wrongs ſeized many knights ſo powerfully, that, attended by eſquires, they wandered about in ſearch of objects whoſe misfortunes and miſery required their aſſiſtance and ſuccour. And, as ladies engaged more particularly their attention, the relief of unfortunate damſels was the atchievement they moſt courted. This was the riſe of knights-errant, whoſe adventures produced romance. Theſe were originally told as they happened. But the love of the marvellous came to interfere; fancy was indulged in her wildeſt exaggerations, and poetry gave her charms to the moſt monſtrous fictions, and to ſcenes the moſt unnatural and gigantic. See Knight.

Knight-*Bachelor*. See Batchelor.

Knights *of the Shire*, or Knights *of Parliament*, are two gentlemen of worth, choſen on the king's writ in *pleno comitatu*, by ſuch of the freeholders of every county as can expend 40*s. per ann.* to repreſent ſuch county in parliament.

Theſe, when every man who held a knights-fee *in capite* of the crown was cuſtomarily conſtrained to be a *knight*, were of neceſſity to be *milites gladio cincti*, for ſo the writ runs to this day; but now cuſtom admits eſquires to be choſen to this office.

They muſt have at leaſt 500*l. per ann.* and their expences are to be defrayed by the county, tho' this be ſeldom, now, required.

Knight-*Marſhal*, an officer in the king's houſehold, who has juriſdiction and cognizance of any tranſgreſſion within the king's houſehold and verge; as alſo of contracts made there, whereof one of the houſe is party.

Knights, in a ſhip, two ſhort thick pieces of wood, commonly carved like a man's head, having four ſhivers in each, three for the halyards, and one for the top to run in: one of them ſtands faſt bolted on the beams abaft the foremaſt, and is therefore called the *fore-knight*; and the other, ſtanding abaft the mainmaſt, is called the *main-knight*.

KNOLLES (Richard), was born in Northamptonſhire, about the middle of the 16th century, and educated at Oxford, after which he was appointed maſter of the free-ſchool at Sandwich in Kent. He compoſed *Grammaticæ Latinæ, Græcæ, et Hebraicæ, compendium, cum radicibus*, London 1606; and ſent a great number of well-grounded ſcholars to the univerſities. He alſo ſpent 12 years in compiling a hiſtory of the Turks; which was firſt printed in 1610, and by which he has perpetuated his name. In the later editions it is called, "The general hiſtory of the Turks, from the firſt beginning of that nation, to the riſing of the Ottomon family, &c." He died in 1610, and this hiſtory has been ſince continued by ſeveral hands: the beſt continuation is that by Paul Ricaut conſul at Smyrna, folio, London 1680. Knolles wrote alſo, "The lives and conqueſts of the Ottoman kings and emperors, to the year 1610; which was not printed till after his death in 1621, to which time it was continued by another hand; and laſtly, "A brief diſcourſe of the greatneſs of the Turkiſh empire, and wherein the greatneſs of the ſtrength thereof conſiſteth, &c."

KNOT, a part of a tree, from which ſhoots out branches, roots, or even fruit. The uſe of the knots is, to ſtrengthen the ſtem; they ſerve alſo as ſearces, to filtrate, purify, and refine the juices raiſed up for the nouriſhment of the plant.

Knots *of a Rope*, among ſeamen, are diſtinguiſhed into three kinds, viz. whole-knot, that made ſo with the lays of a rope that it cannot ſlip, ſerving for ſheets, tacks, and ſtoppers: bow-line knot, that ſo firmly made, and faſtened to the cringles of the ſails, that they muſt break or the ſail ſplit before it ſlips: and ſheep-ſhank knot, that made by ſhortening a rope without cutting it, which may be preſently looſened, and the rope not the worſe for it.

Knot *of the Log-line*, at ſea, are the diviſions of it. See the article Log.

Knot, in ornithology. See Tringa.

Knot-*Graſs*, or biſtort. See Polygonum.

Knot (Edward), born in Northumberland in England, entered among the Jeſuits at the age of 26, being already in prieſt's orders. This happened in the year 1606. He taught a long time at Rome in the Engliſh college; and was afterwards appointed ſub-provincial of the college of England, and was ſent provincial thither. He was twice honoured with that employment. He was preſent as provincial at the general aſſembly of the order of the Jeſuits held at Rome in 1646, and was choſen definitor. He died in 1696. He publiſhed ſeveral pieces; among the reſt, "Mercy and Truth, or Charity maintained by the Catholics;" againſt Dr Potter, who had charged the church of Rome with wanting charity, becauſe ſhe aſſerts that a man cannot be ſaved in the proteſtant communion.

KNOWLEDGE, is defined by Mr Locke to be the perception of the connection and agreement or diſagreement and repugnancy of our ideas. See Metaphysics, n° 163—231; and Logic, n° 27—29. 53.

KNOX (John), the hero of the reformation in Scotland, was born in 1505, at Gifford near Haddington in Eaſt Lothian; and educated at the univerſity of St Andrew's, where he took a degree in arts, and commenced teacher very early in life. At this time the new religion of Martin Luther was but little known in Scotland ; Mr Knox therefore at firſt was a zealous Roman-catholic : but, attending the ſermons of a certain black-friar, named *Guialliam*, he began to waver in his opinions ; and afterwards converſing with the famous Wiſhart, who, in 1544, came to Scotland with the commiſſioners ſent by Henry VIII. he renounced the Romiſh religion, and became a zealous reformer. Being appointed tutor to the ſons of the lairds of Ormiſtoun and Langniddery, he began to inſtruct them in the principles of the Proteſtant religion ; and, on that account, was ſo violently perſecuted by the biſhop of St Andrew's, that, with his two pupils, he was obliged, in the year 1547, to take ſhelter in the caſtle of that place. But the caſtle was beſieged and taken by 21 French galleys. He continued a priſoner on board a galley two years, namely, till the latter end of the year 1549 ; when being ſet at liberty, he landed in England, and, having obtained a licence, was appointed preacher, firſt at Berwick, and afterwards at Newcaſtle. Strype conjectures, that in 1552 he was appointed chaplain to Edward VI. He certainly obtained an annual penſion of 40 l. and was offered the living of All-hallows in London ; which he refuſed, not chooſing to conform to the liturgy.

Soon after the acceſſion of queen Mary, he retired to Geneva ; whence, at the command of John Calvin, he removed to Francfort, where he preached to the exiles : but, a difference ariſing on account of his refuſing to read the Engliſh liturgy, he went back to Geneva ; and from thence, in 1555, returned to Scotland, where the reformation had made conſiderable progreſs during his abſence. He now travelled from place to place, preaching and exhorting the people with unremitting zeal and reſolution. About this time, (1556), he wrote a letter to the queen regent, earneſtly intreating her to hear the Proteſtant doctrine ; which letter ſhe treated with contempt. In the ſame year the Engliſh Calviniſts at Geneva invited Mr Knox to reſide among them. He accepted their invitation. Immediately after his departure from Scotland, the biſhops ſummoned him to appear, and, he not appearing, condemned him to death for hereſy, and burnt his effigy at the croſs of Edinburgh.

Our reformer continued abroad till the year 1559, during which time he publiſhed his "Firſt blaſt againſt the monſtrous regiment of women." Being now returned to Scotland, he reſumed the great work of reformation with his uſual ardour, and was appointed miniſter at Edinburgh. In 1561, queen Mary arrived from France. She, it is well known, was bigotted to the religion in which ſhe had been educated, and, on that account, was expoſed to continual inſults from her reformed ſubjects. Mr Knox himſelf frequently inſulted her from the pulpit ; and, when admitted to her preſence, regardleſs of her ſex, her beauty, and her high rank, behaved to her with a moſt unjuſtifiable freedom. In the year 1571 our reformer was obliged to leave Edinburgh, on account of the confuſion and danger from the oppoſition to the earl of Lenox, then regent ; but he returned the following year, and reſumed his paſtoral functions. He died at Edinburgh in November 1572, and was buried in the church-yard of St Giles's in that city.—His hiſtory of the Reformation was printed, with his other works, at Edinburgh, in 1584, 1586, 1644, 1732. He publiſhed many other pieces ; and ſeveral more are preſerved in Calderwood's hiſtory of the Church of Scotland. He left alſo a conſiderable number of manuſcripts, which in 1732 were in the poſſeſſion of Mr Woodrow, miniſter of Eaſtwood.

As to his character, it is eaſily underſtood, notwithſtanding the extreme diſſimilitude of the two portraits drawn by Popiſh and Calviniſtical pencils. According to the firſt, he was a devil ; in the ideas of the latter, an angel. He was certainly neither. The following character is drawn by Dr Robertſon. "Zeal, intrepidity, diſintereſtedneſs, were virtues that he poſſeſſed in an eminent degree. He was acquainted too with the learning cultivated in that age ; and excelled in that ſpecies of eloquence which is calculated to rouſe and to inflame. His maxims, however, were often too ſevere, and the impetuoſity of his temper exceſſive. Rigid and uncomplying, he ſhewed no indulgence to the infirmities of others. Regardleſs of the diſtinctions of rank and character, he uttered his admonitions with an acrimony and vehemence, more apt to irritate than to reclaim ; and this often betrayed him into indecent expreſſions, with reſpect to queen Mary's perſon and conduct. Thoſe very qualities, however, which now render his character leſs amiable, fitted him to be the inſtrument of Providence for advancing the reformation among a fierce people, and enabled him to face dangers, and to ſurmount oppoſition, from which a perſon of a more gentle ſpirit, would have been apt to ſhrink back. By an unwearied application to ſtudy and to buſineſs, as well as by the frequency and fervour of his public diſcourſes, he had worn out a conſtitution naturally ſtrong. During a lingering illneſs, he diſcovered the utmoſt fortitude ; and met the approach of death with a magniminity inſeparable from his character. He was conſtantly employed in acts of devotion, and comforted himſelf with thoſe proſpects of immortality, which not only preſerve good men from deſponding, but fill them with exultation in their laſt moments. The earl of Morton, who was preſent at his funeral, pronounced his eulogium in a few words, the more honourable for Knox, as they came from one whom he had often cenſured with peculiar ſeverity : "Here lies he who never feared the face of man."

KNUTZEN (Matthias), a native of Holſtein, the only perſon on record who openly profeſſed and taught atheiſm. It is ſaid he had about 1000 diſciples in different parts of Germany. They were called *Conſcienciaries*, becauſe they aſſerted there is no other God, no other religion, no other lawful magiſtracy, but conſcience, which teaches every man the three fundamental principles of the law of nature ; To hurt nobody, to live honeſtly, and to give every one his due. Several copies of a letter of his from Rome were ſpread abroad, containing the ſubſtance of his ſyſtem. It is to be found entire in the laſt edition of Micrælius.

KOEMPFER (Engelbert), was born in 1651 at Lemgow in Weſtphalia. After ſtudying in ſeveral towns, he went to Dantzick, where he gave the firſt public ſpecimen of his proficiency by a diſſertation *De majeſtatis diviſione*. He then went to Thorn ; and from thence to the univerſity of Cracow, where he took his degree of doctor in philoſophy; after which he went to Koningſberg in Pruſſia, and ſtaid there four years. He next travelled into Sweden, where he ſoon began to make a figure, and was appointed ſecretary of the embaſſy to the ſophi of Perſia. He ſet out from Stockholm with the preſents for that emperor; and went through Aaland, Finland, and Ingermanland, to Narva, where he met Mr Fabricius the ambaſſador, who had been ordered to take Moſcow in his way. The ambaſſador having ended his negociations at the Ruſſian court, ſet out for Perſia. During their ſtay, two years, at Iſpahan, Dr Kœmpfer, whoſe curious and inquiſitive diſpoſition ſuffered nothing to eſcape him unobſerved, made all the advantages poſſible of ſo long an abode in the capital of the Perſian empire. The ambaſſador, toward the cloſe of 1685, preparing to return into Europe, Dr Kœmper choſe rather to enter into the ſervice of the Dutch Eaſt India company, in quality of chief ſurgeon to the fleet, then cruiſing in the Perſian gulph. He went aboard the fleet, which, after touching at many Dutch ſettlements, came to Batavia in September 1689. Dr Kœmpfer here applied himſelf chiefly to natural hiſtory. Hence he ſet out for Japan, in quality of phyſician to the embaſſy which the Dutch Eaſt-India company ſends once a-year to the Japoneze court. He quitted Japan to return to Europe in 1692. In 1694 he took his degree of doctor of phyſic at Leyden; on which occaſion he communicated, in what are called *inaugural theſes*, ten very ſingular and curious obſervations made by him in foreign countries. He intended to digeſt his memoirs into proper order; but was prevented, by being made phyſician to the count de Lippe. He died in 1716. His principal works are, 1. *Amœnitates Exoticæ*, in quarto; a work which includes many curious and uſeful particulars in relation to the civil and natural hiſtory of the countries through which he paſſed. 2. *Herbarium Ultra-Gangeticum*. 3. The hiſtory of Japan in German, which is very curious and much eſteemed; and for which the public is indebted to the late Sir Hans Sloane, who purchaſed, for a conſiderable ſum of money, all our author's curioſities, both natural and artificial, as likewiſe all his drawings and manuſcript memoirs, and prevailed with the late learned Dr Scheuchzer to tranſlate the Japaneſe hiſtory into Engliſh.

KOENIG (Samuel), a learned philoſopher and mathematician, was profeſſor of philoſophy at Franeker, and afterwards at the Hague, where he became librarian to the Stadtholder, and died there in 1757. He wrote ſeveral works which are eſteemed.

KONIG (George Matthias), a learned German, born at Altorf in Franconia, in 1616. He became profeſſor of poetry and of the Greek tongue there, and librarian to the univerſity; in which laſt office he ſucceeded his father. He gave ſeveral public ſpecimens of his learning; but is principally known for a biographical dictionary, intitled, *Bibliotheca vetus et nova*, 4to, Altorf, 1674: which, though it is very defective, is uſeful to biographers. He died in 1699.

KONIG (Emanuel), a learned phyſician of Baſil, born in that city in 1658, whoſe medicinal works were ſo eſteemed in Swiſſerland, that he was conſidered as a ſecond Avicenna. He died at Baſil in 1731.

KONINGSBERG, a town of Poland, and capital of Regal Pruſſia, with an univerſity, and a magnificent palace, in which is a hall 274 feet long and 59 broad, without pillars to ſupport it, and a handſome library. It contains 3800 houſes, and 40,000 inhabitants; and the preſent king of Pruſſia received homage of the inhabitants in 1740. The town-houſe, the exchange, and the cathedral church, are all very fine ſtructures. The tower of the caſtle is exceeding high; and has 284 ſteps to go to the top, from whence there is a very diſtant proſpect. There are 18 churches in all; of which 14 belong to the Lutherans, 3 to the Calviniſts, and one to the Papiſts. It is ſeated on the river Preget, near the ſea, E. Long. 21. 35. N. Lat. 54. 42.

KORAN, or ALCORAN. See ALCORAN and MAHOMETANISM.

KOOS. See DOLICHOS.

KOS, in Jewiſh antiquity, a meaſure of capacity, containing about four cubic inches: this was the cup of bleſſing out of which they drank when they gave thanks after ſolemn meals, like that of the paſſover.

KOTTERUS (Chriſtopher), was one of the three fanatics whoſe viſions were publiſhed at Amſterdam in 1657, with the title of *Lux in tenebris*. He lived at Sprotta in Sileſia, and his viſions began in 1616. He fancied he ſaw an angel under the form of a man, who commanded him to go and declare to the magiſtrates, that, unleſs the people repented, the wrath of God would make dreadful havock. The elector palatine, whom the Proteſtants had declared king of Bohemia, was introduced in theſe viſions. Kotterus waited on him at Breſlaw in December 1620, and informed him of his commiſſion. He went to ſeveral other places, and at laſt to the court of Brandenburg. As moſt of theſe predictions promiſed felicity to the elector Palatine, and unhappineſs to his imperial Majeſty, the emperor's fiſcal in Sileſia and Luſatia got him ſeized, ſet on the pillory, and baniſhed the emperor's dominions. Upon this he went to Luſatia, and there lived unmoleſted till his death, which happened in 1647.

KOUANIN, in the Chineſe language, the name of a tutelary deity of women. The Chineſe make great numbers of the figures of this deity in white porcelain, and ſend them to all parts of the world, as well as keep them in their own houſes. The figure repreſents a woman with a child in her arms. The women who have no children pay a ſort of adoration to theſe images, and ſuppoſe the deity they repreſent to have power to make them fruitful. The ſtatue always repreſents a handſome woman very modeſtly attired.

KOUE (Peter), an excellent painter in the 16th century, was born at Aloſt, and was the diſciple of Bernard Van Orley, who lived with Raphael. He went to Rome, and, by ſtudying the beautiful pieces which he found there, formed an excellent taſte, and became a very correct deſigner. On his return to his own country, he undertook the office of directing the execution of ſome tapeſtry-work after the deſigns of Raphael. He was afterwards perſuaded by ſome merchants of Bruſſels to undertake a voyage to Conſtantinople; but when he came there, finding that the Turks were not allowed by their religion to draw any figure, and that there was nothing for him to do but to draw deſigns for tapeſtry, he ſpent his time in deſigning the particular proſpects in the neighbourhood of Conſtantinople, and the manner of the Turks living; of which he has left many wooden cuts, that alone ſuffice to give an idea of his merit. After his return from Conſtantinople he ſettled at Antwerp, where he drew ſeveral pictures for the emperor Cha. V. He was alſo a good architect; and, in the latter part of his life, wrote a treatiſe of ſculpture, geometry, and perſpective; and tranſlated Vitruvius and Serliv into the Flemiſh tongue. He died in 1550.

KOULI-KHAN (Thamas), or *Schah Nadir*, was not the ſon of a ſhepherd, as the authors of the Engliſh biographical dictionary aſſert; his father being chief of a branch of the tribe of Affchars, and governor of a fortreſs erected by that people againſt the Turks. Upon his father's death, his uncle uſurped his government, under the pretext of taking care of it during the minority of Kouli-Khan; or, more properly, young Nadir. Diſguſt at this affront made him commence adventurer. He entered into the ſervice of Beglerberg, governor of Muſchada, in the Khoraſan; who, diſcovering in him ſtrong marks of a military genius, promoted him to the command of a regiment of cavalry. In 1720, the Uſbec Tartars having made an eruption into the Khoraſan with 10,000 men, Beglerberg, whoſe whole force conſiſted only of 4000 horſe and 2000 infantry, called a council of war, in which it was declared imprudent to face the enemy with ſuch an inferior force; but Kouli-Khan propoſed to march againſt the enemy, and engaged to conduct the expedition, and to be anſwerable for the ſucceſs of it. He was accordingly made general; defeated the Tartars, and took their commander priſoner. Hoſſein Beglerberg received him at his return with marks of diſtinction: but growing jealous of his riſing fame, inſtead of obtaining him the rank of lieutenant-general of the Khoraſan, as he had promiſed, obtained it for another; which ſo exaſperated Kouli-Khan, that he publicly complained of the governor's ingratitude and perfidy; who thereupon broke him, and ordered him to be puniſhed with the baſtinado ſo ſeverely, that the nails of his great toes fell off. This affront occaſioned his flight, and his joining a banditti of robbers, (not his ſtealing his father's or his neighbour's ſheep). The reſt of his adventures are too numerous to be inſerted in this work. In 1729, he was made general of Perſia by Schah Thamas, and permitted to take his name *Thamas*, and that of *Khuli*, which ſignifies *ſlave*: his title therefore was, *The ſlave of Thamas*; but he was ennobled by the addition of Khan. In 1739, he fomented a revolt againſt his maſter, for having made an ignominious peace with the Turks; and having the army at his command, he procured his depoſition, and his own advancement to the throne. In 1739 he conquered the Mogul empire; and from this time growing as cruel as he was ambitious, he at length met with the uſual fate of tyrants, being aſſaſſinated by one of his generals, in league with his nephew and ſucceſſor, in 1747, aged ſixty.

KRAKEN, Kraxen, or *Krabben*, a name given by the Norwegians to a ſea-monſter of a moſt enormous ſize, the exiſtence of which ſeems to be after all rather dubious. Erich Pontopiddan, biſhop of Bergen, in his Natural Hiſtory of Norway, gives the moſt diſtinct account of this creature; which, according to him, is of the polypus kind. He is of opinion, that it is mentioned by Pliny and ſome other ancient authors, and will have it to be the remora ſo much ſpoken of by the ancient writers. This laſt, however, is now pretty certainly known to be a miſtake; for the remora has been obſerved in the Mediterranean, and found to be a creature vaſtly inferior in ſize to the Kraken. See Remora. The biſhop's evidences for the exiſtence of the Kraken, and his conjectures about it, we ſhall give in his own words.

"Our fiſhermen," ſays he, "unanimouſly affirm, and without the leaſt variation in their accounts, that when they row out ſeveral miles to ſea, particularly in the hot ſummer-days, and by their ſituation (which they know by taking a view of certain points of land) expect to find 80 or 100 fathoms water, it often happens that they do not find above 20 or 30, and ſometimes leſs. At theſe places they generally find the greateſt plenty of fiſh, eſpecially cod and ling. Their lines, they ſay, are no ſooner out, than they may draw them up with the hooks all full of fiſh; by this they judge that the kraken is at the bottom. They ſay this creature cauſes thoſe unnatural ſhallows mentioned above, and prevents their ſounding. Theſe the fiſhermen are always glad to find, looking upon them as a means of their taking abundance of fiſh. There are ſometimes twenty boats or more got together, and throwing out their lines at a moderate diſtance from each other; and the only thing they then have to obſerve is, whether the depth continues the ſame, which they know by their lines, or whether it grows ſhallower, by their ſeeming to have leſs water. If this laſt be the caſe, they find that the kraken is raiſing himſelf nearer the ſurface, and then it is not time for them to ſtay any longer; they immediately leave off fiſhing, take to their oars, and get away as faſt as they can. When they have reached the uſual depth of the place, and find themſelves out of danger, they lie upon their oars, and in a few minutes after they ſee this enormous monſter come up to the ſurface of the water; he there ſhows himſelf ſufficiently, though his whole body does not appear, which, in all likelihood, no human eye ever beheld, (excepting the young of this ſpecies, which ſhall afterwards be ſpoken of); its back, or upper part, which ſeems to be in appearance about an Engliſh mile and an half in circumference, (ſome ſay more, but I chooſe the leaſt for greater certainty), looks at firſt like a number of ſmall iſlands, ſurrounded with ſomething that floats and fluctuates like ſea-weeds. Here and there a larger riſing is obſerved like ſand-banks, on which various kinds of ſmall fiſhes are ſeen continually leaping about till they roll off into the water from the ſides of it; at laſt ſeveral bright points or horns appear, which grow thicker and thicker the higher they riſe above the ſurface of the water, and ſometimes they ſtand up as high and as large as the maſts of middle-ſized veſſels.

"It ſeems theſe are the creature's arms; and, it is ſaid, if they were to lay hold of the largeſt man of war, they would pull it down to the bottom. After this monſter has been on the ſurface of the water a ſhort time, it begins ſlowly to ſink again, and then the

Kraken.

the danger is as great as before; becauſe the motion of his ſinking cauſes ſuch a ſwell in the ſea, and ſuch an eddy or whirlpool, that it draws every thing down with it.

“As this enormous ſea-animal, in all probability, may be reckoned of the polype or the ſtar-fiſh kind, it ſeems, that the parts which are ſeen riſing at its pleaſure, and are called *arms*, are properly the tentacula, or feeling inſtruments, called *horns* as well as *arms*. With theſe they move themſelves, and likewiſe gather in their food.

“Beſides theſe, for this laſt purpoſe the great Creator has alſo given this creature a ſtrong and peculiar ſcent, which it can emit at certain times, and by means of which it beguiles and draws other fiſh to come in heaps about it. This animal has another ſtrange property, known by the experience of a great many old fiſhermen. They obſerve, that for ſome months the kraken, or krabben, is continually eating, and in other months he always voids his excrements. During this evacuation, the ſurface of the water is coloured with the excrement, and appears quite thick and turbid. This muddineſs is ſaid to be ſo very agreeable to the ſmell or taſte of other fiſhes, or to both, that they gather together from all parts to it, and keep for that purpoſe directly over the kraken: he then opens his arms or horns, ſeizes and ſwallows his welcome gueſts, and converts them, after the due time, by digeſtion, into a bait for other fiſh of the ſame kind. I relate what is affirmed by many; but I cannot give ſo certain aſſurances of this particular, as I can of the exiſtence of this ſurpriſing creature; though I do not find any thing in it abſolutely contrary to nature. As we can hardly expect an opportunity to examine this enormous ſea-animal alive, I am the more concerned that nobody embraced that opportunity which, according to the following account, once did, and perhaps never more may offer, of ſeeing it entire when dead. The reverend Mr Friis, conſiſtorial aſſeſſor, miniſter of Bodoen in Nordland, and vicar of the college for promoting Chriſtian knowledge, gave me, at the latter end of laſt year, when he was at Bergen, this relation; which I deliver again on his credit.

“In the year 1680, a krake, (perhaps a young and careleſs one), came into the water that runs between the rocks and cliffs in the pariſh of Alſtahoug; tho' the general cuſtom of that creature is to keep always ſeveral leagues from land, and therefore of courſe they muſt die there. It happened that its extended long arms, or antennæ, which this creature ſeems to uſe like the ſnail, in turning about, caught hold of ſome trees ſtanding near the water, which might eaſily have been torn up by the roots; but beſides this, as it was found afterwards, he entangled himſelf in ſome openings or clefts in the rock, and therein ſtuck ſo faſt, and hung ſo unfortunately, that he could not work himſelf out, but periſhed and putrified on the ſpot. The carcaſe, which was a long while decaying, and filled great part of that narrow channel, made it almoſt impaſſable by its intolerable ſtench.

“The kraken has never been known to do any great harm, except they have taken away the lives of thoſe who conſequently could not bring the tidings. I have never heard but one inſtance mentioned, which happened a few years ago near Fridrichſtad, in the dioceſe of Aggerhuys. They ſay that two fiſhermen accidentally, and to their great ſurpriſe, fell into ſuch a ſpot on the water as has been before deſcribed, full of a thick ſlime, almoſt like a moraſs. They immediately ſtrove to get out of this place: but they had not time to turn quick enough to ſave themſelves from one of the kraken's horns; which cruſhed the head of the boat ſo, that it was with great difficulty they ſaved their lives on the wreck, though the weather was as calm as poſſible; for theſe monſters never appear at other times.

“Mr Luke Debes, in his deſcription of Faroe, ſpeaks of certain iſlands which ſuddenly appear, and as ſuddenly vaniſh. This was a thing nobody could comprehend; ſo that one ought not to wonder at the common people, and even thoſe that were a degree above them, for looking upon thoſe moving iſlands to be inhabited by evil ſpirits, which appeared ſometimes in ſuch places where the ſeamen, by daily experience, knew very well that there was no ſuch thing as a rock, much leſs an iſland; but, however, they often found ſomething at ſea which had the appearance of land, and conſequently were confounded, made falſe reckonings, and were taken out of their courſe, and brought into the greateſt inconveniencies. Many ſea-faring people give accounts of ſuch appearances of land, and their ſuddenly vaniſhing away, and particularly here in the north ſea. Theſe iſlands, in the boiſterous ocean, cannot be imagined to be of the nature of thoſe real floating iſlands that are ſeen on freſh and ſtagnated waters, and which I have obſerved are found here in Norway and in other places. Theſe could not poſſibly hold or ſtand againſt the violence of the waves in the ocean, which break the largeſt veſſels; and therefore our ſailors have concluded this deluſion could come from no other than that great deceiver the devil. But, according to the laws of truth, we ought not to charge this apoſtate ſpirit without a cauſe. I rather think that this devil, who ſo ſuddenly makes and unmakes theſe floating iſlands, is nothing elſe but the kraken, which ſome ſea-faring people call *Soe-draulen*, that is, *Soe-trolden*, “ſea-miſchief.”

Krantznis, Kuhlman.

KRANTZIUS (Albertus), a native of Hamburg, and a famous hiſtorian, who travelled over ſeveral parts of Europe, and was made rector of the univerſity of Roſtoch in 1482. He went from thence to Hamburgh in 1508, where he was elected dean of the chapter in the cathedral. He did many good ſervices to that church and city; and was ſo famed for his abilities and prudence, that John king of Denmark, and Frederic duke of Holſtein, did not ſcruple to make him umpire in a diſpute they had with the Ditmarſi. He wrote ſeveral good hiſtorical works; the moſt conſiderable of which is an Eccleſiaſtical Hiſtory of Saxony, entitled *Metropolis*, in folio; the beſt edition is that of Francfort. He died in 1517.

KUHLMAN (Quirinus), one of the viſionaries of the 17th century, born at Breſlaw in Sileſia in 1651. He gave great hopes by his early progreſs in his ſtudies; but it was interrupted by a ſickneſs, under which he laboured at 18 years of age. He was thought to be dead on the third day of his illneſs. But that day he had terrible viſions. Two days after, he had more. He had no longer any taſte for profane learning; and would have no inſtructor but the Holy Ghoſt. At 19 he left his country and went to travel. He met in Holland with Bœhmen's works, of which he had never heard before. The reading of them was like oil thrown into the fire: he was ſurpriſed that Bœhmen ſhould have propheſied of things, of which nobody but Kuhlman himſelf had the leaſt knowledge. There was at that time in Holland one John Rothe, who undertook to prophecy. Our author wrote to him in the moſt humble manner, ſtyling him *a man of God, John III.* and *the ſon of Zacharias*. He wandered a long time in England, France, and the Eaſt; and at laſt was burnt in Muſcovy 1680, on account of ſome predictions that were actually ſeditious. There was a picture of him with ſo many titles, that the monarchs of the Eaſt never aſſumed more. The magnificent promiſes and vaſt deſigns of this fanatic may be ſeen in Morhof's *Polyhiſtor*. He wrote ſeveral works filled with fanaticiſm; the principal of which is intitled *Prodromus qinquennii mirabilis*, printed at Leyden in 1674.

KUHNIUS (Joachim), a learned German critic, was born at Gripſwalde in Pomerania, in 1647. He was, in 1669, made principal of the college at Oetingen in Swabia: in 1676, he was elected Greek profeſſor in the principal college at Straſburg; and after acquitting himſelf with honour for ten years in this capacity, was made Greek and Hebrew profeſſor in the ſame univerſity. His uncommon ſkill in the Greek language drew a great number of ſcholars about him, from very diſtant places; and he publiſhed ſome claſſic authors with very learned notes both explanatory and critical. He died in 1697.

KUNCKEL (John), a celebrated Saxon chemiſt, born in the duchy of Sleſwick, in 1630. He became chemiſt to the elector of Saxony, the elector of Brandenburg, and Charles II. king of Sweden, who gave him the title of *counſellor in metals*, and letters of nobility, with the ſurname of *Louwenſtein*. He employed 50 years in chemiſtry; in which, by the help of the furnace of a glaſs-houſe, which he had under his care, he made ſeveral excellent diſcoveries, particularly of the phoſphorus of urine. He died in Sweden, in 1702; and left ſeveral works, ſome in German, and others in Latin: among which, that intitled *Obſervationes Chemicæ*, and the "Art of making Glaſs," printed at Paris in 1752, are the moſt eſteemed.

KUSTER (Ludolf), a very learned writer in the 18th century, was born at Blomberg in Weſtphalia. When very young, he was, upon the recommendation of baron Spanheim, appointed tutor to the two ſons of the count de Schwerin, prime miniſter of the king of Pruſſia, who, upon our author's quitting that ſtation, procured him a penſion of 400 livres. He was promiſed a profeſſorſhip in the univerſity of Joachim; and till this ſhould be vacant, being then but 25, he reſolved to travel. He read lectures at Utrecht; went to England; and from thence to France, where he collated Suidas with three MSS. in the king's library, which furniſhed him with a great many fragments that had never been publiſhed. He was honoured with the degree of doctor by the univerſity of Cambridge, which made him ſeveral advantageous offers to continue there: but he was called to Berlin, where he was inſtalled in the profeſſorſhip promiſed him. Afterward he went to Antwerp; and being brought over to the Catholic religion, he abjured that of the Proteſtants. The king of France rewarded him with a penſion, and ordered him to be admitted ſupernumerary aſſociate of the academy of inſcriptions. But he did not enjoy this new ſettlement long; for he died in 1716, aged 46. He was a great maſter of the Latin tongue, and wrote well in it; but his chief excellence was his ſkill in the Greek language, to which he almoſt entirely devoted himſelf. He wrote many works; the principal of which are, *Hiſtoria critica Homeri*. 2. *Jamblicus de vita Pythagoræ*. 3. An excellent edition of Suidas, in Greek and Latin, three volumes, folio. 4. An edition of Ariſtophanes, in Greek and Latin, folio. 5. A new Greek edition of the New Teſtament, with Dr Mills's Variations, in folio.

KUTUCHTU, among the Calmuc Tartars, the name of their high-prieſt or ſovereign pontiff; formerly only the deputy of the delai-lama or high-prieſt of the Tartars, but at preſent independent on him.

L.

L, A ſemi-vowel, or liquid, making the eleventh letter of the alphabet.

It was derived from the old Hebrew Lamed, or Greek Lambda λ. It is ſounded by intercepting the breath between the top of the tongue and forepart of the palate, with the mouth open; and makes a ſweet ſound, with ſomething of an aſpiration; and therefore the Britons and Spaniards uſually doubled it, or added an *h* to it, in the beginning of words, as in *llan*, or *lhan*, a temple, ſounding nearly like *fl*, &c. In Engliſh words of one ſyllable it is doubled at the end, as *tell, bell, knell*, &c. but in words of more ſyllables than one it is ſingle at the end, as *evil, general, conſtitutional*, &c. It is placed after moſt of the conſonants in the beginning of words and ſyllables, as *black, glare, ad-le, ea-gle*, &c. but before none. Its ſound is clear in *Abel*, but obſcure in *able*, &c.

As a numeral letter, L denotes 50; and with a daſh over it, thus, $\bar{\text{L}}$, 50000. Uſed as an abbreviature, L ſtands for Lucius; and L. L. S. for a ſeſterce. See SESTERCE.

LA, the ſyllable by which Guido denotes the laſt ſound of each hexachord: if it begins in C, it anſwers to our A; if in G, to E; and if in F, to D.

LABADIE (John), a famous French enthuſiaſt, ſon of John Charles Labadie, governor of Bourges, and gentleman in ordinary of the bed-chamber to the French king, was born in 1610. He entered young into the Jeſuits college at Bourdeaux; which, by his own account, he afterwards quitted, but by other accounts was expelled for his peculiar notions, and for hypocriſy. He became a popular preacher; but being repeatedly detected in working upon female devotees with ſpiritual inſtructions for carnal purpoſes, his loſs of character among the Catholics drove him among the Proteſtants. A reformed Jeſuit being thought a great acquiſition, he was precipitately accepted as a paſtor at Montauban, where he officiated for eight years; but, attempting the chaſtity of a young lady whom he could not convert to his purpoſe, and quarrelling with the Catholic prieſt about the right of interring a dead body, he was at length baniſhed that place. The ſtory of his affair with the lady, as related by Mr Bayle, may here be given as a ſpecimen of his miniſtry. Having directed this damſel to the ſpiritual life, which he made to conſiſt in internal recollection and mental prayer, he gave her out a certain point of meditation; and having ſtrongly recommended it to her to apply herſelf entirely for ſome hours to ſuch an important object, he went up to her when he believed her to be at the height of her recollection, and put his hand into her breaſt. She gave him a haſty repulſe, expreſſed a great deal of ſurprize at the proceeding, and was even preparing to rebuke him, when he, without being in the leaſt diſconcerted, and with a devout air, prevented her thus: "I ſee plainly, my child, that you are at a great diſtance from perfection; acknowledge your weakneſs with an humble ſpirit; aſk forgiveneſs of God for your having given ſo little attention to the myſteries upon which you ought to have meditated. Had you beſtowed all neceſſary attention upon theſe things, you would not have been ſenſible of what was doing about your breaſt. But you are ſo much attached to ſenſe, ſo little concentered with the Godhead, that you were not a moment in diſcovering that I had touched you. I wanted to try whether your fervency in prayer had raiſed you above the material world, and united you with the Sovereign Being, the living ſource of immortality and of a ſpiritual ſtate; and I ſee to my great grief, that you have made very ſmall progreſs, and that you only creep on the ground: may this, my child, make you aſhamed, and for the future move you to perform the duties of mental prayer bettter than you have hitherto done." The young lady, who had as much goodſenſe as virtue, was no leſs provoked at theſe words, than at the bold actions of her ghoſtly inſtructor; and could never afterwards bear the name of ſuch an holy father.

Labadie being driven out of Montauban, went to ſeek an aſylum at Orange: but not finding himſelf ſo ſafe there as he imagined, he withdrew privately to Geneva, where he impoſed on the people by his devout preaching and carriage; and from thence was invited to Middleburg, where his ſpirituality made him and his followers conſidered as ſo many ſaints, diſtinguiſhed by the name of *Labadiſts*. They increaſed ſo much, that he excited the attention of the other churches, whoſe authority he diſputed, till he was formally depoſed by the ſynod of Dort. Inſtead of obeying, he procured a tumultuous ſupport from a crowd of his devotees; and at length formed a little ſettlement between Utrecht and Amſterdam, where he erected a printing-preſs, which ſent forth many of his works. Here he was betrayed by ſome deſerters, who expoſed his private life, and informed the public of his familiarities with his female diſciples, under pretence of uniting them more particularly to God; and was finally obliged to retire to Altena in Holſtein, where he died in 1674.

LABADISTS, a ſect of religioniſts in the 17th century, followers of the opinions of John Labadie, of whom an account is given in the preceding article. Some of their opinions were, 1. That God could, and did deceive men. 2. That, in reading the Scriptures, greater attention ſhould be paid to the internal inſpiration of the Holy Spirit, than to the words of the text. 3. That baptiſm ought to be deferred till mature age. 4. That the good and the wicked entered equally into the old alliance, provided they deſcended from Abraham; but that the new admitted only ſpiritual men. 5. That the obſervation of Sunday was a matter of indifference. 6. That Chriſt would come and reign 1000 years on earth. 7. That the euchariſt was only a commemoration of the death of Chriſt; and that, though the ſymbols were nothing in themſelves, yet that Chriſt was ſpiritually received by thoſe who partook of them in a due manner. 8. That a contemplative life was a ſtate of grace, and of divine union during this life, the ſummit of perfection, &c. 9. That the man whoſe heart was perfectly content and calm, half enjoys God, has familiar entertainments with him, and ſees all things in him. 10. That this ſtate was to be come at by an entire ſelf-abnegation, by the mortification of the ſenſes and their objects, and by the exerciſe of mental prayer.

LABARUM, the banner or ſtandard borne before the Roman emperors in the wars. The *labarum* conſiſted of a long lance, with a ſtaff a-top, croſſing it at right angles; from which hung a rich ſtreamer, of a purple colour, adorned with precious ſtones. Till the time of Conſtantine it had an eagle painted on it; but that emperor, in lieu thereof, added a croſs with a cipher expreſſing the name of *Jeſus*.

This ſtandard the Romans took from the Germans, Dacæ, Sarmatæ, Pannonians, &c. whom they had overcome. The name *labarum* was not known before the time of Conſtantine; but the ſtandard itſelf, in the form we have deſcribed it, abating the ſymbols of Chriſtianity, was uſed by all the preceding emperors. Some derive the word from *labor*, as if this finiſhed their labours; ſome from ευλαβεια, "reverence, piety;" others from λαμβανειν, "to take;" and others from λαφυρα, "ſpoils."

LABAT (John Baptiſt), a celebrated traveller, of the order of St Dominic, was born at Paris, taught philoſophy at Nancy, and in 1693 went to America in quality of a miſſionary. At his return to France in 1705, he was ſent to the chapter of his order at Bologna to give an account of his miſſion, and ſtaid ſeveral years in Italy. He died at Paris in 1738. His principal works are, 1. A new voyage to the

American iſlands, 6 vols 12mo. 2. Travels in Spain and Italy, 8 vols 12mo. 3. A new account of the weſtern parts of Africa, 5 vols 12mo.: Father Labat was not in Africa, and therefore was not a witneſs of what he relates in that work. He alſo publiſhed the *Chevalier des Marchais's voyage to Guinea*, in 4 vols. 12mo.; and *An hiſtorical account of the weſtern parts of Æthiopia*, tranſlated from the Italian of father Cavazzi, 5 vols 12mo.

LABBE (Louiſa), a courtezan and poeteſs of Lyons. Her charms were ſo great, that her cotemporaries have laviſhed every kind of applauſe on her. She entertained at her houſe lords, gentlemen, and other perſons of merit, with converſation, muſic, and the reading of good authors, with which her cloſet was abundantly ſtocked, and with the moſt delicious ſweet-meats. She was particularly fond of learned men; who were ſo much in her good graces, that ſhe preferred them before any nobleman of the higheſt diſtinction. All the compoſitions ſhe left are comprized in a book, which is extremely ſcarce, intitled, *Ouvres de Louize Labbé, Lionnoiſe*, printed at Lyons in 1556; in which is, *The conteſt of Love and Folly*.

Labbe (Philip), born at Bourges in France, in 1607; profeſſed philoſophy, divinity, and the languages, with great applauſe; and died in 1667, aged 70. He was a laborious writer, and a good critic; and wrote, 1. *Nova Bibliotheca MS. librorum*, in 2 vols folio. 2. *De Byzantinæ hiſtoriæ Scriptoribus*. 3. *Galeni vita*. 4. *Bibliotheca bibliothecarum*. 5. *Concordantia chronologica, &c.* He began the laſt edition of "The councils," and died while the 9th volume was printing; they were finiſhed in 17 volumes, by father Coſſart.

LABDANUM, or **Ladanum**, a reſin of the ſofter kind, though of too firm a conſiſtence to be ranked among the fluid ones.

There are two kinds of it kept in the ſhops; one uſually imported in bladders, to preſerve it in its genuine ſoft conſiſtence, and to prevent the evaporation of its finer parts; another in rolls, much inferior to the former in purity and virtue.

Labdanum ſhould be choſen ſoft and moiſt, of a ſtrong ſmell, pure, very inflammable, and diffuſing a fragrant ſmell while burning. It is a reſinous juice, which exſudes from a tree of the ciſtus-kind. See Cistus.

In medicine it is uſed externally, to attenuate and diſcuſs tumours; internally, it is more rarely uſed, but it is greatly extolled by ſome againſt catarrhs, and in dyſenteries.

LABEL, a long, thin braſs ruler, with a ſmall ſight at one end, and a centre-hole at the other; commonly uſed with a tangent-line on the edge of a circumferentor, to take altitudes, &c.

Label, in law, is a narrow ſlip of paper, or parchment, affixed to a deed or writing, in order to hold the appending ſeal.—Any paper annexed by way of addition, or explication, to any will or teſtament, is alſo called a *label* or codicil.

Label, in heraldry, a fillet uſually placed in the middle along the chief of the coat, without touching its extremities. Its breadth ought to be a ninth part of the chief. It is adorned with pendants; and when there are above three of theſe, the number muſt be ſpecified in blazoning.

It is uſed on the arms of eldeſt ſons while the father is alive, to diſtinguiſh them from the younger; and is eſteemed the moſt honourable of all differences. See Heraldry, p. 3587. col. 2.

LABIAL letters, thoſe pronounced chiefly by means of the lips.

LABIATED flowers, monopetalous flowers, conſiſting of a narrow tube, with a wide mouth, divided into two or more.

LABIAU, a ſmall town of Ducal Pruſſia, in a circle of the ſame name, ſeated at the mouth of the river Deime, with a ſtrong caſtle, two ſides of which are ſurrounded with water, and the other defended by a wall and ditch. E. Long. 19. 56. N. Lat. 55. 17.

LABORATORY, or **Elaboratory**, the chemiſts work-houſe, or the place where they perform their operations, where the furnaces are built, their veſſels kept, &c. and in general, the term *laboratory*, is applied to any place where phyſical experiments in pharmacy, chemiſtry, pyrotechny, &c. are performed.

As laboratories muſt be of very different kinds, according to the nature of the operations to be performed in them, it is impoſſible that any directions can be given which will anſwer for every one. Where the purpoſes are merely experimental, a ſingle furnace or two of the portable kind will be ſufficient. It is ſcarce needful to add, that ſhelves are neceſſary for holding veſſels with the products of the different operations; and that it is abſolutely neceſſary to avoid confuſion and diſorder, as by theſe means the products of the operations might be loſt or miſtaken for one another. Mortars, filters, levigating ſtones, &c. muſt alſo be procured: but from a knowledge of the methods of performing the different chemical operations will eaſily be derived the knowledge of a proper place to perform them in; for which, ſee the the articles Chemistry, Metallurgy, and Furnace.

Laboratory, in military affairs, ſignifies that place where all ſorts of fire-works are prepared, both for actual ſervice and for pleaſure, viz. quick-matches, fuzes, portfires, grape-ſhot, caſe-ſhot, carcaſſes, hand-grenades, cartridges, ſhells filled and fuſes fixed, wads, &c. &c.

LABOUR, in general, denotes a cloſe application to work or buſineſs.—Among ſeamen a ſhip is ſaid to be in labour, when ſhe rolls and tumbles very much, either a-hull, under ſail, or at anchor.—It is alſo ſpoke of a woman in travail or child-birth; ſee Midwifery.

LABOURER, generally ſignifies one that does the moſt ſlaviſh and leſs artful part of a laborious work, as that of huſbandry, maſonry, &c.

LABOUREUR (John le), almoner to the king of France, and prior of Juvigne, was born at Montmorency near Paris in 1623. At the age of 18, he diſtinguiſhed himſelf by publiſhing "A collection of the monuments of illuſtrious perſons buried in the church of the Celeſtines at Paris, with their elogies, genealogies, arms, and mottoes," 4to. He afterwards publiſhed an excellent edition of The Memoirs of Michael de Caſtelnau, with ſeveral other genealogical hiſtories; and died in 1675.—He had a brother, *Lewis le Laboureur*, bailiff of Montmorency, author of ſeveral pieces of poetry; and an uncle, *Dom. Claude le Laboureur*, provoſt of the abbey of L'iſle Barbe, of which abbey he wrote a hiſtory, and publiſhed notes and corrections upon the breviary of Lyons, with ſome other things.

LABRADOR, the ſame with *New*-Britain.

LABRUS, in ichthyology, a genus of fiſhes belonging to the order of thoracici. The characters are as follow: The covers of the gills ſcaly; the branchioſtegous rays unequal in number; teeth conic, long, and blunt at their ends; one tuberculated bone in the bottom of the throat; two above, oppoſite to the other; one dorſal fin reaching the whole length of the back; a ſlender ſkin extending beyond each ray, with a rounded tail. There are 41 ſpecies of this genus, which vary from each other, even thoſe of the ſame ſpecies, almoſt infinitely in colour; ſome of them being of a dirty red mixed with a certain duſkineſs; others moſt beautifully ſtriped, eſpecially about the head, with the richeſt colours, ſuch as blue, red, and yellow. Care muſt therefore be taken not to multiply the ſpecies from theſe accidental teints, but to attend to the form, which never varies. Mr Pennant mentions his having ſeen a ſpecies of labrus taken about the Giant's Cauſeway in Ireland, of a moſt beautiful vivid green, ſpotted with ſcarlet; and others at Bandooran in the county of Sligo, of a pale green. To this genus belongs the fiſh called by the Engliſh the *old-wife*.

LABURNUM, in botany. See Cytisus.

LABYRINTH, among the ancients, was a large intricate edifice cut out into various aiſles and meanders running into each other, ſo as to render it difficult to get out of it.

There is mention made of four celebrated labyrinths among the ancients, ranked by Pliny in the number of the wonders of the world; viz. the Cretan, Egyptian, Lemnian, and Italian.

That of Crete is the moſt famed: it was built by Dædalus; and it was hence that Theſeus made his eſcape by mean of Ariadne's clue.

That of Egypt, according to Pliny, was the oldeſt of all, and was ſubſiſting in his time, after having ſtood 3600 years. He ſays it was built by king Peteſucus, or Tithoes; but Herodotus makes it the work of ſeveral kings: it ſtood on the banks of the lake Myris, and conſiſted of 12 palaces, and 1500 apartments: Mela ſays, *ter mille domos*.

That of Lemnos was ſupported by columns of wonderful beauty; there were ſome remains of it at the time when Pliny wrote.—That of Italy, was built by Porſenna king of Hetruria for his tomb.

Labyrinth *of the Ear*. See Anatomy, nº 405, h, i, k, l.

LAC, milk, among phyſicians. See Milk.

LACARRY (Giles), a learned Jeſuit of the 17th century, was born in the dioceſe of Caſtres, in Languedoc, in 1605. He taught philoſophy, theology, and the holy Scriptures, in his ſociety; was rector of the college of Cahors; and became well ſkilled in hiſtory. He wrote many works; the principal of which are, 1. *Hiſt. Galliarum ſub Præfectis Prætorii Galliarum*, 4to. a work which is much eſteemed, and extends from the reign of Conſtantine to that of Juſtinian. 2. *Hiſtoria Romana á Julio Cæſare ad Conſtantinum Magnum, per numiſmata & marmora antiqua*, an excellent work. 3. *Epitome hiſtoriæ Reg. Franciæ, ex Dionyſio Petavio excerpta*, alſo much eſteemed. 4. An edition of Velleius Paterculus, with learned notes.

LACCA, Lac, or *Gum-Lac*, is a kind of wax, of which a ſpecies of winged ants form cells upon trees, like honeycombs. In theſe cells remain ſome of the dead inſects, which give a red colour to the whole ſubſtance of the lac. That called *ſtick-lac* is the wax adhering to ſome of the ſmall branches of the tree, and which is unprepared. This lac, when ſeparated from the adhering ſticks, and groſsly powdered, and deprived of its colour by digeſtion with menſtruums, for the ſake of the dyes and other purpoſes, is called *ſeed-lac;* and laſtly, when the ſtick-lac is freed from impurities, by melting it over a gentle fire, and formed into cakes, it is called *ſhell-lac*. Lac is unſoluble in water; and difficultly ſoluble in ſpirit of wine, which for that purpoſe muſt be well dephlegmated. According to Neuman, 16 ounces of ſeed-lac, diſtilled in an open fire, yielded nine ounces and ſix drams of a butter or thick oil, one ounce ſix drams of a watery liquor neither acid nor alkaline, and a reſiduum weighing two ounces and a half. It is uſed in the preparation of ſpirit varniſhes, for the making of ſealing-wax, and as a colouring material for dying ſcarlet. The colour given by lac is leſs beautiful, but more durable, than that given by cochineal. To render the colouring matter of the lac diffuſible in water, ſo as to be applied to the ſtuffs to be dyed, Mr Hellot directs the following proceſs: Let ſome powdered gum-lac be digeſted during two hours in a decoction of comfrey root, by which a fine crimſon colour is given to the water, and the gum is rendered pale or ſtraw-coloured. To this tincture, poured off clear, let a ſolution of alum be added; and when the colouring matter has ſubſided, let it be ſeparated from the clear liquor and dried. It will weigh about $\frac{1}{7}$ of the quantity of lac employed. This dried fecula is to be diſſolved or diffuſed in warm water, and ſome ſolution of tin is to be added to it, by which it acquires a vivid ſcarlet colour. This liquor is to be added to a ſolution of tartar in boiling water; and thus the dye is prepared.

LACE, in commerce, a work compoſed of many threads of gold, ſilver, or ſilk, interwoven the one with the other, and worked uppn a pillow with ſpindles according to the pattern deſigned. The open work is formed with pins, which are placed and diſplaced as the ſpindles are moved. The importation of gold and ſilver lace is prohibited.

*Method of Cleaning Gold-*Lace *and Embroidery when tarniſhed.*—For this purpoſe alkaline liquors are by no means to be uſed; for while they clean the gold, they corrode the ſilk, and change or diſcharge its colour. Soap alſo alters the ſhade, and even the ſpecies of certain colours. But ſpirit of wine may be uſed without any danger of its injuring either the colour or quality of the ſubject; and in many caſes proves as effectual, for reſtoring the luſtre of the gold, as the corroſive detergents. A rich brocade, flowered with a variety of colours, after being diſagreeably tarniſhed, had the luſtre of the gold perfectly reſtored by waſhing it with a ſoft bruſh dipt in warm ſpirit of wine; and ſome of the colours of the ſilk, which were likewiſe ſoiled, be-

Lace.

became at the ſame time remarkably bright and lively. Spirit of wine ſeems to be the only material adapted to this intention, and probably the boaſted ſecret of certain artiſts is no other than this ſpirit diſguiſed. Among liquids, Dr Lewis ſays, he does not know of any other that is of ſufficient activity to diſcharge the foul matter, without being hurtful to the ſilk: as to powders, however fine, and however cautiouſly uſed, they ſcratch and wear the gold, which here is only ſuperficial and of extreme tenuity.

But tho' ſpirit of wine is the moſt innocent material that can be employed for this purpoſe, it is not in all caſes proper. The golden covering may be in ſome parts worn off; or the baſe metal, with which it had been iniquitouſly alloyed, may be corroded by the air, ſo as to leave the particles of the gold diſunited; while the ſilver underneath, tarniſhed to a yellow hue, may continue a tolerable colour to the whole: in which caſes it is apparent, that the removal of the tarniſh would be prejudicial to the colour, and make the lace or embroidery leſs like gold than it was before. A piece of old tarniſhed gold-lace, cleaned by ſpirit of wine, was deprived, with its tarniſh, of greateſt part of its golden hue, and looked now almoſt like ſilver-lace.

Method of ſeparating the Gold and Silver from LACE *without burning it.* Cut the lace in pieces, and (having ſeparated the thread from it by which it was ſewed to the garment) tie it up in a linen cloth, and boil it in ſoap-ley, diluted with water, till you perceive it is diminiſhed in bulk; which will take up but a little time, unleſs the quantity of lace be very conſiderable. Then take out the cloth, and waſh it ſeveral times in cold water, ſqueezing it pretty hard with your foot, or beating it with a mallet, to clear it of the ſoap-lye; then untie the cloth, and you will have the metallic part of the lace pure, and nowhere altered in colour or diminiſhed in weight.

This method is abundantly more convenient and leſs troubleſome than the common way of burning; and as a ſmall quantity of the ley will be ſufficient, the expence will be trifling, eſpecially as the ſame ley may be uſed ſeveral times, if cleared of the ſilky calcination. It may be done in either an iron or copper veſſel.

The ley may be had at the ſoap-boilers, or it may be made of pearl-aſh and quick-lime boiled together in a ſufficient quantity of water.

The reaſon of this ſudden change in the lace will be evident to thoſe who are acquainted with chemiſtry: for ſilk, on which all our laces are wove, is an animal-ſubſtance, and all animal-ſubſtances are ſoluble in alkalies, eſpecially when rendered more cauſtic by the addition of quick-lime; but the linen you tie it in, being a vegetable, will remain unaltered.

Bone-LACE, a lace made of fine linen thread or ſilk, much in the ſame manner as that of gold and ſilver. The pattern of the lace is fixed upon a large round pillow, and pins being ſtuck into the holes or openings in the patterns, the threads are interwoven by means of a number of bobbins made of bone or ivory, each of which contains a ſmall quantity of fine thread, in ſuch a manner as to make the lace exactly reſemble the pattern. There are ſeveral towns in England, and particularly in Buckinghamſhire, that carry on this manufacture; but vaſt quantities of the fineſt laces have been imported from Flanders.

Lacedæmon, Lacerta.

LACEDÆMON. See SPARTA.

LACERTA, the LIZARD, in zoology, a genus of amphibious animals, belonging to the order of reptilia, the characters of which are theſe: The body is naked, with four feet, and a tail. There are 49 ſpecies, the moſt remarkable are,

I. The *crocodylus*, or crocodile, has a compreſſed jagged tail, five toes on the fore-feet, and four on the hind-feet. This is the largeſt animal of the lizard kind. One that was diſſected at Siam, an account of which was ſent to the Royal Academy at Paris, was 18 feet and a half long, of which the tail was no leſs than five feet and a half, and the head and neck above two and a half. He was four feet and nine inches in circumference where thickeſt.

The hinder legs, including the thigh and the paw, were two feet and two inches long; the paws, from the joint to the extremity of the longeſt claws, were above nine inches. They were divided into four toes; of which three were armed with large claws, the longeſt of which was an inch and a half, and ſeven lines and a half broad at the root. The fourth toe was without a nail, and of a conical figure; but was covered with a thick ſkin like ſhagreen leather. Theſe toes were united with membranes like thoſe of ducks, but much thicker.

The fore-legs had the ſame parts and conformation as the arms of a man, both within and without; but they were ſomewhat ſhorter than thoſe behind. The hands had five fingers, the two laſt of which had no nails, and were of a conical figure, like the fourth toe on the hind paws. The head was long, and had a little riſing at the top; but the reſt was flat, and eſpecially towards the extremity of the jaws. It was covered with a ſkin, which adhered firmly to the ſkull and to the jaws. The ſkull was rough and unequal in ſeveral places; and about the middle of the forehead there were two bony creſts, about two inches high. They were not quite parallel, but ſeparated from each other in proportion as they mounted upwards.

The eye was very ſmall in proportion to the reſt of the body, and was ſo placed within its orbit, that the outward part, when ſhut, was only a little above an inch in length, and run parallel to the opening of the jaws.

The noſe was placed in the middle of the upper jaw, near an inch from its extremity, and was perfectly round and flat, being two inches in diameter, of a black, ſoft, ſpungy ſubſtance, not unlike the noſe of a dog. The noſtrils were in the form of a Greek capital Σ; and there were two caruncles which filled and cloſed them very exactly, and which opened as often as he breathed through the noſe. The jaws ſeemed to ſhut one within another by means of ſeveral apophyſes, which proceeded from above downwards, and from below upwards, there being cavities in the oppoſite jaw to receive them. They had 27 dog-teeth in the upper jaw, and 15 in the lower, with ſeveral void ſpaces between them. They were thick at the bottom, and ſharp at the point; being all of different ſizes, except ten large hooked ones, ſix of which were in the lower jaw, and four in the upper. The mouth was 15 inches in length, and eight and a half in breadth where broadeſt; and the diſtance of the two jaws, when open-

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Fig. 2.
HELIX POMATIA.

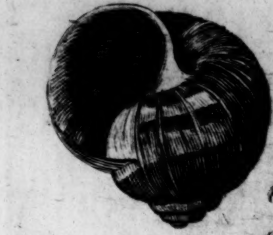

Fig. 4. LACERTA CROCODILUS *or* CROCODILE

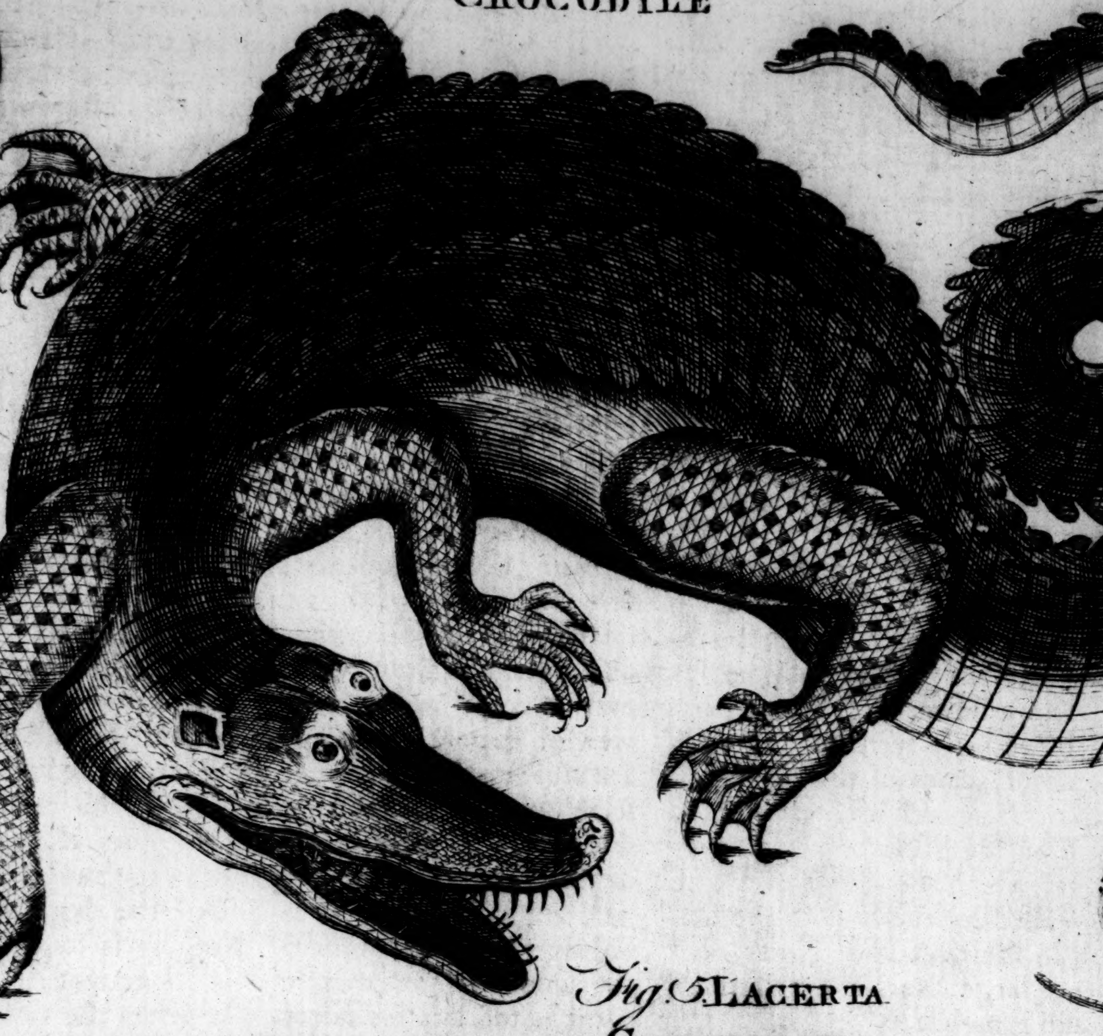

Fig. 3. HALIOTIS

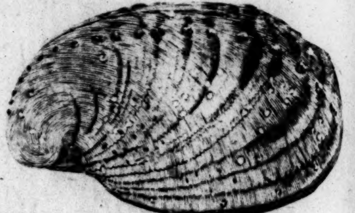

Fig. 5. LACERTA CHAMÆLEON.

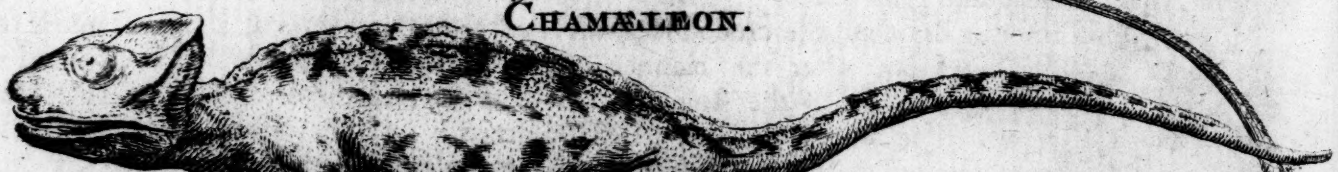

Fig. 1. HELM

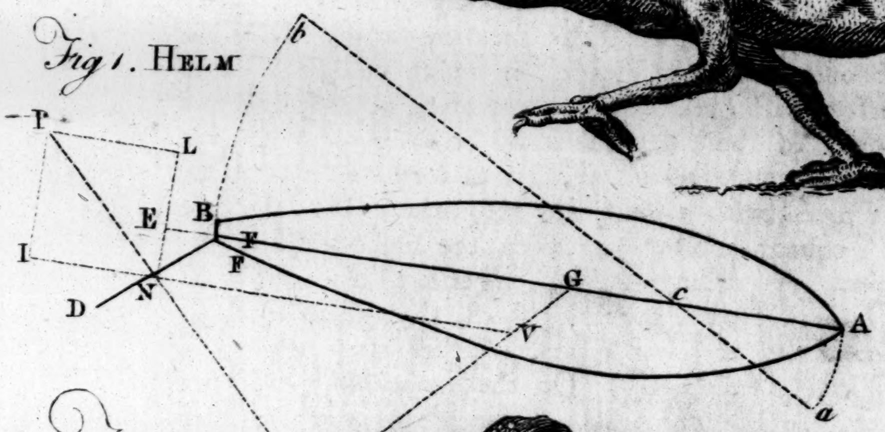
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Fig. 6.
LACERTA BASILISCUS.

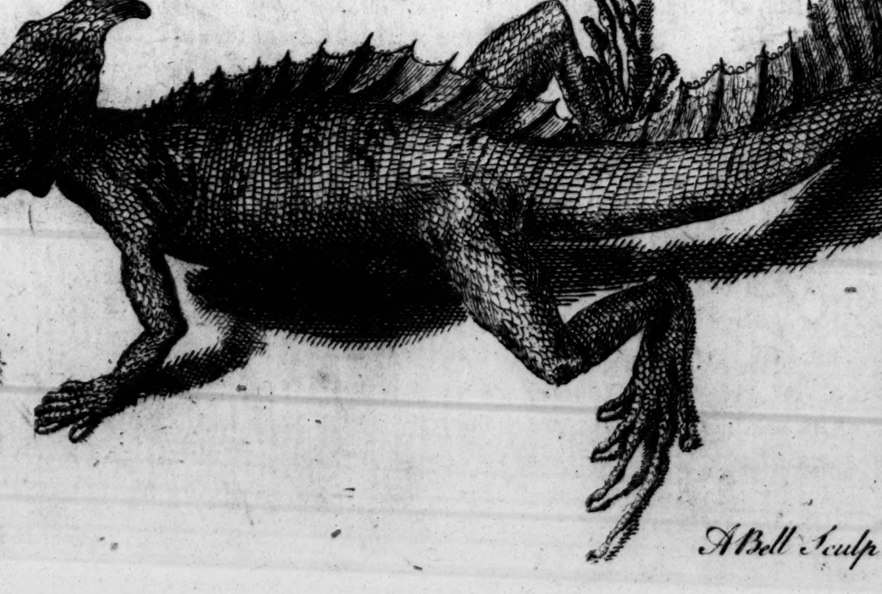


Fig. 8.
Scythian LAMB.

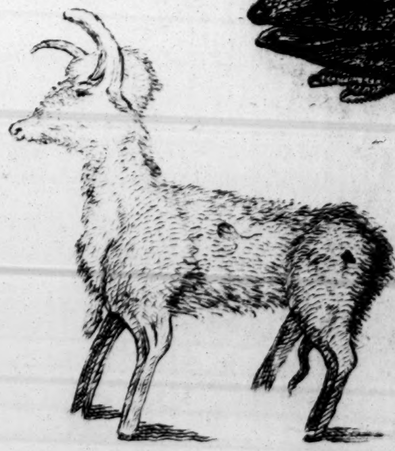
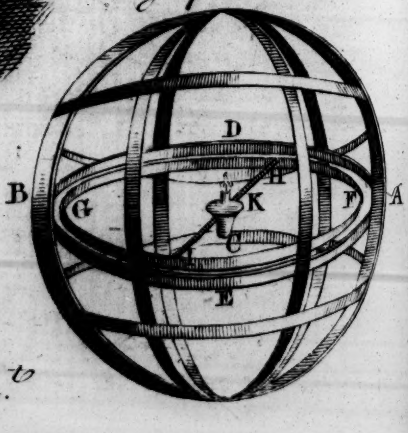


Fig. 7. Rolling LAMP



A Bell Sculp.t

ed as wide as they could be, was 15 inches and a half. The ſkull, between the two creſts, was proof againſt a muſket-ball, for it only rendered the part a little white that it ſtruck againſt.

The colour of the body was of a dark brown on the upper part, and of a whitiſh citron below, with large ſpots of both colours on the ſides. From the ſhoulders to the extremity of the tail he was covered with large ſcales of a ſquare form, diſpoſed like parallel girdles, and were 52 in number; but thoſe near the tail were not ſo thick as the reſt. In the middle of each girdle there were four protuberances, which became higher as they approached the end of the tail, and compoſed four rows, of which the two in the middle were lower than the remaining two, forming three channels, which grew deeper the nearer they came to the tail, and were confounded with each other about two feet from its extremity.

The ſkin was defended with a ſort of armour, which, however, was not proof againſt a muſket-ball, contrary to what has been commonly ſaid. However, it muſt be acknowledged, that the attitude in which it was placed might contribute not a little thereto; for probably, if the ball had ſtruck obliquely againſt the ſhell, it would have flown off. Thoſe parts of the girdles underneath the belly were of a whitiſh colour, and were made up of ſcales of divers ſhapes. They were about one-ſixth of an inch in thickneſs, and were not ſo hard as thoſe on the back.

This creature lays eggs, which ſhe covers over with ſand, and leaves to be hatched by the heat of the ſun. They are to be met with in the river Nile, Niger, and Ganges, beſides moſt other large rivers in the ſouthern parts of Aſia, Africa, and America.

Mr Haſſelquiſt informs us, that the crocodile ſwallows ſtones to aſſiſt digeſtion, after the manner of ſeed-eating birds, which commit to the ſtomach the work of maſtication as well as concoction, being deſtitute of the inſtruments adapted to that purpoſe. The Egyptians ſay, that his excrements do not paſs by the anus: this ſeems to be confirmed by the ſtructure of the gut, which is near the pylorus; for it cannot eaſily be conceived, that excrements ſhould paſs thro' ſuch a narrow paſſage, ſeemingly deſtined for the conveyance of the chyle only; but the ſtructure of the parts, and the gut being ſo near the pylorus, ſeem to indicate that the excrements paſs through it into the ventricle, and are vomited up. The inhabitants above Cairo ſay they ſee this daily; and obſerve, that the crocodile is obliged to come on ſhore as often as he has occaſion to eaſe himſelf. There is a folliculus, of the bigneſs of a hazel-nut, under the ſhoulders of the old crocodiles, which contains a thick matter, ſmelling like muſk. The Egyptians are very anxious to get this when they kill a crocodile, it being a perfume much eſteemed by the grandees. When the male copulates with the female, he turns her with his ſnout on her back. The Egyptians uſe the fat againſt the rheumatiſm and ſtiffneſs of the tendons, eſteeming it a powerful remedy outwardly applied. They ſay the gall is good for the eyes; they make uſe of it as a certain remedy for barrenneſs in women, taking about ſix grains internally, and outwardly they apply a peſſus made of cotton and the gall of a crocodile. The eyes of the crocodile are the beſt aphrodiſiacs of any known by the Arabs; who prefer them to all confections dea-ſatyrii, hyacinthi, &c. and even to ambergreaſe.

The crocodile is a very dangerous and terrible animal in ſome countries. It does a great deal of miſchief among the common people of Upper Egypt, often killing and devouring women who come to the river to fetch water, and children playing on the ſhore or ſwimming in the river. In the ſtomach of one diſſected before Mr Barton the Engliſh conſul, they found the bones of the legs and arms of a woman, with the rings which they wear in Egypt as ornaments. Theſe animals are ſeen in ſome places lying for whole hours, and even days, ſtretched in the ſun and motionleſs; ſo that one not uſed to them might miſtake them for trunks of trees covered with a rough and dry bark: but the miſtake would ſoon be fatal; for the ſeemingly torpid animal, at the near approach of any living creature, inſtantly darts upon it, and carries it to the bottom. In the times of an inundation they ſometimes enter the cottages of the natives, where they ſeize the firſt animal they meet with. There have been ſeveral examples of their taking a man out of a canoe in the ſight of his companions, without their being able to lend him any aſſiſtance. The crocodile, however, except when preſſed with hunger, or with a view of depoſiting its eggs, ſeldom leaves the water. Its uſual method is to float along upon the ſurface, and ſeize whatever animals come within its reach; but when this method fails, it then goes cloſer to the bank. There it waits in patient expectation of ſome land-animal that comes to drink; the dog, the bull, the tiger, or man himſelf. Nothing is to be ſeen as the animal approaches, nor is its retreat diſcovered till it is too late for ſafety. It ſeizes the victim with a ſpring, and goes at a bound much faſter than ſuch an unwieldy animal could be ſuppoſed to do; then having ſecured the creature both with teeth and claws, it drags it into the water, inſtantly ſinks with it to the bottom, and in this manner quickly drowns it. Sometimes it happens, that the creature wounded by the crocodile makes its eſcape; in which caſe, the latter purſues with great celerity, and often takes it a ſecond time. In theſe depredations, however, this terrible animal often ſeizes on another as formidable as itſelf, and meets with a deſperate reſiſtance. We are told of frequent combats between the crocodile and the tiger. All creatures of the tiger kind are continually oppreſſed by a parching thirſt, that keeps them in the vicinity of great rivers, whither they deſcend to drink very frequently. On theſe occaſions they are ſeized by the crocodile; upon whom they inſtantly turn with the greateſt agility, and force their claws into his eyes, while he plunges, with his fierce antagoniſt, into the river. There they continue to ſtruggle for ſome time, till at laſt the tiger is drowned. Notwithſtanding all this, however, we are aſſured by Labat, that a negro, with no other weapon than a knife in his right hand, and his left arm wrapped round with a cow-hide, ventures boldly to attack this animal in its own element. As ſoon as he approaches the crocodile, he preſents his left arm, which the animal ſwallows moſt greedily: but as it ſticks in his throat, the negro has time to give it ſeveral ſtabs below the chin, where it is eaſily vulnerable; and the water alſo getting in at the mouth, which is held involuntarily open, the creature is ſoon bloated up as big as a tun, and expires.

The natives of Siam ſeem particularly fond of the capture of all the great animals with which their country abounds. The crocodiles are taken by throwing three or four ſtrong nets acroſs a river, at proper diſtances from each other; ſo that if the animal breaks through the firſt, it may be caught by one of the reſt. When it is firſt taken, it employs the tail, which is the grand inſtrument of ſtrength, with great force; but after many unſucceſsful ſtruggles, the animal's ſtrength is at laſt exhauſted. Then the natives approach their priſoner in boats, and pierce him in the moſt tender parts till he is weakened by loſs of blood. When he has done ſtirring, they begin by tying up his mouth, and with the ſame cord tie his head to his tail, which laſt they bend back like a bow. However, they are not yet perfectly ſecure from his fury; but for their greater ſafety they tie his forefeet, as well as thoſe behind, to the top of his back. Theſe precautions are not uſeleſs; for if they were to omit them, the crocodile would ſoon recover ſtrength enough to do a great deal of miſchief. When thus brought into ſubjection, or when taken young and tamed, this formidable animal is uſed to divert and entertain the great men of the eaſt. It is often managed like an horſe; a curb is put into its mouth, and the rider directs it as he thinks proper. Though aukwardly formed, it does not fail to proceed with ſome degree of ſwiftneſs; and is thought to move as faſt as ſome of the moſt unwieldy of our own animals, the hog or the cow. Some indeed aſſert, that no animal could eſcape it but for its ſlowneſs in turning; which, however, ſeems very improbable, as its back-bone is full of articulations, and ſeemingly as flexible as that of other large animals.

All crocodiles breed near freſh waters; and though they are ſometimes found in the ſea, yet that may be conſidered rather as a place of excurſion than abode. They produce their young by eggs, as was ſaid above; and for this purpoſe, the female, when ſhe comes to lay, chooſes a place by the ſide of a river, or ſome freſh-water lake, to depoſite her brood in. She always pitches upon an extenſive ſandy ſhore, where ſhe may dig a hole without danger of detection from the ground being freſh turned up. The ſhore muſt alſo be gentle and ſhelving to the water, for the greater convenience of the animal's going and returning; and a convenient place muſt be found near the edge of the ſtream, that the young may have a ſhorter way to go. When all theſe requiſites are adjuſted, the animal is ſeen cautiouſly ſtealing up on ſhore to depoſit her burden. The preſence of a man, a beaſt, or even a bird, is ſufficient to deter her at that time; and if ſhe perceives any creature looking on, ſhe infallibly returns. If, however, nothing appears, ſhe then goes to work, ſcratching up the ſand with her fore-paws, and making a hole pretty deep in the ſhore. There ſhe depoſites from 80 to 100 eggs, of the ſize of a tennis-ball, and of the ſame figure, covered with a tough white ſkin like parchment. She takes above an hour to perform this taſk; and then, covering up the place ſo artfully that it can ſcarcely be perceived, ſhe goes back to return again the next day. Upon her return, with the ſame precaution as before, ſhe lays about the ſame number of eggs; and the day following alſo a like number. Thus having depoſited her whole quantity, and having covered them cloſe up in the ſand, they are ſoon vivified by the heat of the ſun; and at the end of 30 days, the young ones begin to break open the ſhell. At this time the female is inſtinctively taught that her young ones want relief; and ſhe goes upon land to ſcratch away the ſand and ſet them free. Her brood quickly avail themſelves of their liberty; a part run unguided to the water; another part aſcend the back of the female, and are carried thither in greater ſafety. But the moment they arrive at the water, all natural connexion is at an end; when the female has introduced her young to their natural element, not only ſhe, but the male, become amongſt the number of their moſt formidable enemies, and devour as many of them as they can. The whole brood ſcatters into different parts at the bottom; by far the greateſt number are deſtroyed, and the reſt find ſafety in their agility or minuteneſs.

But it is not the parent alone that is thus found to thin their numbers; the eggs of this animal are not only a delicious feaſt to the ſavage, but are eagerly ſought after by every beaſt and bird of prey. The ichneumon was erected into a deity among the ancients for its ſucceſs in deſtroying the eggs of theſe monſters: at preſent, that ſpecies of the vulture called the *gallinazo* is their moſt prevailing enemy. All along the banks of great rivers, for thouſands of miles, the crocodile is ſeen to propagate in numbers that would ſoon over-run the earth, but for the vulture, that ſeems appointed by Providence to abridge its fecundity. Theſe birds are ever found in great numbers where the crocodile is moſt numerous; and hiding themſelves within the thick branches of the trees that ſhade the banks of the river, they watch the female in ſilence, and permit her to lay all her eggs without interruption. Then when ſhe has retired, they encourage each other with cries to the ſpoil; and flocking all together upon the hidden treaſure, tear up the eggs, and devour them in a much quicker time than they were depoſited. Nor are they leſs diligent in attending the female while ſhe is carrying her young to the water; for if any one of them happens to drop by the way, it is ſure to receive no mercy.

Such is the extraordinary account given us by late travellers of the propagation of this animal; an account adopted by Linnæus and the moſt learned naturaliſts of the age. Yet, if one might argue from the general analogy of nature, the crocodile's devouring her own young when ſhe gets to the water ſeems doubtful. This may be a ſtory raiſed from the general idea of this animal's rapacious cruelty; when, in fact, the crocodile only ſeems more cruel than other animals becauſe it has more power to do miſchief. It is probable, that it is not more diveſted of parental tenderneſs than other creatures; and we are the more led to think ſo from the peculiar formation of one of the crocodile kind. This is called the *open-bellied crocodile*, and is furniſhed with a falſe belly like the opoſſum, where the young creep out and in as their dangers or neceſſities require. The crocodile, thus furniſhed at leaſt, cannot be ſaid to be an enemy to her own young, ſince ſhe thus gives them more than parental protection. It is probable alſo, that this open-bellied crocodile is viviparous, and foſters her young that are prematurely excluded in this ſecond womb, until they come to proper maturity.

How long the crocodile lives, we are not certainly informed: if we may believe Ariſtotle, it lives the age of a man; but the ancients ſo much amuſed themſelves in inventing fables concerning this animal, that even truth from them is ſuſpicious. What we know for certain from the ancients is, that among the various animals that were produced to fight in the amphitheatre at Rome, the combat of the crocodile was not wanting. Marcus Scaurus produced them living in his unrivalled exhibitions; and the Romans conſidered him as the beſt citizen, becauſe he furniſhed them with the moſt expenſive entertainments.

Plate CLIX. fig. 4.

The laſt mentioned kind of crocodile is a ſpecies not deſcribed by Linnæus. Mr Edwards tells us, that three of theſe creatures were ſent from Bengal, about the year 1747, to the late Dr Mead phyſician in ordinary to the king. Two of theſe the Doctor preſerved in his collection, and preſented the third to the late curious Mrs Kennon; and ſince the deceaſe of theſe worthy perſons, they became the property of Mr James Lemon of London, who obliged our author with one of them to produce to the royal ſociety. The narrowneſs of the beak is the moſt extraordinary circumſtance in this crocodile, which appears like the bill of the bird called *gooſeander*. It has ſmall ſharp teeth. Another peculiarity is a paunch or open purſe in the middle of the under ſide of the belly, which ſeems to be naturally formed with round hips, and hollow within, to receive its young in time of danger, as it appears in the American animal called *opoſſum*. Dr Parſons gave it as his opinion, that the opening in the belly was really natural, it having no appearance of being cut or torn open. In other reſpects it hath all the marks common to alligators or crocodiles. The beak was finely creaſed tranſverſely. The animal appeared, in the ſpirits, all over of a yellowiſh oval colour, the under ſide lighter than the upper, the latter having ſome duſky marks and ſpots. This ſpecies inhabits the banks of the Ganges; and it is very ſtrange that they ſhould never have been deſcribed before, as our India company have been ſo long ſettled there, and the animal is, at full growth, nearly, if not altogether, as large as the common crocodile.

II. The caudiverbera, has a depreſſed pinnatifid tail, and palmated feet. It is larger than the common green lizard, is found in Peru, and has got its name from its beating the ground with its tail.

III. The ſtellio has a verticillated tail, and dentated ſcales. It is a native of Africa, and the warm parts of Aſia. It frequents the ruinous walls of Natolia, Syria, and Paleſtine. The Arabs call it *hardun*. The Turks kill it; for they imagine, that, by declining the head, it mimics them while they ſay their prayers.

IV. The agilis, has a pretty long verticillated tail, with ſharp ſcales, and a ſcaly collar. This is the common green lizard, and is a native both of Europe and India. This ſpecies is extremely nimble: in hot weather, it baſks on the ſides of dry banks or old trees; but, on being obſerved, immediately retreats to its hole. The food of this ſpecies, as well as of all the other Britiſh lizards, is inſects; and they themſelves are devoured by birds of prey. They are all perfectly harmleſs; yet their form ſtrikes one with diſguſt, and has occaſioned great obſcurity in their hiſtory. Mr Pennant mentions a lizard killed in Worceſterſhire in the year 1714, which was two feet ſix inches long, and four inches in girth. The fore-legs were placed eight inches from the head; the hind-legs five inches beyond thoſe: the legs were two inches long; the feet divided into four toes, each furniſhed with a ſharp claw. Another of the ſame kind was afterwards killed in that county; but whether theſe large lizards were natives of other countries and imported into England, or whether they were of Britiſh growth, is uncertain.

Plate CLVIII. fig. 5.

5. The chamæleon has a crooked cylindrical tail. The head of a large chamæleon is almoſt two inches long, and from thence to the beginning of the tail it is four inches and a half. The tail is five inches long, and the feet two and a half. The thickneſs of the body is different at different ſeaſons; for ſometimes from the back to the belly it is two inches, and ſometimes but one; for he can blow himſelf up and contract himſelf at pleaſure. This ſwelling and contraction is not only of the back and belly, but of the legs and tail.

Theſe different motions are not like thoſe of other animals, which proceed from a dilatation of the breaſt in breathing, and which riſes and falls ſucceſſively; but they are very irregular, as in tortoiſes and frogs. The chamæleon has continued as it were blown up for two hours together, and then he would grow leſs and leſs inſenſibly; for the dilatation was always more quick and viſible than the contraction. In this laſt ſtate he appeared extremely lean, and the ſpine of the back was ſharp, and all his ribs might be told; likewiſe the tendons of the arms and legs might be ſeen very diſtinctly.

The ſkin is very cold to the touch; and notwithſtanding he ſeems ſo lean, there is no feeling the beating of the heart. The ſurface of the ſkin is unequal, and has a grain not unlike ſhagreen, but very ſoft, becauſe each eminence is as ſmooth as if it was poliſhed. Some of theſe are as large as a middling pin's head on the arms, legs, belly, and tail; but on the ſhoulders and head they are of an oval figure, and a little larger. Thoſe under the throat are ranged in the form of a chaplet, from the lower lip to the breaſt. Some on the head and back are amaſſed together in cluſters, with ſpaces between them, on which are almoſt imperceptible ſpots of a pale red and yellow colour, as well as the ground of the ſkin itſelf, which plainly appears between theſe cluſters. This ground changes colour when the animal is dead, becoming of a greyiſh brown, and the ſmall ſpots are whitiſh.

The colour of all theſe eminences, when the chamæleon is at reſt in a ſhady place, is of a bluiſh grey, except on the claws, where it is white with a little yellow; and the ſpaces between the cluſters is of a pale red and yellow, as was before obſerved. But when he is in the ſun, all parts of the body which are affected with the light, become of a greyiſh brown, or rather of a tawny. That part of the ſkin which the ſun does not ſhine on, changes into ſeveral brighter colours, which form ſpots of the ſize of half one's finger. Some of theſe deſcend from the ſpine half way on the back; and others appear on the ſides, arms, and tail. They are all of an Iſabella colour, from a mixture of a pale yellow and of a bright red, which is the colour of the ground of the ſkin.

The head of a chamæleon is not unlike that of a fiſh, it being joined to the breaſt by a very ſhort neck, covered on each ſide with cartilaginous membranes reſembling the gills of fiſhes. There is a creſt directly on the top of the head, and two others on each ſide above the eyes, and between theſe there are two cavities near the top of the head. The muzzle is blunt, and not much unlike that of a frog: at the end there is a hole on each ſide for the noſtrils; but there are no ears, nor any ſign of any.

The jaws are furniſhed with teeth, or rather with a bone in the form of teeth, which he makes little or no uſe of, becauſe he lives upon ſwallowing flies and other inſects, without chewing them; and hence aroſe the vulgar notion of his living upon air, becauſe he was never ſeen to eat. The form, ſtructure, and motion of the eyes, have ſomething very particular; for they are very large, being almoſt half an inch in diameter. They are of a globous figure; which may be eaſily ſeen, becauſe they ſtand out of the head. They have a ſingle eye-lid like a cap, with a hole in the middle, through which the ſight of the eye appears, which is of a ſhining brown, and round it there is a little circle of a gold colour. This eye-lid has a grain like ſhagreen, as well as the other parts of the ſkin; and when the reſt of the body changes colour, and aſſumes ſpots of different ſhapes, thoſe on the lid always keep the ſame form, though they are tinctured with the ſame colour as the ſkin. But the moſt extraordinary thing relating to the eyes is, that this animal often moves one when the other is entirely at reſt; nay, ſometimes one eye will ſeem to look directly forward and the other backward, and one will look up to the ſky when the other regards the earth.

That part of the body which is called the *trunk*, and comprehends the thorax and the belly in a chamæleon, is almoſt all thorax, with little or no belly. The four feet are all of a length; and the only difference between them is, that thoſe before are turned backwards, and thoſe behind forwards. There are five toes on each paw, which have a greater reſemblance to hands than feet. They are all divided into two, which gives the appearance of two hands to each arm, and two feet to each leg; and though one of theſe parts have three toes, and the other but two, yet they ſeem to be all of the ſame ſize. Theſe toes lie together under the ſame ſkin as in a mitten; however, their ſhape might be ſeen through the ſkin. With theſe paws the chamæleon can lay hold of the ſmall branches of trees in the ſame manner as a parrot. When he is about to perch, he parts his toes differently from birds, becauſe he puts two behind and two before. The claws are little, crooked, very ſharp, and of a pale yellow, proceeding but half way out of the ſkin, while the other half is hid beneath it. His walk is ſlower than that of a tortoiſe, and he ſeems to move along with an affectation of gravity. He ſeems to ſeek for a proper place to ſet his feet upon; and when he climbs up trees, he does not truſt to his feet like ſquirrels, but endeavours to find out clefts in the bark, that he may get a ſurer hold.

His tail is like that of a viper, when it is puffed up and round; for otherwiſe the bones may be ſeen in the ſame manner as on the back. He always wraps his tail round the branches of trees, and it ſerves him as it were inſtead of a fifth hand. — He is a native of Africa and Aſia. Mr Haſſelquiſt is of opinion, that the change of colour in the chameleon is owing to its being exceedingly ſubject to the jaundice, which particularly happens either when it is expoſed to the ſun, or when it is made angry. The mixture of the bile with its blood is then very perceptible, and, as the ſkin is tranſparent, makes it ſpotted with green and yellow. He never ſaw it coloured with red, blue, or purple; and does not believe that ever it aſſumes theſe colours.

6. The gecko has a cylindrical tail, concave ears, and a warty body. It is the indian ſalamander of Bontius. "This animal is very frequent in Cairo, (ſays Haſſelquiſt), both in the houſes and without them. The poiſon of this animal is very ſingular, as it exhales from the lobuli of the toes. The animal ſeeks all places and things impregnated with ſea-ſalt, and, paſſing over them ſeveral times, leaves this very noxious poiſon behind it. In July 1750, Mr Haſſelquiſt ſaw two women and a girl in Cairo at the point of death, from eating cheeſe new ſalted, bought in the market, and on which this animal had dropt its poiſon. Once at Cairo, I had an opportunity of obſerving how acrid the exhalations of the toes of this animal are, as it ran over the hand of a man who endeavoured to catch it; there immediately roſe little puſtules over all thoſe parts the animal had touched; theſe were red, inflamed, and ſmarted a little, greatly reſembling thoſe occaſioned by the ſtinging of nettles. It emits an odd ſound, eſpecially in the night, from its throat, not unlike that of a frog."

7. The ſcincus has a cylindrical tail compreſſed at the point, and blunt marginated toes. This animal is found in Arabia Petræa near the Red Sea, and in Upper Egypt near the Nile. It is much uſed by the inhabitants of the eaſt as an aphrodiſiac, but not at this time by the Europeans. The fleſh of the animal is given in powder, with ſome ſtimulating vehicle; broth made of the recent fleſh is likewiſe uſed by the Arabs. It is brought from Uppet Egypt and Arabia to Alexandria, whence it is carried to Venice and Marſeilles, and from thence to all the apothecaries ſhops of Europe. It has been an error common to almoſt all authors, to imagine the ſcincus to be a fiſh.

8. The nilotica has a long tail with a triangular edge, and four lines of ſcales on the back. It is met with in the moiſt places of Egypt near the Nile. The Egyptians ſay that this lizard proceeds from the eggs of the crocodile laid in the ſand, but that the crocodile proceeds from thoſe laid in the water. Mr Haſſelquiſt hath detected the fallacy of this account.

9. The paluſtris has a lanceolated tail, and four toes on the fore-feet, and inhabits the ſtagnating waters of Europe. It has a ſlow and crawling pace. Mr Pennant mentions his having more than once found, under ſtones and old logs, ſome very minute lizards that had much the appearance of this kind: they were perfectly formed, and had not the leaſt veſtiges of fins; which circumſtance, joined to their being found in a dry place remote from water, ſeems to indicate, that they had never been inhabitants of that element, as it is certain many of our lizards are in their firſt ſtate. At that period they have a fin above and below their tail; that on the upper part extends along the back as far as the head; but both drop off as ſoon as the animal takes

Plate CLIX.

Fig. 1. HEAD *of a Ship.*

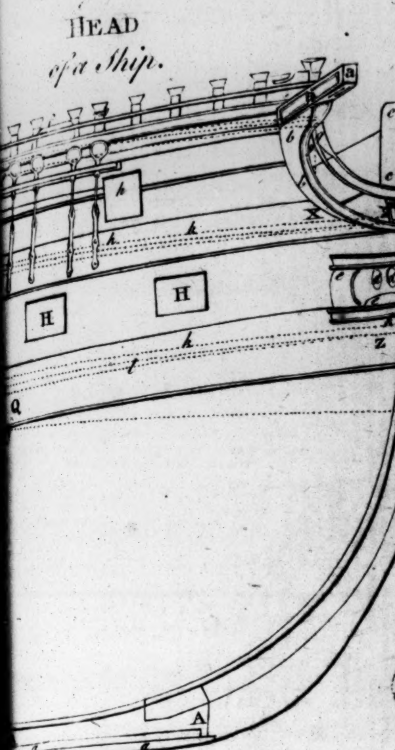


Fig. 2.

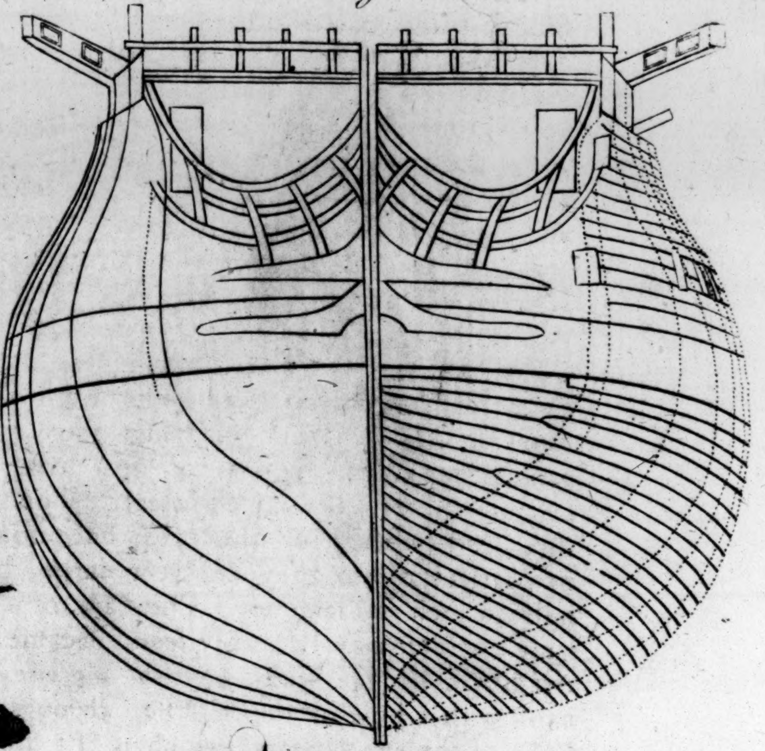


Fig. 6. **LEMUR** Tardigradus, *or tailleſs Maucauco.*

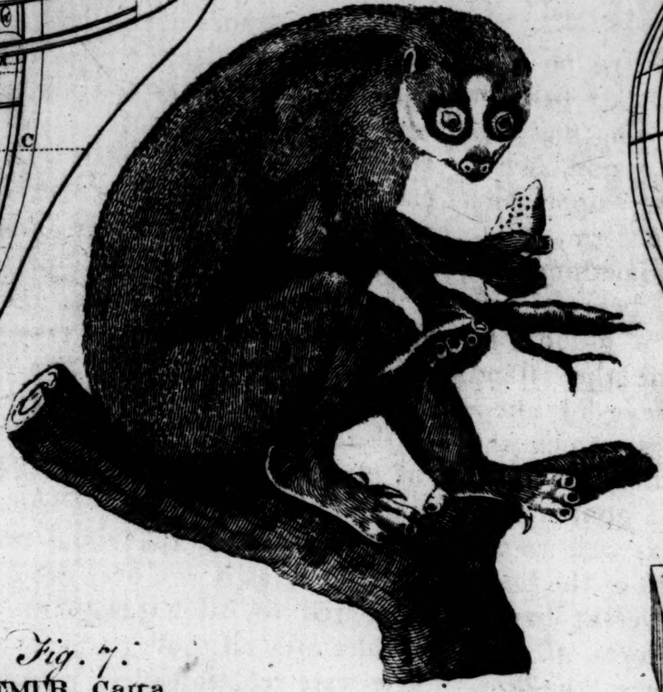


Fig. 3. **HARMONICA.**

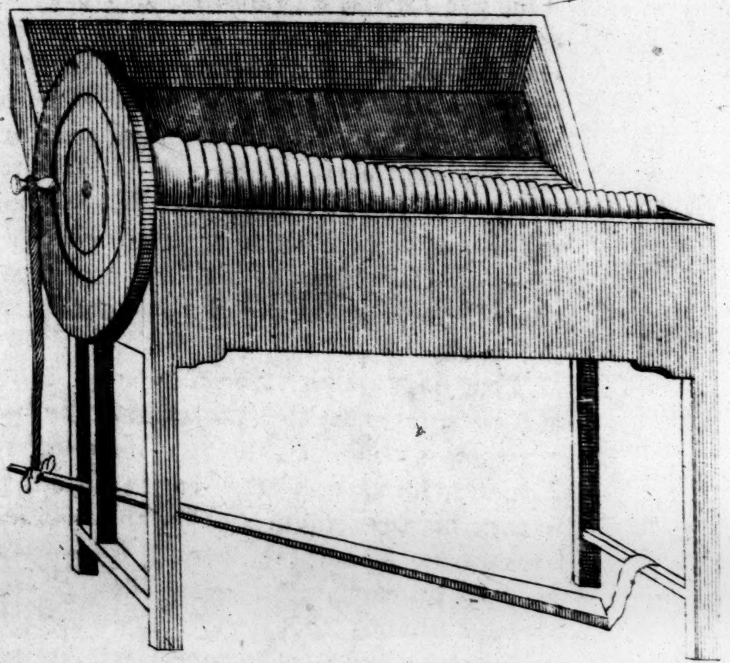


Fig. 7. **LEMUR** Catta, *or arch-tailed Maucauco.*

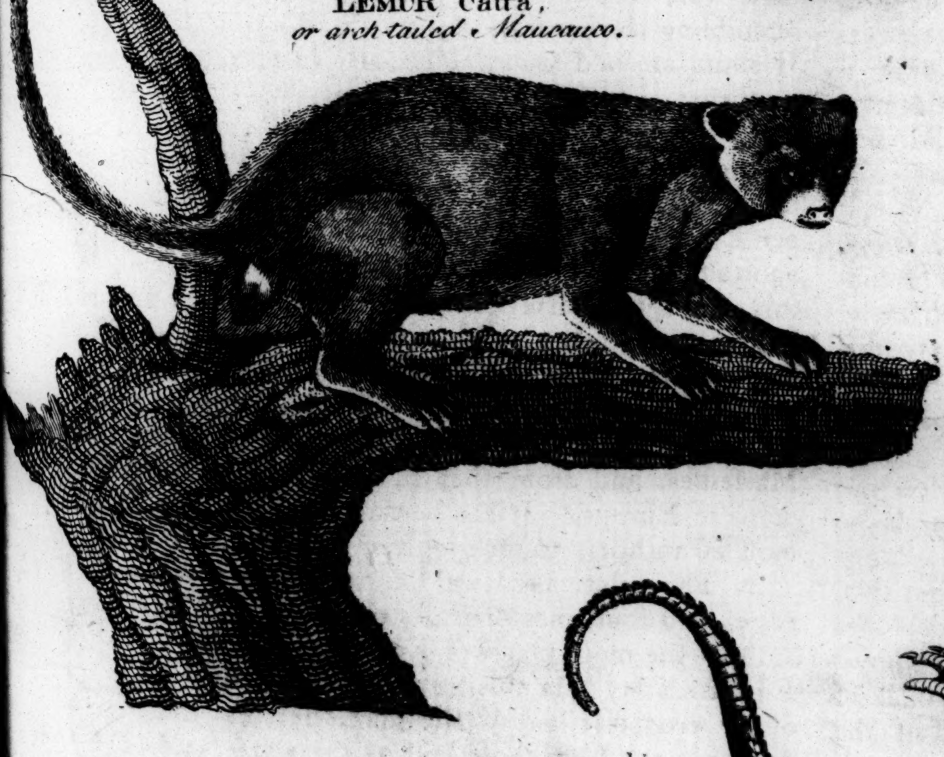


Fig. 4. The open-bellied, or narrow-beaked **LACERTA.**

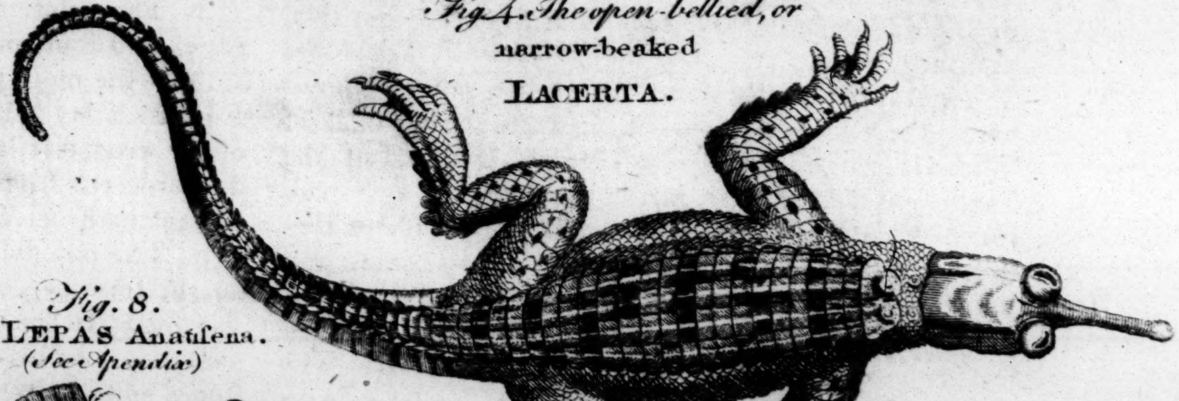


Fig. 5. **LOPHIUS** Piſcatorius, *or common angler.*

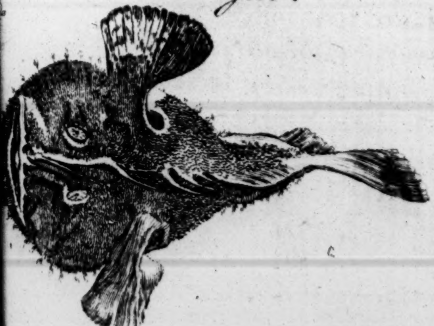
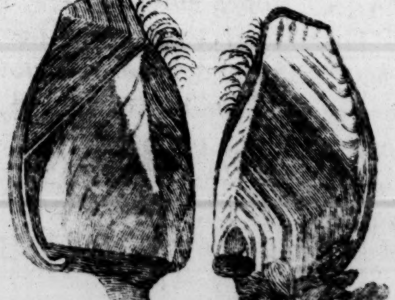


Fig. 8. **LEPAS** Anatiſera. *(See Apendix)*



A Bell Sculp.t

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LEGERDEMAIN. Plate CLX.

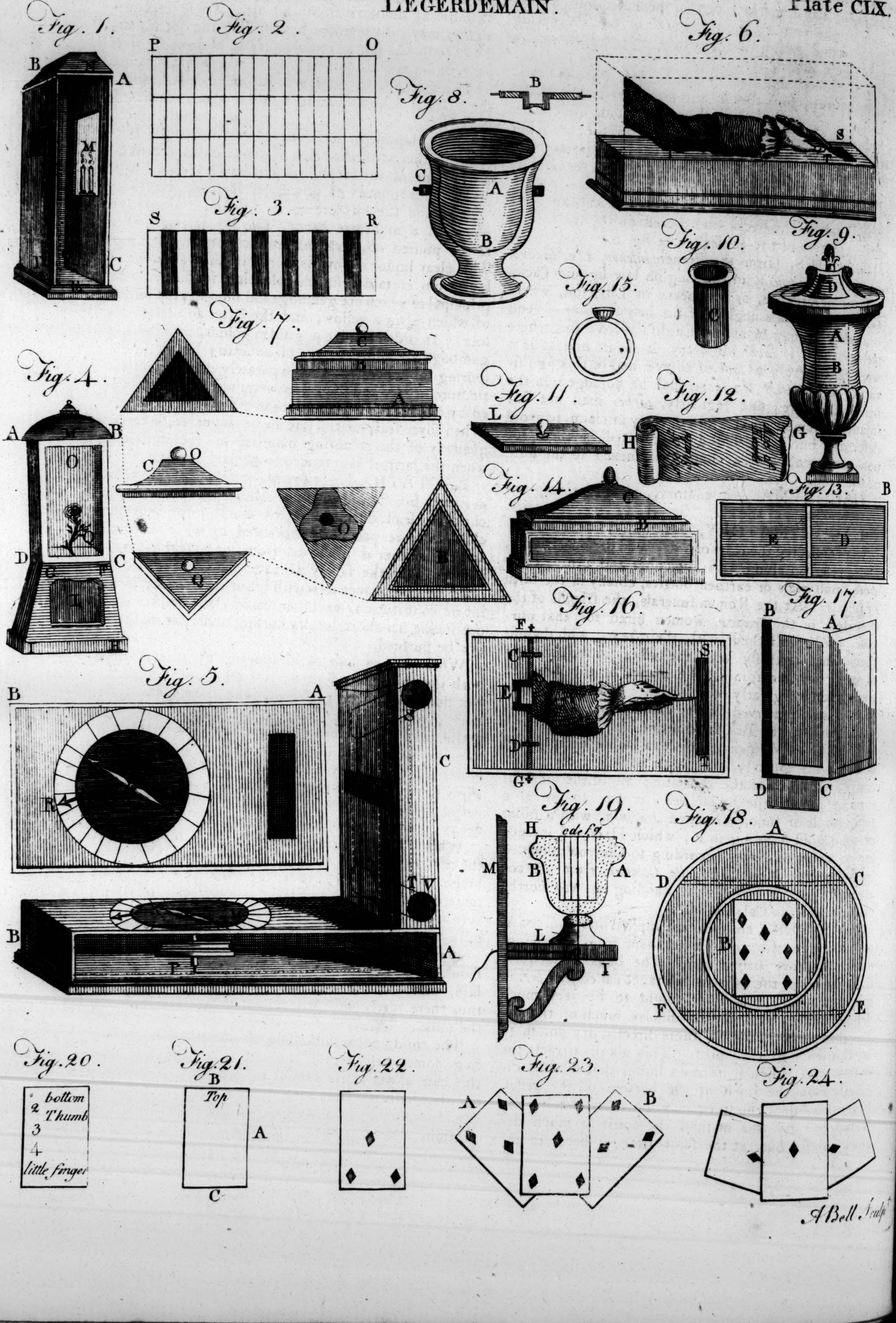
Fig. 1.
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Fig. 18.
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Fig. 20.
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Fig. 21.
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Fig. 22.
Fig. 23.
A
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Fig. 24.

A Bell Sculp^t

takes to the land, being then no longer of any uſe. Mr Ellis has remarked certain pennated fins at the gills of one very common in moſt of our ſtagnating waters, and which is frequently obſerved to take a bait like a fiſh.

10. The ſalamandra, or ſalamander, has a ſhort cylindrical tail, four toes on the fore-feet, and a naked porous body. This animal has been ſaid, even in the Philoſophical Tranſactions, to live in the fire; but this is found to be a miſtake. Its properties are very little known. It is found in the ſouthern countries of Europe.

11. The baſiliſkus, has a long cylindrical tail, a radiated fin on the back, and a creſt on the the throat. It is a native of the Indies. See fig. 6.

LACHES, (from the French *laſcher*, i. e. *laxare*, or *laſche*, *ignavus*), in the Engliſh law ſignifies ſlackneſs or negligence, as it appears in Littleton, where *laches of entry* is a neglect of the heir to enter. And probably it may be an old Engliſh word: for where we ſay there is *laches* of entry, it is all one as if it were ſaid there is a *lack* of entry; and in this ſignification it is uſed. No *laches* ſhall be adjudged in the heir within age; and regularly, *laches* ſhall not bar infants or femme coverts for not entry or claim, to avoid deſcents; but *laches* ſhall be accounted in them for non-performance of a condition annexed to the ſtate of the land.

LACHRYMAL, in anatomy, an appellation given to ſeveral parts of the eye. See ANATOMY, n° 406. f.

LACHRYMATORY, in antiquity, a veſſel wherein were collected the tears of a deceaſed perſon's friends, and preſerved along with the aſhes and urn. They were ſmall glaſs or earthen bottles, chiefly in the form of phials. At the Roman funerals, the friends of the deceaſed, or the *præficæ*, women hired for that purpoſe, uſed to fill them with their tears, and depoſit them very carefully with the aſhes, in teſtimony of their ſorrow; imagining the manes of the deceaſed were thereby greatly comforted. Many ſpecimens of them are preſerved in the cabinets of the curious, particularly in the Britiſh Muſeum.

LACINIUM, (anc. geog.) a noble promontory of the Brutii in Italy, the ſouth boundary of the Sinus Tarentinus and the Adriatic; all to the ſouth of it being deemed the Ionian Sea: it was famous for a rich temple of Juno, ſurnamed *Lacinia*, with a pillar of ſolid gold ſtanding in it; which Hannibal intending to carry off, was, according to Cicero, diſſuaded by a dream. Now *Capo delle Colonne*, from the columns of Juno's temple ſtill ſtanding on the north-eaſt coaſt of the Calabria ultra.

LACQUERS, are varniſhes applied upon tin, braſs, and other metals, to preſerve them from tarniſhing, and to improve their colour. The baſis of lacquers is a ſolution of the reſinous ſubſtance called *ſeed lac*, in ſpirit of wine. The ſpirit ought to be very much dephlegmated, in order to diſſolve much of the lac. For this purpoſe, ſome authors directly dry potaſh to be thrown into the ſpirit. This alkali attracts the water, with which it forms a liquid that ſubſides diſtinctly from the ſpirit at the bottom of the veſſel. From this liquid the ſpirit may be ſeparated by decantation. By this method the ſpirit is much dephlegmated; but, at the ſame time, it becomes impregnated with part of the alkali, which depraves its colour, and communicates a property to the lacquer of imbibing moiſture from the air. Theſe inconveniences may be prevented by diſtilling the ſpirit; or, if the artiſt has not an opportunity of performing that proceſs, he may cleanſe the ſpirit in a great meaſure from the alkali, by adding to it ſome calcined alum; the acid of which uniting with the alkali remaining in the ſpirit, forms with it a vitriolated tartar, which, not being ſoluble in ſpirit of wine, falls to the bottom together with the earth of the decompoſed alum. To a pint of the dephlegmated and purified ſpirit, about three ounces of powdered ſhell-lac are to be added; and the mixture to be digeſted during ſome day with a moderate heat. The liquor ought then to be poured off, ſtrained, and cleared by ſettling. This clear liquor is now fit to receive the required colour from certain reſinous colouring ſubſtances; the principal of which are gamboge and annotto; the former of which gives a yellow, and the latter an orange colour. In order to give a golden colour, two parts of gamboge are added to one of annotto; but theſe colouring ſubſtances may be ſeparately diſſolved in the tincture of lac, and the colour required may be adjuſted by mixing the two ſolutions in different proportions. When ſilver leaf, or tin, are to be lacquered, a larger quantity of the colouring materials are requiſite than when the lacquer is intended to be laid on braſs.

Motherby's Medical Dictionary.

LACTATIO, LACTATION, or *Giving Suck*. The mother's-breaſt, if poſſible, ſhould be allowed the child, at leaſt during the firſt month; for thus the child is more peculiarly benefited by what it ſucks, and the mother is preſerved from more real inconveniences, than the falſely delicate imagine they would ſuffer by compliance herewith: but if by reaſon of an infirm conſtitution, or other cauſes, the mother cannot ſuckle her child, let dry nurſing under the mother's eye be purſued.

When women loſe their appetite by giving ſuck, both the children and themſelves are thereby injured; wet nurſes are to be preferred, who during the time they give the breaſt, have rather an increaſed appetite, and digeſt more quickly; the former are apt to waſte away, and ſometimes die conſumptive. In ſhort, thoſe nurſes with whom lactation may for a while agree, ſhould wean the child as ſoon as their appetite leſſens, their ſtrength ſeems to fail, or a tendency to hyſteric ſymptoms are manifeſt.

When the new-born child is to be brought up by the mother's breaſt, apply it thereto in ten or twelve hours after delivery; thus the milk is ſooner and more eaſily ſupplied, and there is leſs hazard of a fever, than when the child is not put to it before the milk begins to flow of itſelf.

If the mother does not ſuckle her child, her breaſts ſhould be ſo kept warm with flannels, or with a hare-ſkin, that a conſtant perſpiration may be ſupported; thus there rarely will ariſe much inconvenience from the milk.

The child, notwithſtanding all our care in dry nurſing, ſometimes pines if a breaſt is not allowed. In this caſe a wet nurſe ſhould be provided, if poſſible one that hath not been long delivered of a child. She ſhould be young, of a healthy habit, and an active diſpoſition, a mild temper, and whoſe breaſts are well filled with milk. If the milk is good, it is ſweetiſh to the taſte, and totally free from ſaltneſs; to the eye it appears thin, and of a bluiſh caſt. That the woman hath her menſes, if in other reſpects objections are not made, this need not be any; and as to the cuſtom with many, of abſtaining from venery while they continue to ſuckle a child, it is ſo far without reaſon to ſupport it, that the truth is, a rigorous chaſtity is as hurtful, and often more pernicious, than an immoderate uſe of venery. Amongſt the vulgar errors, is that of red-haired women being improper for wet nurſes.

If the menſes do not appear during the firſt months, but after ſix or eight months ſuckling they begin to deſcend, the child ſhould be weaned.

Wet nurſes ſhould eat at leaſt one hearty meal of animal-food every day; with this, a proper quantity of vegetables ſhould be mixed. Thin broth, or milk, are proper for their breakfaſts and their ſuppers; and if the ſtrength ſhould ſeem to fail a little, a draught of good ale ſhould now and then be allowed: but ſpirituous liquors muſt, in general, be foreborn; not but a ſpoonful of rum may be allowed in a quart of milk and water, (*i. e.* a pint of each), which is a proper common drink.

Though it is well obſerved by Dr Hunter, that the far greater number of thoſe women who have cancers in the breaſt or womb, are old maids, and thoſe who refuſe to give ſuck to their children; yet it is the unhappineſs of ſome willing mothers not to be able: for inſtance, thoſe with tender conſtitutions, and who are ſubject to nervous diſorders; thoſe who do not eat a ſufficient quantity of ſolid food, nor enjoy the benefit of exerciſe and air: if children are kept at their breaſts, they either die whilſt young, or are weak and ſickly after childhood is paſt, and ſo on through remaining life.

LACTANTIUS (Lucius Cœlius Firmianus), a celebrated author at the beginning of the 4th century, was, according to Baronius, an African; but, according to others, was born at Fermo in the marquiſate of Anconia, from whence it is imagined he was called *Firmianus*. He ſtudied rhetoric under Arnobius; and was afterwards a profeſſor of that ſcience in Africa and Nicomedia, where he was ſo admired, that the emperor Conſtantine choſe him preceptor to his ſon Criſpus Cæſar. Lactantius was ſo far from ſeeking the pleaſures and riches of the court, that he lived there in poverty, and, according to Euſebius, frequently wanted neceſſaries. His works are written in elegant Latin. The principal of which are, 1. *De ira divina.* 2. *De operibus Dei*, in which he treats of the creation of man, and of divine providence. 3. Divine Inſtitutions, in ſeven books. This is the moſt conſiderable of all his works: he there undertakes to prove the truth of the Chriſtian religion, and to refute all the difficulties that had been raiſed againſt it; and he ſolidly and with great ſtrength attacks the illuſions of paganiſm. His ſtyle is pure, clear, and natural, and his expreſſions noble and elegant, on which account he has been callthe *Cicero of the Chriſtians*. There is alſo attributed to him a treatiſe *De morte perſecutorum;* but ſeveral of the learned doubt its being written by Lactantius. The moſt copious edition of Lactantius's works is that of Paris, in 1748, 2 vols 4to.

LACTEAL VESSELS. See ANATOMY, n° 369.

LACTIFEROUS, an appellation given to plants abounding with a milky juice, as the ſow-thiſtle and the like. The name of *lactiferous*, or *lacteſcent*, is given to all thoſe plants which abound with a thick-coloured juice, without regarding whether it is white or not. Moſt lactiferous plants are poiſonous, except thoſe with compound flowers, which are generally of an innocent quality.

Of the poiſonous lacteſcent plants the moſt remarkable are ſumach, agaric, maple, burning thorny plant, caſſada, celandine, puccoon, prickly poppy, and the plants of the natural order *contortæ*, as ſwallow-wort, apocynum, cynanchum, and cerbera.

The bell-ſhaped flowers are partly noxious, as cardinal flower; partly innocent, as campanula.

Among the lacteſcent plants with compound flowers that are innocent in their quality, may be mentioned dandelion, picris, hyoſeris, wild lettuce, gum-ſuccory, hawk-weed, baſtard hawk-weed, hypochœris, goat's-beard, and moſt ſpecies of lettuce: we ſay moſt ſpecies, becauſe the prickly ſpecies of that genus are ſaid to be of a very virulent and poiſonous nature; though Mr Lightfoot denies this, and affirms that they are a ſafe and gentle opiate, and that a ſyrup made from the leaves and ſtalks is much preferable to the common diacodium.

LACTUCA, LETTUCE; a genus of the polygamia æqualis order, belonging to the ſyngeneſia claſs of plants. There are ſeveral ſpecies, moſt of which are plants of no uſe, and never cultivated but in botanic gardens for variety. Thoſe commonly cultivated in the kitchen-garden for uſe are, 1. The common or garden lettuce. 2. Cabbage lettuce. 3. Sileſia lettuce. 4. Dutch brown lettuce. 5. Aleppo lettuce. 6. Imperial lettuce. 7. Green capuchin lettuce. 8. Verſailles or upright white Cos lettuce. 9. Black Cos. 10. Red Cos. 11. Red capuchin lettuce. 12. Roman lettuce. 13. Prince lettuce. 14. Royal lettuce. 15. Egyptian Cos lettuce.

The firſt of theſe ſorts is very common in all gardens, and is commonly ſown for cutting very young, to mix with other ſalad herbs in ſpring; and the ſecond, or cabbage-lettuce, is only this mended by culture. It may be ſown at all times of the year, but in the hot months requires to be ſown in ſhady borders. The cabbage-lettuce may alſo be ſown at different ſeaſons, to have a continuation of it through the ſummer. The firſt crop ſhould be ſown in February, in an open ſituation; the others, at three weeks diſtance; but the later ones under covert, but not under the drippings of trees.

The Sileſia, imperial, royal, black, white, and upright Cos lettuces, may be firſt ſown in the latter end of February or the beginning of March, on a warm light ſoil, and in an open ſituation; when the plants are come up, they muſt be thinned to 15 inches diſtance every way, they will then require no farther care than the keeping them clear of weeds; and the black Cos, as it grows large, ſhould have its leaves tied together to whiten the inner part. Succeeding crops of theſe ſhould be ſown in April, May, and June; and toward the latter end of Auguſt they may be ſowed for a winter crop, to be preſerved under glaſſes, or in a bed arched over with hoops and covered with mats.

The moſt valuable of all the Engliſh lettuces are, the white Cos, or the Verſailles, the Sileſia, and the black Cos. The brown Dutch and the green capuchin are very hardy, and may be ſown late, under walls, where they will ſtand the winter, and be valuable when no others are to be had. The red capuchin, Roman, and prince lettuce, are very early kinds, and are ſown for variety; as are alſo the Aleppo ones for the beauty of their ſpotted leaves.

The milk of the common garden-lettuce is hypnotic, while the root of the plant is cooling, diluent, and nouriſhing.

LACUNAR, in architecture, an arched roof or ceiling, more eſpecially the planking or flooring above porticos or piazzas.

LACYDES, a Greek philoſopher, born at Cyrene, was the diſciple of Arceſilaus, and his ſucceſſor in the academy. He taught in a garden given him by Attalus king of Pergamus; but that prince ſending for him to court, he replied, "That the pictures of kings ſhould be viewed at a diſtance." He imitated his maſter in the pleaſure he took in doing good without caring to have it known: he had a gooſe which followed him every where, by night as well as by day; and when ſhe died, he made a funeral for her, which was as magnificent as if it had been for a ſon or a brother. He taught the ſame doctrine as Arceſilaus; and pretended that we ought to determine nothing, but always to ſuſpend our opinion. He died 212 B. C.

LADDER, a frame made with a number of ſteps, by means of which people may aſcend as on a ſtair to places otherwiſe inacceſſible.

Scaling LADDERS, in the military art, are uſed in ſcaling when a place is to be taken by ſurprize. They are made ſeveral ways: here we make them of flat ſtaves, ſo that they may move about their pins, and ſhut like a parallel ruler, for conveniently carrying them: the French make them of ſeveral pieces, ſo as to be joined together, and to be made of any neceſſary length: ſometimes they are made of ſingle ropes, knotted at proper diſtances, with iron hooks at each end, one to faſten them upon the wall above, and the other in the ground; and ſometimes they are made with two ropes, and ſtaves between them, to keep the ropes at a proper diſtance, and to tread upon. When they are uſed in the action of ſcaling walls, they ought to be rather too long than too ſhort, and to be given in charge only to the ſtouteſt of the detachment. The ſoldiers ſhould carry theſe ladders with the left arm paſſed through the ſecond ſtep, taking care to hold them upright cloſe to their ſides, and very ſhort below, to prevent any accident in leaping into the ditch.

The firſt rank of each diviſion, provided with ladders, ſhould ſet out with the reſt at the ſignal, marching reſolutely with their firelocks ſlung, to jump into the ditch: when they are arrived, they ſhould apply their ladders againſt the parapet, obſerving to place them towards the ſalient angles rather than the middle of the curtain, becauſe the enemy have leſs force there. Care muſt be taken to place the ladders within a foot of each other, and not to give them too much nor too little ſlope, ſo that they may not be overturned or broke with the weight of the ſoldiers mounting upon them.

The ladders being applied, they who have carried them, and they who come after, ſhould mount up, and ruſh upon the enemy ſword-in-hand: if he who goes firſt, happens to be overturned, the next ſhould take care not to be thrown down by his comerade; but, on the contrary, immediately mount himſelf, ſo as not to give the enemy time to load his piece.

As the ſoldiers who mount firſt may be eaſily tumbled over, and their fall may cauſe the attack to fail, it would perhaps be right to protect their breaſts with the fore-parts of cuiraſſes; becauſe, if they can penetrate, the reſt may eaſily follow.

The ſucceſs of an attack by ſcaling is infallible, if they mount the four ſides at once, and take care to ſhower a number of grenades amongſt the enemy, eſpecially when ſupported by ſome grenadiers and picquets, who ſhare the attention and fire of the enemy.

LADEN, in the ſea-language, the ſtate of a ſhip when ſhe is charged with a weight or quantity of any ſort of merchandizes, or other materials, equal to her tonnage or burthen. If the cargo with which ſhe is laden is extremely heavy, her burthen is determined by the weight of the goods; and if it is light, ſhe carries as much as ſhe can *ſtow*, to be fit for the purpoſes of navigation. As a ton in meaſure is generally eſtimated at 2000 ℔. in weight, a veſſel of 200 tons ought accordingly to carry a weight equal to 400,000 ℔. when the matter of which the cargo is compoſed is ſpecifically heavier than the water in which ſhe floats; or, in other words, when the cargo is ſo heavy that ſhe cannot float high enough with ſo great a quantity of it as her hold will contain.

LADEN *in Bulk*, the ſtate of being freighted with a cargo which is neither in caſks, boxes, bales, nor caſes, but lies looſe in the hold; being defended from the moiſture or wet of the hold, by a number of mats and a quantity of *dunage*. Such are uſually the cargoes of corn, ſalt, or ſuch materials.

LADENBURG, a town of Germany in the Palatinate of the Rhine, ſeated on the river Neckar, in E. Long. 8. 42. N. Lat. 49. 27. It belongs to the biſhopric of Worms, and the elector Palatine.

LADISLAUS, the name of ſeveral kings of Poland. See POLAND.

LADOGA, a town of the Ruſſian empire, ſeated on a great lake of the ſame name, which has a communication with the gulph of Finland, by the river Nieva; and it abounds in fiſh, particularly ſalmon. E. Long. 33. 29. N. Lat. 60. 0.

LADOGNA, or LACEDOGNA, a town of Italy, in the kingdom of Naples, and in the Capitanata, with a biſhop's ſee. E. Long. 15. 12. N. Lat. 41. 16.

LADRONE or MARIAN *Iſlands*, a cluſter of 12 iſlands lying in the Pacific Ocean, in about 145° of eaſt longitude, and between the 11th and 21ſt degree of north latitude. They were firſt diſcovered by Magellan, who ſailed round the world through the Straits which bear his name. He gave them the name of *Ladrone Iſlands*, or the *Iſlands of Thieves*, from the thieviſh diſpoſition of the inhabitants. At the time theſe iſlands were diſcovered by the Europeans, the natives were totally unacquainted with any other coun-

Ladrone.

country beſides their own; and having no traditionary accounts of their own origin, they imagined that the author of their race was formed of a piece of the rock of Funa, one of their ſmalleſt iſlands. Many things looked upon by us as abſolutely neceſſary to our exiſtence, were utterly unknown to theſe people. They had no animals of any ſort; and would not even have had any idea of them, had it not been for the birds; and even of them they had but one ſpecies, ſomewhat like the turtle-dove, which they never killed for eating, but only tamed them, and taught them to ſpeak. They were much aſtoniſhed on ſeeing a horſe which a Spaniſh captain left among them in 1673, and could not for a long time be ſatisfied with admiring him. But what is moſt ſurpriſing and incredible in their hiſtory is, that they were utterly unacquainted with the element of fire, till Magellan, provoked by their repeated thefts, burned one of their villages. When they ſaw their wooden houſes blazing, they firſt thought that the fire was a beaſt which fed upon the wood; and ſome of them who came too near, being burnt, the reſt ſtood at a diſtance, leſt they ſhould be devoured or poiſoned by the breathings of this terrible animal.

The inhabitants of the Ladrones are olive-coloured, but not of ſuch a deep dye as thoſe of the Philippine iſlands; their ſtature is good, and their limbs well proportioned. Though their food conſiſts entirely of fiſh, fruits, and roots, yet they are ſo fat, that to ſtrangers they appear ſwelled, but this does not render them leſs nimble and active. They often live to 100 years or more, yet retain the health and vigour of men of 50. The men go ſtark naked, but the women are covered. They are not ill-looked, and take great care of their beauty, though their ideas on that ſubject are very different from ours. They love black teeth and white hair. Hence one of their principal occupations is to keep their teeth black by the help of certain herbs, and to whiten their hair, ſprinkling upon it a certain water for this purpoſe. The women have their hair very long; but the men generally ſhave it cloſe, except a ſingle lock on the crown of the head, after the manner of the Japaneſe. Their language much reſembles that of the people called *Tagales* in the Philippine iſlands. It is agreeable to the ear, with a ſoft and eaſy pronunciation. One of its chief graces conſiſts in the facility of tranſpoſing words, and even all the ſyllables of one word; and thus furniſhing a variety of double meanings, with which theſe people are greatly delighted. Though plunged in the deepeſt ignorance, and deſtitute of every thing valued by the reſt of mankind, no nation ever ſhewed more preſumption, or a greater conceit of themſelves than theſe iſlanders, looking on their own nation as the only wiſe, ſenſible, and poliſhed one in the world, and beholding every other people with the greateſt contempt. Though they are ignorant of the arts and ſciences, yet, like every other nation, they have their fables which ſerve them for hiſtory, and ſome poems which they greatly admire. A poet is with them a character of the firſt eminence, and greatly reſpected.

We neither know at what time, nor from what place the Ladrone iſlands were firſt peopled. As Japan lies within ſix or ſeven days ſail of them, ſome have been induced to believe, that the firſt inhabitants of the Ladrones came from Japan. But from their greater reſemblance to the inhabitants of the Philippine iſlands than to the Japaneſe, it is more probable that they came from the former than the latter. Formerly, moſt of the iſlands were inhabited; and about 90 years ago, the three principle iſlands, Guam, Tinian, and Rota, are ſaid to have contained 50,000 people; but ſince that time, Tinian hath been entirely depopulated, and only 200 or 300 Indians left at Rota to cultivate rice for the iſland of Guam, which alone is inhabited by Europeans, and where the Spaniards have a governor and a garriſon: here alſo the annual Manilla ſhip touches for refreſhments in her paſſage from Acapulco to the Philippines. The iſland of Tinian afforded an aſylum to commodore Anſon in 1742; and the maſterly manner in which the author of that voyage paints the natural beauties of the country hath given a degree of eſtimation not only to this iſland, but to all the reſt, which they had not before. Commodore Byron, in 1765, continued nine weeks at Tinian, and anchored in the very ſpot where the centurion lay; but gives a much leſs favourable account of this climate and country than the former navigator. The water, he ſays, is brackiſh, and full of worms: many of his men were ſeized with fevers, occaſioned by the intenſe heat; the thermometer, which was kept on board the ſhip, generally ſtood at 86°, which is but 10 or 11 degrees leſs than the heat of the blood at the heart; and had the iuſtrument been aſhore, he imagines it would have ſtood much higher than it did. It was with the greateſt difficulty that they could penetrate through the woods; and when they had fortunately killed a bull, and with prodigious labour dragged it through the foreſts to the beach, it ſtunk, and was full of fly-blows by the time it reached the ſhore. The poultry was ill-taſted; and within an hour after it was killed, the fleſh became as green as graſs, and ſwarmed with maggots. The wild hogs were very fierce; and ſo large, that a carcaſe frequently weighed 200 pounds. Cotton and indigo were found on the iſland. Captain Wallis continued here a month in 1767, but makes no ſuch complaints.

Ladrone, Lady.

LADY. This title is derived from two Saxon words, which ſignify *loaf-day*, which words have in time been contracted into the preſent appellation. It properly belongs only to the daughter of earls, and all of higher rank; but cuſtom has made it a word of complaiſance for the wives of knights, and of all eminent women.

As to the original application of this expreſſion, it may be obſerved, that heretofore it was the faſhion for thoſe families, whom God had bleſſed with affluence, to live conſtantly at their manſion-houſes in the country, and that once a-week, or oftener, the lady of the manor diſtributed to her poor neighbours, *with her own hands*, a certain quantity of bread; but the practice, which gave riſe to this title, is now as little known as the meaning of it: however, it may be from that hoſpitable cuſtom, that, to this day, the ladies in this kingdom alone ſerve the meat at their own tables.

LADY's *Bedſtraw*. See GALLIUM.

LADY's *Mantle*. See ALCHEMILLA.

LADY's *Smock*. See CARDAMINE.

LADY's *Slipper*. See CYPRIPEDIUM.

LADY's *Traces*. See OPHRYS.

LADY-*Day*, in law, the 25th of March, being the annunciation of the Holy Virgin. See ANNUNCIATION.

LÆLIUS (Caius), a Roman conſul and great orator, ſurnamed the *Wiſe*, diſtinguiſhed himſelf in Spain in the war againſt Viriathus the Spaniſh general. He is highly praiſed by Cicero, who gives an admirable deſcription of the intimate friendſhip which ſubſiſted between Lælius and Scipio Africanus the Younger. His eloquence, his modeſty, and his abilities, acquired him a great reputation; and he is thought to have aſſiſted Terence in his comedies. He died about 126 B. C.

LAER. See BAMBOCCIO.

LAESTRYGONES, (anc. geog.), an ancient people dwelling in Sicily, together with the Cyclopes; about whoſe origin and fate Thucydides declares, he has nothing to ſay. They were alſo a people of Italy about Formiæ, of Scythian original, and a race of canibals, (Pliny); reſembling giants rather than men, (Homer).

LAET (John de), a writer in the 17th century, born at Antwerp, was director of the Weſt India company. He acquired great ſkill in the languages, in hiſtory, and geography; and had the management of Elzevir's edition of *A deſcription of moſt kingdoms in the world*, printed in Latin. He wrote, in French, a *Deſcription of the Eaſt Indies*, and other works; and died in 1649.

LÆVINUS (Torrentinus), commonly called *Vander Bekin*, or *Torrentin*, was a native of Ghent, and bred in the univerſity of Louvain. He afterwards made the tour of Italy, where his virtues obtained him the friendſhip of the moſt illuſtrious perſonages of his time. On his return to the Low Countries; he was made canon of Liege, and vicar-general to Erneſt de Baviere, biſhop of that ſee. At length, having executed a ſucceſsful embaſſy to Philip II. of Spain, he was rewarded with the biſhopric of Antwerp; from whence he was tranſlated to the metropolitan church of Mechlin, and died there in 1595. He founded a college of Jeſuits at Louvain, to which he left his library, medals, and curioſities. He wrote ſeveral poems that procured him the character of being, after Horace, the prince of the lyric poets.

LÆVIUS, a Latin poet. It is not well known when he lived, but probably he was more ancient than Cicero. He made a poem entitled *Erotopagnia*, i. e. *love-games*. Aulius Gellius quotes two lines of it. Apuleius alſo quotes ſix lines from the ſame poet, but he does not tell from what work he borrowed them. Lævius had alſo compoſed a poem intitled *The centaurs*, which Feſtus quotes under the title of *Petrarum*.

LAGAN, or LAGON. See FLOTSOM.

LAGNY, a town of the iſle of France, with a famous benedictine abbey. It is ſeated on the river Marne, in E. Long. 2. 45. N. Lat. 48. 50.

LAGOON ISLAND, one of the new diſcovered iſlands in the South Sea, lying in S. Lat. 18. 47. W. Long. 139. 28. It is of an oval form, with a lake in the middle, which occupies much the greateſt part of it. The whole iſland is covered with trees of different growth. It is inhabited by a race of Indians, tall, of a copper-colour, with long black hair. Their weapons are poles or ſpikes, which are twice as long as themſelves. Their habitations were ſeen under ſome clumps of palm-trees, which formed very beautiful groves. This iſland was diſcovered by Captain Cook in April 1769.

LAGOPUS, in ornithology. See TETRAO.

LAGOS, a ſea-port town of Portugal, in the kingdom of Algarve, with a caſtle near the ſea, where there is a good harbour, and where the Engliſh fleets bound to the Straits uſually take in freſh water. W. Long. 8. 5. N. Lat. 36. 45.

LAGUNA, or *San Chriſtoval de Laguna*, a conſiderable town in the iſland of Teneriff, near a lake of the ſame name, on the declivity of a hill. It has very handſome buildings, and a fine ſquare. W. Long. 16. 24. N. Lat. 28. 30.

LAGUNES of VENICE, are marſhes or lakes in Italy on which Venice is ſeated. They communicate with the ſea, and are the ſecurity of the city. There are about 60 iſlands in theſe Lagunes, which together make a biſhop's ſee. Eurano is the moſt conſiderable, next to thoſe on which Venice ſtands.

LAHOLM, a ſea-port town of Sweden, in the province of Gothland, and territory of Halland, ſeated near the Baltic Sea, with a caſtle and a harbour, in E. Long. 13. 13. N. Lat. 56. 35.

LAHOR, a large town of Aſia, in Indoſtan, and capital of a province of the ſame name, and one of the moſt conſiderable in the Mogul's dominions. It is of a vaſt circumference, and contains a great number of moſques, public baths, caravanſeras, and pagods. It was the reſidence of the Great Mogul; but ſince the removal of the court, the fine palace is going to decay. There is a magnificent walk of ſhady trees, which runs from this to Agra, that is upwards of 300 miles. Here they have manufactures of cotton cloths and ſtuffs of all kinds, and they make very curious carpets. E. Long. 75. 55. N. Lat. 31. 40.

LAINEZ (James), a Spaniard, companion of Ignatius of Loyola, ſecond general of the Jeſuits, and a man of a more daring and political character. Having procured from pope Paul IV. the perpetual generalſhip of the new order of Jeſuits, after the death of Ignatius, he got the following privileges ratified by that pontiff, which ſhew, that he was in fact the founder of the worſt part of their inſtitution: 1. The right of making all ſorts of contracts (without the privity of the community) veſted in the generals and their delegates. 2. That of giving authenticity to all comments and explanations of their conſtitutions. 3. The power of making new, and altering the old: this opened the door to their bloody political tenets, not to be attributed to Loyola. 4. That of having priſons independent of the ſecular authority, in which they put to death refractory brethren. Lainez died in 1565, aged 53.

LAIRESSE (Gerard), an eminent Flemiſh painter, born at Liege in 1640. He received the principal part of his inſtruction from his father Reiniere de Laireſſe, though he is alſo accounted a diſciple of Bartolet. He firſt ſettled at Utrecht, where he lived in diſtreſſed circumſtances; but an accidental recommendation carrying him to Amſterdam, he ſoon exchanged want and obſcurity for affluence and reputation. He was a perfect maſtery of hiſtory; his deſigns are diſtinguiſhed by the grandeur of the compoſition; and the back-grounds, wherever the ſubjects required it, are rich in architecture, which is an uncommon circumſtance in that country. He had the unhappineſs to loſe his ſight ſeveral years before his death, which happened in 1711; ſo that the treatiſe on deſign and colouring, which paſſes under his name, was not wrote by him, but collected from his obſervations after he was blind, and publiſhed after his death. He had three ſons, two of whom were painters; and alſo three brothers, Erneſt, James, and John: Erneſt and John painted animals, and James was a flower-painter. He engraved a good deal in aquafortis: his works conſiſt of 256 plates, above half of which were done with his own hand. He wrote an excellent book on the art, which has been tranſlated into Engliſh, and printed at London both in 4to and 8vo.

LAITY, the people as diſtinguiſhed from the clergy; (ſee Clergy). The lay part of his Majeſty's ſubjects is divided into three diſtinct ſtates; the civil, the military, and the maritime. See Civil, Military, Maritime.

LAKE, a collection of waters contained in ſome cavity in an inland place, of a large extent, ſurrounded with land, and having no communication with the ocean. Lakes may be divided into four kinds. 1. Such as neither receive nor ſend forth rivers. 2. Such as emit rivers, without receiving any. 3. Such as receive rivers, without emitting any. And, 4. Such as both receive and ſend forth rivers. Of the firſt kind, ſome are temporary and others perennial. Moſt of thoſe that are temporary owe their origin to the rain, and the cavity or depreſſion of the place in which they are lodged: thus in India there are ſeveral ſuch lakes made by the induſtry of the natives, of which ſome are a mile, and ſome two in circuit; theſe are ſurrounded with a ſtone-wall, and being filled in the rainy mouths, ſupply the inhabitants in dry ſeaſons, who live at a great diſtance from ſprings or rivers. There are alſo ſeveral of this kind formed by the inundations of the Nile and the Niger; and in Muſcovy, Finland, and Lapland, there are many lakes formed, partly by the rains, and partly by the melting of the ice and ſnow: but moſt of the perennial lakes, which neither receive nor emit rivers, probably owe their riſe to ſprings at the bottom, by which they are conſtantly ſupplied. The ſecond kind of lakes, which emit without receiving rivers, is very numerous. Many rivers flow from theſe as out of ciſterns; where their ſprings being ſituated low within a hollow place, firſt fill the cavity and make it a lake, which not being capacious enough to hold all the water, it overflows and forms a river: of this kind is the Wolga, at the head of the river Wolga; the lake Odium, at the head of the Tanais; the Adac, from whence one branch of the river Tigris flows; the Ozero, or White lake, in Muſcovy, is the ſource of the river Shakſna. The great lake Chaamay, which emits four very large rivers, which water the countries of Siam, Pegu, &c. viz. the Menan, the Aſa, the Caipoumo, and the Laquia, &c. The third ſpecies of lakes, which receive rivers but emit none, apparently owe their origin to thoſe rivers which, in their progreſs from their ſource, falling into ſome extenſive cavity, are collected together, and form a lake of ſuch dimenſions as may loſe as much by exhalation as it continually receives from theſe ſources: of this kind is that great lake improperly called the *Caſpian Sea*; the lake Aſphaltites, alſo called the *Dead Sea*; the lake of Geneva, and ſeveral others. Of the fourth ſpecies, which both receive and emit rivers, we reckon three kinds, as the quantity they emit is greater, equal, or leſs than they receive. If it be greater, it is plain that they muſt be ſupplied by ſprings at the bottom; if leſs, the ſurplus of the water is probably ſpent in exhalations; and if it be equal, their ſprings juſt ſupply what is evaporated by the ſun.

Lakes are alſo divided into thoſe of freſh water, and thoſe of ſalt. Dr Halley is of opinion, that all great perennial lakes are ſaline, either in a greater or leſs degree; and that this ſaltneſs increaſes with time: and on this foundation he propoſes a method for determining the age of the world.

Large lakes anſwer the moſt valuable purpoſes in the northern regions, the warm vapours that ariſe from them moderating the pinching cold of thoſe climates; and what is ſtill a greater advantage, when they are placed in warmer climates at a great diſtance from the ſea, the exhalations raiſed from them by the ſun cauſe the countries that border upon them to be refreſhed with frequent ſhowers, and conſequently prevent their being barren deſarts.

LAMA, a ſynonime of the camelus pacos. See Camelus.

Lama, the ſovereign pontiff, or rather god, of the Aſiatic Tartars, inhabiting the country of Barantola. The lama is not only adored by the inhabitants of the country, but alſo by the kings of Tartary, who ſend him rich preſents, and go in pilgrimage to pay him adoration, calling him *lama congiu*, i. e. god, the everlaſting father of heaven. He is never to be ſeen but in a ſecret place of his palace, amidſt a great number of lamps, ſitting croſs-legged upon a cuſhion, and adorned all over with gold and precious ſtones; where, at a diſtance, they proſtrate themſelves before him, it not being lawful for any to kiſs even his feet. He is called the *great lama*, or *lama of lamas*, that is, *prieſt of prieſts*. And to perſuade the people that he is immortal, the inferior prieſts, when he dies, ſubſtitute another in his ſtead, and ſo continue the cheat from generation to generation. Theſe prieſts perſuade the people, that the lama was raiſed from death many hundred years ago, that he has lived ever ſince, and will continue to live for ever.

LAMB, in zoology, the young of the ſheep-kind. See Ovis.

A male lamb of the firſt year is called a *wedder-hog*, and the female a *ewe-hog*; the ſecond year it is called a *wedder*, and the female a *ſheave*. If a lamb be ſick, mare's milk with water may be given it; and by blowing into the mouth, many have been recovered, after appearing dead. The beſt ſeaſon for weaning them is when they are 16 or 18 weeks old, and about Michaelmas. The males ſhould be ſeparated from the females, and ſuch males as are not deſigned for rams, gelded. "Lamb, (ſays Dr Cullen), appears a more fibrous kind of meat, and upon that account is leſs eaſily ſoluble than veal. In Scotland, houſe-lamb is never reared to advantage."

Scythian **Lamb**, a kind of moſs, which grows about the roots of fern in ſome of the northern parts of Europe and Aſia, and ſometimes aſſumes the form of a quadruped. See Plate CLVIII. fig. 8. A particular deſcription of it may be ſeen in Philoſ. Tranſ. Nº 398.

LAMBECIUS (Peter), born at Hamburg in 1628, was one of the moſt learned men of his time. He went very young to ſtudy in foreign countries, at the expence of his uncle the learned Holſtenius. He was choſen profeſſor of hiſtory at Hamburg in 1652, and rector of the college of that city in 1660. He had taken his degree of doctor of law in France before. He ſuffered a thouſand vexations in his own country; becauſe his enemies charged him with atheiſm, and cenſured his writings bitterly. He married a rich lady, but who was ſo very covetous, that he left her in diſguſt within a fortnight. He went to Vienna, and from thence to Rome, where he publicly profeſſed the Catholic religion. He returned to Vienna in 1662, where he was kindly received by the emperor, who appointed him his ſublibrary-keeper, and afterwards his principal librarian, with the title of *counſellor and hiſtoriographer*; in which employment he continued till his death, and gained a great reputation by the works he publiſhed, viz. 1. *An Eſſay on Aulus Gellius*. 2. *The Antiquities of Hamburg*. 3. *Remarks on Codinus's Antiquities of Conſtantinople*, &c.

LAMBERT of Aſchaffenburg, a Benedictine monk, in the 11th century, wrote ſeveral works; among which is a hiſtory of Germany, from the year 1050 to 1077, which is eſteemed.

Lambert (John), general of the parliament's forces in the civil wars of the laſt century, was of a good family, and for ſome time ſtudied the law in one of the inns of court; but upon the breaking out of the rebellion, went into the parliament-army, where he ſoon roſe to the rank of colonel, and by his conduct and valour performed many eminent ſervices. But when Cromwell ſeemed inclined to aſſume the title of king, Lambert oppoſed it with great vigour, and even refuſed to take the oath required by the aſſembly and council to be faithful to the government; on which Cromwell deprived him of his commiſſion, but granted him a penſion of 2000 l. a-year. This was an act of prudence rather than of generoſity; as he well knew, that ſuch a genius as Lambert's, rendered deſperate by poverty, was capable of attempting any thing.

Lambert being now diveſted of all employment, retired to Wimbleton-houſe; where turning floriſt, he had the fineſt tulips and gilliflowers that could be got for love or money. Yet amidſt theſe amuſements he ſtill nouriſhed his ambition: for when Richard Cromwell ſucceeded his father, he acted ſo effectually with Fleetwood, Deſborough, Vane, Berry, and others, that the new protector was obliged to ſurrender his authority; and the members of the long-parliament, who had continued ſitting till the 20th of April 1653, when Oliver diſmiſſed them, were reſtored to their ſeats, and Lambert was immediately appointed one of the council of ſtate, and colonel of a regiment of horſe and another of foot. For this ſervice the parliament preſented him 1000 l. to buy a jewel; but he diſtributed it among his officers. This being ſoon known to the parliament, they concluded that he intended to ſecure a party in the army. They therefore courteouſly invited him to come to London; but reſolved, as ſoon as he ſhould arrive, to ſecure him from doing any farther harm. Lambert, apprehenſive of this, delayed his return, and even refuſed to reſign his commiſſion when it was demanded of him and of eight of the other leading officers; and, marching up to London with his army, diſlodged the parliament by force in October 1659. He was then appointed, by a council of the officers, major-general of the army, and one of the new council for the management of public affairs, and ſent to command the forces in the north. But general Monk marching from Scotland into England to ſupport the parliament, againſt which Lambert had acted with ſuch violence, the latter, being deſerted by his army, was obliged to ſubmit to the parliament, and by their order was committed priſoner to the tower; whence eſcaping, he ſoon appeared in arms with four troops under his command, but was defeated and taken priſoner by colonel Ingoldſby.

At the Reſtoration he was particularly excepted out of the act of indemnity. Being brought to his trial on the 4th of June 1662, for levying war againſt the king, this daring general behaved with more ſubmiſſion than the meaneſt of his fellow-priſoners, and was by his majeſty's favour reprieved at the bar, and confined during his life in the iſland of Guernſey.

Lambert (Anna Thereſa de Marguenat de Courcelles, marchioneſs of), an elegant moral writer, was the only daughter of Stephen Marguenat lord of Courcelles. In 1666 ſhe married Henry de Lambert, who at his death was lieutenant-general of the army; and ſhe afterwards remained a widow with a ſon and a daughter, whom ſhe educated with great care. Her houſe was a kind of academy, to which perſons of diſtinguiſhed abilities regularly reſorted. She died at Paris in 1733, aged 86. Her works, which are written with much taſte, judgement, and delicacy, are printed in two volumes. The advice of a mother to her ſon and daughter are particularly eſteemed.

LAMBIN (Dennis), an eminent claſſical commentator, was born at Montreuil-ſur-Mer, in Picardy, and acquired great ſkill in polite literature. He lived for a long time at Rome; and at his return to Paris was made royal profeſſor of the Greek language. He died in 1572, aged 56, of pure grief at the death of his friend Ramus, who was murdered at the maſſacre on St Bartholomew's day. He wrote commentaries on Plautus, Lucretius, Cicero, and Horace, and other works. His commentary on Horace is more particularly eſteemed.

LAMELLÆ, in natural hiſtory, denotes very thin plates, ſuch as the ſcales of fiſhes are compoſed of.

LAMENTATIONS, a canonical book of the Old Teſtament, written by the prophet Jeremiah. The two firſt chapters of this book are employed in deſcribing the calamities of the ſiege of Jeruſalem. In the third, the author deplores the perſecutions he himſelf had ſuffered. The fourth turns upon the deſolation of the city and temple, and the misfortune of Zedekiah. The fifth chapter is a prayer for the Jews in their diſperſion and captivity; and, at the end of all, he ſpeaks of the cruelty of the Edomites, who had inſulted Jeruſalem in her miſery. The firſt four chapters of the Lamentations are an abcedary, every verſe or couplet beginning with one of the letters of the Hebrew alphabet, in the alphabetical order.

LAMIÆ, Λαμιαι, among the ancients, a kind of dæmons, or evil ſpirits, who, under the form of beautiful women, are ſaid to have devoured children.

Horace makes mention of them in his Art of Poetry. Some authors call them *laniæ, à laniando.* Philoſtratus ſays, they are alſo called *larvæ*, or *lemures*, as if they were all the ſame thing. Bochart will have the word to be *Phœnician*, and derives it from לחם "to devour;" alleging the fable of the lamiæ came from Libya.

LAMINÆ, in phyſiology, thin plates, or tables, whereof any thing conſiſts; particularly the human ſkull, which are two, the one laid over the other.

LAMIUM, DEAD-*Nettle;* a genus of the gymnoſpermia order, belonging to the didynamia claſs of plants. There are eight ſpecies; of which only two, *viz.* the album, white archangel, or dead-nettle, and the purpureum or red archangel, are remarkable; and that only becauſe their young leaves are boiled and eaten in ſome places like greens. The firſt grows frequently under hedges and in waſte places; the ſecond is very common in gardens and corn-fields. None of the ſpecies are cultivated except merely for the ſake of variety.

LAMMAS-DAY, the firſt of Auguſt; ſo called, as ſome will have it, becauſe lambs then grow out of ſeaſon, as being too big. Others derive it from a Saxon word, ſignifying "loaf-maſs," becauſe on that day our fore-fathers made an offering of bread made with new wheat.

On this day the tenants who formerly held lands of the cathedral church in York, were bound by their tenure to bring a lamb alive into the church at high-maſs.

LAMOIGNON (Chretien Francis de) marquis of Baville, and preſident of the parliament of Paris, was born in 1644. His father would not truſt the education of his ſon to another, but took it upon himſelf, and entered into the minuteſt particulars of his firſt ſtudies: the love of letters and a ſolid taſte were the fruits the ſcholar reaped from this valuable education. He learned rhetoric in the Jeſuits college, made the tour of England and Holland, and returned home the admiration of thoſe meetings regularly held by perſons of the firſt merit, at his father's houſe. The ſeveral branches of literature were however only his amuſement: the law was his real employ; and the eloquence of the bar at Paris owes its reformation from bombaſt and affected erudition, to the plain and noble pleadings of M. Lamoignon. He was appointed the king's advocate general in 1673; which he diſcharged until 1698, when the preſidentſhip of the parliament was conferred on him. This poſt he held nine years, when he was allowed to reſign in favour of his eldeſt ſon: he was choſen preſident of the royal academy of inſcriptions in 1705. The only work he ſuffered to ſee the light was his *Pleader*, which is a monument of his eloquence and inclination to polite letters. He died in 1709.

LAMP, a veſſel containing oil, with a lighted wick.

Dr St Clair, in the Philoſ. Tranſ. n° 245, gives the deſcription of an improvement on the common lamp. He propoſes that it ſhould be made two or three inches deep, with a pipe coming from the bottom almoſt as high as the top of the veſſel. Let it be filled ſo high with water, that it may cover the hole of the pipe at the bottom, that the oil may not get in at the pipe and ſo be loſt. Then let the oil be poured in, ſo as to fill the veſſel almoſt brim-full; and to the veſſel muſt be adapted a cover having as many holes as there are to be wicks. When the veſſel is filled and the wicks lighted, if water falls in by drops at the pipe, it will always keep the oil at the ſame height or very near it; the weight of the water being to that of the oil as $20\frac{8}{11}$ to 19, which in two or three inches makes no great difference. If the water runs faſter than the oil waſtes, it will only run over at the top of the pipe, and what does not run over will come under the oil, and keep it at the ſame height.

From experiments made in order to aſcertain the expence of burning chamber-oil in lamps, it appears, that a taper-lamp, with eight threads of cotton in the wick, conſumes in one hour $\frac{325}{1000}$ oz. of ſpermaceti oil, at 2 s. 6 d. per gallon; ſo that the expence of burning 12 hours is 4.57 farthings. This lamp gives as good a light as the candles of eight and ten in the pound; it ſeldom wants ſnuffing, and caſts a ſtrong and ſteady light. A taper, chamber, or watch lamp, with four ordinary threads of cotton in the wick, conſumes 0.1664 oz. of ſpermaceti oil in one hour; the oil at 2 s. 6 d. per gallon, makes the expence of burning 12 hours only 2.34 farthings.

Perpetual LAMPS. The teſtimonies of Pliny, St Auſtin, and others, have led many to believe that the ancients had the invention of perpetual lamps; and ſome moderns have attempted to find out the ſecret, but hitherto in vain. Indeed it ſeems no eaſy matter to find out either a perpetual wick, or a perpetual oil. The curious may read Dr Plot's conjectures on the ſubject in the Philoſ. Tranſ. n° 166; or in Lowthorp's abridgement, vol. iii. p. 636. But few, we believe, will give themſelves the trouble of ſearching for the ſecret, when they conſider, that the credulity of Pliny and of St Auſtin was ſuch, that their teſtimony does not ſeem a ſufficient inducement to us to believe that a lamp was ever formed to burn 1500 or 1000 years: much leſs is it credible that the ancients had the ſecret of making one burn for ever.

Rolling-LAMP, a machine AB, with two moveable circles DE, FG, within it; whoſe common centre of motion and gravity is at K, where their axis of motion croſs one another. If the lamp KC, made pretty heavy and moveable about its axis HI, and whoſe centre of gravity is at C, be fitted within the inner circle, the common centre of gravity of the whole machine will fall between K and C; and by reaſon of the pivots A, B, D, E, H, I, will be always at liberty to deſcend: hence, though the whole machine be rolled along the ground, or moved in any manner, the flame will always be uppermoſt, and the oil cannot ſpill.

It is in this manner they hang the compaſs at ſea; and thus ſhould all the moon-lanterns be made, that are carried before coaches, chaiſes, and the like.

LAMP-*Black*, among colourmen. See COLOUR-*Making*, n° 17, 18.—Subſtances painted with lamp-black and oil, are found to reſiſt the effects of electricity to a ſurpriſing degree; ſo that in many caſes even lightning itſelf ſeems to have been repelled by them. See LIGHTNING; THUNDER; CHEMISTRY, n° 112. and

Electricity, n° 112.

LAMPADARY, an officer in the ancient church of Conſtantinople, ſo called from his employment, which was to take care of the lamps, and to carry a taper before the emperor or patriarch when they went to church or in proceſſion.

LAMPAS, in farriery. See there, § xxxiv.

LAMPREY. See Petromyzon.

LAMPRIDIUS (Ælius), a Latin hiſtorian, who lived under the emperors Diocleſian and Conſtantine the Great. We have, of his writing, the lives of four emperors, Antoninus, Commodus, Diadumenus, and Heliogabalus. Some attribute the life of Alexander Severus to him; but the MS in the palatine library aſcribes it to Spartian.

Lampridius (Benedict), of Cremona, a celebrated Latin poet of the 16th century. He taught Greek and Latin at Rome and at Padua, until he was invited to Mantua by Frederic Gonzaga to undertake the tuition of his ſon. We have epigrams and lyric verſes of this writer, both in Greek and Latin, which were printed ſeparately, as well as among the *Deliciæ* of the Italian poets.

LAMPSACUS, Lampsacum, (anc. geog.) a conſiderable city of Myſia; more anciently called *Pityea*, (Homer), becauſe abounding in pine-trees, a circumſtance confirmed by Pliny; ſituate at the north end, or entrance of the Helleſpont, into the Propontis, with a commodious harbour, oppoſite to Callipolis in the Thracian Cherſoneſus. It was aſſigned by Artaxerxes to Themiſtocles, for furniſhing his table with wine, in which the country abounded. It was ſaved from the ruin threatened by Alexander becauſe in the intereſt of Perſia, by the addreſs of Anaximenes the hiſtorian, ſent by his fellow-citizens to avert the king's diſpleaſure; who hearing of it, ſolemnly declared he would do the very reverſe of Anaximenes's requeſt, who therefore begged the king utterly to deſtroy it, which he could not do becauſe of his oath. *Lampſacius* the epithet, denoting *laſcivus*, the character of the people: ſtill called *Lampſacus*. E. Long. 28°. N. Lat. 40. 12.

LAMY, or Lami, (Bernard), was born at Mons in 1640, and ſtudied there under the fathers of the oratory; with whoſe way of life he was ſo pleaſed, that he went to Paris in 1658, and entered into the inſtitution. He had a great taſte for the ſciences, and ſtudied them all; he entered into the prieſthood in 1667, and taught philoſophy at Saumur and Angiers; which latter place he was obliged to quit by an order procured from court for adopting the new philoſophy inſtead of that of Ariſtotle. In 1676, he went to Grenoble, where cardinal Camus was then biſhop; who conceived ſuch an eſteem for him, that he retained him near his perſon, and derived conſiderable ſervices from him in the government of his dioceſe. After continuing many years there, he went to reſide at Rouen, where he died in 1715. He wrote ſeveral ſcientifical works, beſides others in divinity.

LANCARIM spring, the name of a medicated water of Glamorganſhire. It has its name from a town near which it riſes; and has been very long famous in the place for the cure of the king's evil. The body of water is about an ell broad, and runs between two hills covered with wood. About 12 yards from this ſpring the rill falls from a rock of about eight or nine feet high, with a conſiderable noiſe. The ſpring is very clear, and riſes out of a pure white marle. The cures that have been performed there, are proofs of a real power in the water; but there is ſome queſtion whether the water, or its motion and coldneſs, does the good; for the people who come for relief always drink of the ſprink, and bathe the part afterward in the fall below. It is generally ſuppoſed, that the limeſtone rocks communicate a virtue to it by which it cures internally; but it has been often found, that the holding a limb diſordered with the evil in the ſtrong current of a mill-tail has cured it, and there is the ſame advantage in the fall of this water.

LANCASHIRE, a large maritime province of England, waſhed by the Iriſh ſea on the weſt, bordering on the north with part of Cumberland and Weſtmoreland; bounded on the eaſt by the Weſt Riding of Yorkſhire, and on the weſt by Cheſhire; extending 45 miles in length from north to ſouth, and 32 miles in breadth from eaſt to weſt; comprehending ſix hundreds, 60 pariſhes, 27 market-towns, and about 240000 inhabitants.

The eaſtern parts of the province are rocky, and in the northern diſtricts we ſee many ſingle mountains remarkably high, ſuch as Ingleborough-hill, Cloughbo-hill, Pendle-hill, and Longridge-hill. Nor is there any want of wood in this country, either for timber or fuel; witneſs Wierſdale foreſt and Bowland foreſt to the northward, and Simon's wood in the ſouthern part of Lancaſhire.

This country is well watered with rivers and lakes. Among the former we number the Merſey, the Ribble, the Wier, the Lon, the Ken, and the Irke. The Merſey ſprings among the mountains of Derbyſhire, is ſwelled by ſeveral ſtreams, winds along the borders of Lancaſhire, which it divides from Cheſhire, and runs into the ſea at Liverpool. The Ribble, riſing in Yorkſhire, enters this county at Clithero, waſhes the town of Preſton, and having received the ſmaller ſtreams of the Hadder, the Whalley, the Darwent, and the Lea, diſembogues itſelf into the Iriſh ſea at Lethum. The Wier is a continuation of the Calder, which derives its ſource from the foreſt of Wierſdale, in the northern part of the county, and, being augmented by divers ſmaller ſtreams, runs into the ſea at Cockerham. The Irke is an inconſiderable rivulet, that forms the beginning of the Irwel and Merſey, which are its continuations; and is noted for producing the fatteſt eels in England.

Among the lakes or meres of Lancaſhire, we reckon the Winander-mere, and the Keningſton-mere, which, tho' neither ſo large nor ſo well ſtored with fiſh, yet affords plenty of excellent char. There was on the ſouth ſide of the Ribble another lake called *Marton*, ſeveral miles in circumference, which is now drained, and converted into paſture-ground. In this operation, the workmen found a great quantity of fiſh, together with eight canoes, reſembling thoſe of America, ſuppoſed to have been uſed by the ancient Britiſh fiſhermen. Beſides theſe meres or lakes, this county abounds with moraſſes and moſſes, from which the inhabitants dig excellent peat or turf for fuel, as well as marle for manuring the ground, and trunks of old fir-trees, ſuppoſed to have lain there ſince the general deluge. Some of theſe are ſo impregnated with turpentine, that, when divided into ſplinters, they burn like candles, and are uſed for that purpoſe by the common people. There is a great variety of mineral waters in this county, ſome periodical ſprings, and one inſtance of a violent eruption of water at Kirky in Fourneſs. The moſt remarkable chalybeate ſpaws are thoſe of Latham, Wigan, Stockport, Burnley, Bolton, Plumpton, Middleton, Strangeways, Lancaſter, Larbrick, and Chorly. At Ancliff, in the neighbourhood of Wigan, is a fountain called the *Burning Well*, from whence a bituminous vapour exhales, which being ſet on fire by a candle burns like brandy, ſo as to produce a heat that will boil eggs to a hard conſiſtence, while the water itſelf retains its original coldneſs *. There is at Barton a fountain of ſalt-water, ſo ſtrongly impregnated with the mineral, as to yield ſix times as much as can be extracted from the ſame quantity of ſea-water. At Rogham, in Fourneſs, there is a purging ſaline fountain; and in the neighbourhood of Raſſal, where the ground is frequently overflowed by the ſea, a ſtream deſcends from Hagbur-hills, which, in the ſpace of ſeven years, is ſaid to convert the marle into a hard freeſtone fit for building. The air of Lancaſhire is pure, healthy, and agreeable, except among the fens and on the ſea-ſhore, where the atmoſphere is loaded with putrid exhalations producing malignant and intermitting fevers, ſcurvy, rheumatiſm, dropſy, and conſumption. The ſoil is various in different parts of the county, poor and rocky on the hills, fat and fertile in the valleys and champaign country. The colour of the peat is white, grey, or black, according to the nature of the compoſition and the degree of putrefaction which the ingredients have undergone. There is a bituminous earth about Ormſkirk, that ſmells like the oil of amber, and indeed yields an oil of the ſame nature, both in its ſcent and medicinal effects, which moreover reduces raw fleſh to the conſiſtence of mummy: this earth burns like a torch, and is uſed as ſuch by the country people. The metals and minerals of this county conſiſt of lead, iron, copper, antimony, black lead, lapis calaminaris, ſpar, green vitriol, allum, ſulphur, pyrites, freeſtone, and pit and cannel coal.

The level country produces plenty of wheat and barley, and the ſkirts of the hills yield good harveſts of excellent oats: very good hemp is raiſed in divers parts of the province; and the paſture which grows in the valley is ſo peculiarly rich, that the cattle which feed upon it are much larger and fatter than in any other part of England. There is not any part of the world better ſupplied than Lancaſhire with proviſions of all kinds at a very reaſonable rate; ſuch as beef, veal, mutton, lamb, pork, poultry, and game of all ſorts, caught upon the moors, heaths, and commons, in the hilly part of the ſhire. Beſides the ſea-fowl common to the ſhires of England, ſuch as ducks, eaſterlings, teal, and plover, many uncommon birds are obſerved on the coaſt of Lancaſhire, the ſea-crow, variegated with blue and black, the puffin, the cormorant, the curlew, the razor-bill, the copped wren, the red-ſhanks, the ſwan, the tropic bird, the king's-fiſher, &c.

Lancaſhire was erected into a county-palatine by Edward III. who conferred it as an appenage on his ſon John of Ghaunt, thence called *duke of Lancaſter*: but the duchy contained lands that are not in Lancaſhire, and, among other demeſnes, the palace of the Savoy, and all that diſtrict in London, which indeed belong to it at this day. The revenues of this duchy are adminiſtered by a court which ſits at Weſtminſter, and a chancery-court at Preſton, which has a ſeal diſtinct from that of the county-palatine. The title of *Lancaſter* diſtinguiſhed the poſterity of John of Ghaunt from thoſe of his brother, who ſucceeded to the duchy of York, in their long and bloody conteſt for the crown of England.—Lancaſhire ſends two members to parliament for the county; and 12 for the ſix boroughs of Lancaſter, Preſton, Newton, Wigan, Clithero, and Liverpool.

LANCASTER, the capital of the county of Lancaſhire in England, is pleaſantly ſituated on the ſouth ſide of the river Lun, over which there is a handſome ſtone-bridge ſupported by five arches. It is an ancient town, and is ſuppoſed to have been the *Longovicum* of the Romans. It contains ſeveral good ſtreets with well-built houſes; but has only one pariſh-church, which is large and handſome, and is ſeated on the ſide of a high hill, on the top of which ſtands the caſtle that is now made uſe of as a priſon. It is a place of no great trade, but is a corporation, and ſends two members to parliament. The chief ornaments of the town are the church, caſtle, bridge, and town-hall. W. Long. 2. 44. N. Lat. 54. 5.

LANCE, in ichthyology. See AMMODYTES.

LANCEOLATED LEAF. See BOTANY, p. 1296.

LANCET, a chirurgical inſtrument, ſharp-pointed and two-edged, chiefly uſed for opening veins in the operation of phlebotomy or bleeding; alſo for laying open abſceſſes, tumours, &c.

LANCH, a peculiar ſort of long boat, uſed by the French, Spaniſh, and Italian ſhipping, and in general by thoſe of other European nations, when employed in voyaging in the Mediterranean ſea.

A lanch is proportionably longer, lower, and more flat-bottomed than the long-boat; it is by conſequence leſs fit for ſailing, but better calculated for rowing and approaching a flat ſhore. Its principal ſuperiority to the long-boat, however, conſiſts in being, by its conſtruction, much fitter to under-run the cable; which is a very neceſſary employment in the harbours of the Levant ſea, where the cables of different ſhips are faſtened acroſs each other, and frequently render this exerciſe extremely neceſſary.

LANCH, is alſo the movement by which a ſhip or boat deſcends from the ſhore, either when ſhe is at firſt built, or at any time afterwards.

To facilitate the operation of lanching, and prevent any interruption therein, the ſhip is ſupported by two ſtrong platforms, laid with a gradual inclination to the water, on the oppoſite ſides of her keel, to which they are parallel. Upon the ſurface of this declivity are placed two correſponding ranges of planks, which compoſe the baſe of a frame called the *cradle*, whoſe upper-part envelopes the ſhip's bottom, whereto it is ſecurely attached. Thus the lower ſurface of the cradle, conforming exactly to that of the frame below, lies flat upon it, lengthways, under the oppoſite ſides of the ſhip's bottom; and as the former is intended to ſlide downwards upon the latter, carrying the ſhip along with it, the planes or faces of both are well daubed with ſoap and tallow.

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* See BURNING *Well*.

The neceſſary preparations for the lanch being made, all the blocks and wedges, by which the ſhip was formerly ſupported, are driven out from under her keel, till her whole weight gradually ſubſides upon the platforms above deſcribed, which are accordingly called the *ways*. The ſhores and ſtanchions, by which ſhe is retained upon the ſtocks till the period approaches for lanching, are at length cut away, and the ſcrews applied to move her, if neceſſary. The motion uſually begins on the inſtant when the ſhores are cut, and the ſhip ſlides downward along the ways, which are generally prolonged under the ſurface of the water, to a ſufficient depth to float her as ſoon as ſhe arrives at the fartheſt end thereof.

When a ſhip is to be lanched, the enſign, jack, and pendant, are always hoiſted, the laſt being diſplayed from a ſtaff erected in the middle of the ſhip.

Ships of the firſt rate are commonly conſtructed in dry docks, and afterwards floated out, by throwing open the floot-gates, and ſuffering the tide to enter, as ſoon as they are finiſhed.

LANCEROTA, one of the Canary iſlands, ſubject to Spain, and ſituated in W. Long. 13. 5. N. Lat. 28. 40. It is about 32 miles in length and 22 in breadth. The ancient inhabitants were negroes, very ſtrong, active, and ſwift of foot. There is a ridge of hills runs quite through it, on which are fed a good number of ſheep and goats. They have but few black cattle, ſtill fewer camels, and a very few ſmall horſes. The valleys are dry and ſandy, yet they produce a ſmall quantity of wheat and barley. This iſland was firſt diſcovered in 1417. In 1596, it was taken by the Engliſh under the command of the earl of Cumberland; after which it was better fortified than before. There is in this iſland a city called alſo *Lancerota*, which, at the time the earl of Cumberland was there, conſiſted only of about 100 houſes, all poor buildings, generally of one ſtory, and covered with reeds or ſtraw laid upon a few rafters, and over all a coat of dirt hardened by the ſun. There was alſo a church which had no windows in it, and was ſupplied with light only by the door.

LANCIANO, a conſiderable town of Italy, in the kingdom of Naples, and in the Hither Abruzzo, with an archbiſhop's ſee; famous for its fairs which are held in July and Auguſt. It is ſeated on the river Feltrino near that of Sangor. E. Long. 15. 5. N. Lat. 42. 12.

LANCISI (John Marca), an eminent Italian phyſician, was born at Rome in 1654. From his earlieſt years he had a turn to natural hiſtory; and ſtudied botany, chemiſtry, anatomy, and medicine, with great vigour. In 1688, Pope Innocent XI. appointed him his phyſician and private chamberlain, notwithſtanding his youth; and cardinal Akieri Camerlinga made him his vicar for the inſtallation of doctors in phyſic, which Pope Clement XI. gave him as long as he lived, as well as continued to him the appointments conferred on him by his predeceſſor. He died in 1720, after giving his fine library of more than 20,000 volumes to the hoſpital of the Holy Ghoſt, for the uſe of the public. This noble benefaction was opened in 1716, in the preſence of the pope and moſt of the cardinals. He wrote many works which are eſteemed the principal of which were collected together, and printed at Geneva in 1718, in two volumes quarto.

LANCRET (Nicholas), a French painter born at Paris in 1690. He was the diſciple of Watteau and Gillot, and painted converſations. He was indefatigable in his profeſſion, executed with great truth after Nature, grouped his figures well, and handled a light pencil. He died in 1743.

LANCRINCK (Proſper Henry), a painter of conſiderable note, born in 1628, and educated in the ſchool at Antwerp. He ſtudied principally after Titian and Salvator Roſa; and met with encouragement in England ſuitable to his merit. His landſcapes ſhew a good invention, good colouring and harmony: they are chiefly of rough rude country, with broken ground and uncommon ſcenery. He gave way too much to pleaſure, and died in 1692.

LAND, in a general ſenſe, denotes *terra firma*, as diſtinguiſhed from *ſea*.

LAND, in a limited ſenſe, denotes arable ground. See AGRICULTURE.

LAND, in the ſea-language, makes part of ſeveral compound terms; thus, *land-laid*, or, *to lay the land*, is juſt to loſe ſight of it. *Land-locked*, is when land lies all round the ſhip, ſo that no point of the compaſs is open to the ſea. If ſhe is at anchor in ſuch a place, ſhe is ſaid to ride *land-locked*, and is therefore concluded to ride ſafe from the violence of the winds and tides. *Land-mark*, any mountain, rock, ſteeple, tree, &c. that may ſerve to make the land known at ſea. *Land is ſhut in*, a term uſed to ſignify that another point of land hinders the ſight of that from which the ſhip came. *Land-to*, or the ſhip *lies land-to*; that is, ſhe is ſo far from ſhore, that it can only juſt be diſcerned. *Land turn* is a wind that in almoſt all hot countries blows at certain times from the ſhore in the night. *To ſet the land*; that is, to ſee by the compaſs how it bears.

LAND-*Tax*, one of the annual taxes raiſed upon the ſubject. See TAX.

The land-tax, in its modern ſhape, has ſuperſeded all the former methods of rating either property, or perſons in reſpect of their property, whether by tenths or fifteenths, ſubſidies on land, hydages, ſcutages, or talliages; a ſhort explication of which will, however, greatly aſſiſt us in underſtanding our ancient laws and hiſtory.

Tenths, and fifteenths, were temporary aids iſſuing out of perſonal property, and granted to the king by parliament. They were formerly the real tenth or fifteenth part of all the moveables belonging to the ſubject; when ſuch moveables, or perſonal eſtates, were a very different and a much leſs conſiderable thing than what they uſually are at this day. Tenths are ſaid to have been firſt granted under Henry II. who took advantage of the faſhionable zeal for croiſaides to introduce this new taxation, in order to defray the expence of a pious expedition to Paleſtine, which he really or ſeemingly had projected againſt Saladine emperor of the Saracens, whence it was originally denominated the *Saladine tenth*. But afterwards fifteenths were more uſually granted than tenths. Originally the amount of theſe taxes was uncertain, being levied by aſſeſſments new-made at every freſh grant of the commons, a commiſſion for which is preſerved by Matthew Paris: but it was at length reduced to a certainty in the eighth year of Edward III. when, by virtue of the king's commiſſion, new taxations were made of every townſhip, borough, and city in the kingdom, and recorded in the exchequer; which rate was, at the time, the fifteenth part of the value of every townſhip, the whole amounting to about 29000 l. and therefore it ſtill kept up the name of a *fifteenth*, when, by the alteration of the value of money and the increaſe of perſonal property, things came to be in a very different ſituation. So that when, of later years, the commons granted the king a fifteenth, every pariſh in England immediately knew their proportion of it; that is, the ſame identical ſum that was aſſeſſed by the ſame aid in the eighth of Edward III.; and then raiſed it by a rate among themſelves, and returned it into the royal exchequer.

The other ancient levies were in the nature of a modern land-tax: for we may trace up the original of that charge as high as to the introduction of our military tenures; when every tenant of a knight's fee was bound, if called upon, to attend the king in his army for 40 days in every year. But this perſonal attendance growing troubleſome in many reſpects, the tenants found means of compounding for it, by firſt ſending others in their ſtead, and in proceſs of time by making a pecuniary ſatisfaction to the crown in lieu of it. This pecuniary ſatisfaction at laſt came to be levied by aſſeſſments, at ſo much for every knight's fee, under the name of ſcutages; which appear to have been levied for the firſt time in the fifth year of Henry II. on account of his expedition to Toulouſe, and were then (Sir Wm. Blackſtone apprehends) mere arbitrary compoſitions, as the king and the ſubject could agree. But this precedent being afterwards abuſed into a means of oppreſſion, (by levying ſcutages on the landholders by the king's authority only, whenever our kings went to war, in order to hire mercenary troops and pay their contingent expences) it became thereupon a matter of national complaint; and king John was obliged to promiſe in his *magna carta*, that no ſcutage ſhould be impoſed without the conſent of the common council of the realm.

Of the ſame nature with ſcutages upon knights-fees were the aſſeſſments of hydage upon all other lands, and of talliage upon cities and burghs. But they all gradually fell into diſuſe, upon the introduction of ſubſidies, about the time of king Richard II. and king Henry IV. Theſe were a tax, not immediately impoſed upon property, but upon perſons in reſpect of their reputed eſtates, after the nominal rate of 4 *s.* in the pound for lands, and 2 *s.* 6 *d.* for goods; and for thoſe of aliens in a double proportion. But this aſſeſſment was alſo made according to an ancient valuation; wherein the computation was ſo very moderate, and the rental of the kingdom was ſuppoſed to be ſo exceeding low, that one ſubſidy of this ſort did not, according to Sir Edward Coke, amount to more than 70,000 l. whereas a modern land-tax at the ſame rate produces two millions. It was anciently the rule never to grant more than one ſubſidy and two fifteenths at a time: but this rule was broke through for the firſt time on a very preſſing occaſion, the Spaniſh invaſion in 1588; when the parliament gave queen Elizabeth two ſubſidies and four fifteenths. Afterwards, as money ſunk in value, more ſubſidies were given; and we have an inſtance, in the firſt parliament of 1640, of the king's deſiring 12 ſubſidies of the commons, to be levied in three years; which was looked upon as a ſtartling propoſal: though lord Clarendon tells us, that the ſpeaker, ſerjeant Glanvile, made it manifeſt to the houſe, how very inconſiderable a ſum 12 ſubſidies amounted to, by telling them he had computed what he was to pay for them; and when he named the ſum, he being known to be poſſeſſed of a great eſtate, it ſeemed not worth any farther deliberation. And, indeed, upon calculation, we ſhall find, that the total amount of theſe 12 ſubſidies, to be raiſed in three years, is leſs than what is now raiſed in one year by a land-tax of 2 *s.* in the pound.

The grant of ſcutages, talliages, or ſubſidies by the commons did not extend to ſpiritual preferments; thoſe being uſually taxed at the ſame time by the clergy themſelves in convocation: which grants of the clergy were confirmed in parliament; otherwiſe they were illegal, and not binding; as the ſame noble writer obſerves of the ſubſidies granted by the convocation, which continued ſitting after the diſſolution of the firſt parliament in 1640. A ſubſidy granted by the clergy was after the rate of 4 *s.* in the pound, according to the valuation of their livings in the king's books; and amounted, Sir Edward Coke tells us, to about 20,000 *l.* While this cuſtom continued, convocations were wont to ſit as frequently as parliaments: but the laſt ſubſidies, thus given by the clergy, were thoſe confirmed by ſtatute 15 Car. II. c. 10. ſince which another method of taxation has generally prevailed, which takes in the clergy as well as the laity: in recompenſe for which, the beneficed clergy have from that period been allowed to vote at the election of knights of the ſhire; and thenceforward alſo the practice of giving eccleſiaſtical ſubſidies hath fallen into total diſuſe.

The lay-ſubſidy was uſually raiſed by commiſſioners appointed by the crown, or the great officers of ſtate: and therefore in the beginning of the civil wars between Charles I. and his parliament, the latter, having no other ſufficient revenue to ſupport themſelves and their meaſures, introduced the practice of laying weekly and monthly aſſeſſments of a ſpecific ſum upon the ſeveral counties of the kingdom; to be levied by a pound-rate on lands and perſonal eſtates: which were occaſionally continued during the whole uſurpation, ſometimes at the rate of 120,000 l. a month, ſometimes at inferior rates. After the Reſtoration the ancient method of granting ſubſidies, inſtead of ſuch monthly aſſeſſments, was twice, and twice only, renewed; viz. in 1663, when four ſubſidies were granted by the temporalty, and four by the clergy; and in 1670, when 800,000 l. was raiſed by way of ſubſidy, which was the laſt time of raiſing ſupplies in that manner. For, the monthly aſſeſſments being now eſtabliſhed by cuſtom, being raiſed by commiſſioners named by parliament, and producing a more certain revenue; from that time forwards we hear no more of ſuſidies, but occaſional aſſeſſments were granted as the national emergencies required. Theſe periodical aſſeſſments, the ſubſidies which preceded them, and the more ancient ſcutage, hydage, and talliage, were to all intents and purpoſes a land-tax; and the aſſeſſments were ſometimes expreſsly called ſo. Yet a popular opinion has prevailed, that the land-tax was firſt introduced in the reign of king William III.; becauſe in the year 1692 a new aſſeſſment or valuation of eſtates was made throughout the kingdom: which, though by no means a perfect one, had this effect, that a ſupply of 500,000 l. was equal to 1 s. in the pound of the value of eſtates given in. And, according to this enhanced valuation, from the year 1693 to the preſent, a period of above 80 years, the land-tax has continued an annual charge upon the ſubject; above half the time at 4s. in the pound, ſometimes at 3s. ſometimes at 2s. twice at 1s. but without any total intermiſſion. The medium has been 3 s. 3 d. in the pound; being equivalent to 23 ancient ſubſidies, and amounting annually to more than a million and a half of money. The method of raiſing it is by charging a particular ſum upon each county, according to the valuation given in, A. D. 1692; and this ſum is aſſeſſed and raiſed upon individuals (their perſonal eſtates, as well as real, being liable thereto) by commiſſioners appointed in the act, being the principal land-holders in the county, and their officers.

LANDAFF, a town or village of Glamorganſhire in South-Wales, with a biſhop's ſee, and on that account has the title of a *city*. It is ſeated upon an aſcent on the river Taff, or Tave, near Cardiff; but the cathedral ſtands on a low ground, and is a large, ſtately building. W. Long. 3. 20. N. Lat. 51. 33.

LANDAU, an ancient, handſome, and very ſtrong town of France, in Lower Alſace. It was formerly imperial, and belonged to Germany, till the treaty of Munſter, when it was given up to France. It is ſeated on the river Zurich, in a pleaſant fertile country. E. Long. 8. 12. N. Lat. 49. 12.

LANDEN, a town of the Auſtrian Netherlands, in Brabant, famous for a battle gained over the French by the allies, in July 1693, when 20,000 men were killed. It is ſeated on the river Beck, in E. Long. 5. 5. N. Lat. 52. 45.

LANDERNEAU, a town of France, in Lower Bretagne, ſeated on the river Elboro, 20 miles eaſt of Breſt. In an inn here is a well which ebbs and flows like the ſea, but at contrary times. E. Long. 4. 13. N. Lat. 48. 25.

LANDRECY, a town of the French Netherlands, in Hainault, ceded to France by the treaty of the Pyrenees, and is now very well fortified. It was beſieged by prince Eugene in 1712, but to no purpoſe. It is ſeated on a plain, on the river Sambre, in E. Long. 3. 47. N. Lat. 50. 4.

LANDGRAVE, the German name for a count or earl, that has the government of a province, county, or large tract of land.

LANDGRAVIATE, or Landgravate, the office, authority, juriſdiction, or territory of a landgrave.

LANDSCAPE, See Landskip.

LANDSCROON, a ſea-port town of Sweden, in South-Gothland, and territory of Schonen, ſeated on the Baltic Sea, within the Sound, 22 miles north of Copenhagen. E. Long. 14. 20. N. Lat. 55. 42.

LANDSDOWN, a place in Somerſetſhire, near Bath, with a fair, on October 10. for cattle and cheeſe.

LANDSHUT, a ſtrong town of Germany, in Lower Bavaria, with a ſtrong caſtle, on an adjacent hill. It is ſeated on the river Iſer, in E. Long. 1. 15. N. Lat. 48. 23. There is another ſmall town of the ſame name in Sileſia, and in the duchy of Schweidnitz, ſeated on the river Zieder, which falls into the Bauber: and there is alſo another in Moravia, ſeated on the river Morave, on the confines of Hungary and Auſtria.

LANDSKIP, or Landscape, in painting, the view or proſpect of a country extended as far as the eye will reach. See Painting, n° 11. and 22.; and Drawing, ſect. 10.

LANERK-shire, a county of Scotland, called alſo *Clydeſdale*, from the river Clyde, by which it is watered. It ſtretches 40 miles in length from ſouth-eaſt to north-weſt, and 24 at its utmoſt breadth. It is bounded on the ſouth-eaſt and ſouth, by Annandale and Dumfriesſhire; on the north-weſt and north, by Renfrewſhire and Lennox; on the eaſt and north-eaſt, by Linlithgowſhire and Stirlingſhire; and on the ſouth-eaſt, by part of Midlothian. It is divided into two diſtricts, called the *upper* and *nether ward*; the firſt, which is roughened with hills and barren heaths, may be denominated the *ſhire of Lanerk*, the other be diſtinguiſhed as the *barony of Glaſgow*. The Clyde derives its ſource in the upper ward from Errick-hill, which likewiſe gives riſe to the Tweed and the Annan; and theſe three rivers purſue different courſes. The Clyde falls into the Deucaledonian ſea; the Annan diſcharges itſelf into Solway Frith; and the Tweed runs into the German ocean. The country of Clydeſdale, though in ſome places barren, mountainous, and embrowned with heath, is in general pleaſant and fertile, exhibiting intermingled landſkips of wood and water, hill and valley. Even the naked mountains are rich in minerals, producing abundance of lead-ore, impregnated with a large proportion of ſilver. Such are the mines belonging to the duke of Queenſberry and the earl of Hopeton, at the lead-hills waſhed by the rivulet of Wanlock, which employ ſome thouſands of hands, and enrich the proprietors. On the ſides of the Wanlock, among the ſand and ſoil ſwept down from the mountains by torrents, the labourers find often ſmall pieces of pure virgin gold; certain ſigns that there muſt be a gold-mine in that neighbourhood. Little bits and particles of the ſame precious metal have been found in Grawford-muir, together with large pieces of lapis lazuli. In the reign of James VI. Cornelius, a German alchemiſt, found a gold-mine at Crawford-John in this county, from whence, in thirty days, he ſent half a ſtone weight of pure metal to the mint at Edinburgh. Clydſedale is for the moſt part a corn-country, abounding with oats, barley, rye, and producing a conſiderable quantity of wheat; while the hilly parts afford excellent paſturage and plenty of game. It yields alſo great ſtore of freeſtone, limeſtone, excellent coal, together with peat and turf for fuel. It is adorned with a great number of agreeable ſeats: nor is it deficient in Roman antiquities; for it is penetrated from one end to the other by a Roman cauſeway or military way, called *Watling-ſtreet*, running from Grukſtone to the borders of Renfrew. Clydſdale and Lanerk give the titles of *marquis* and *earl* to the duke of Hamilton, whoſe fortune and influence lie chiefly in this province, which is noted for the number of its gentlemen-landholders. Clydſedale is very populous, inhabited by lowlanders, who profeſs the Preſbyterian religion, in which they have ſignalized their zeal even to a degree of fanaticiſm. The ſhire being an inland country, the common people chiefly employ themſelves in farming, breeding ſheep and cattle, and in the linen manufacture. Lanerk, the county-town, is a royal borough, and ſeat of a preſbytery; but in other reſpects thinly inhabited, and of little importance. It ſtands upon the banks of the Clyde, over which there is a ſtone-bridge built at a great expence by the inhabitants. At the diſtance of a few miles from the town, the river tumbles over a precipice forty feet high, producing a cataract that roars with a hideous noiſe, deafening thoſe who live in its neighbourhood. Below the town, the Clyde is increaſed by the ſmall river Douglas, which waters a diſtrict called *Douglaſdale*, deriving this appellation from the noble family of Douglas, whoſe ancient caſtle is ſituated near the banks of this river. At the diſtance of ten miles from Lanerk ſtand the caſtle and burgh of Crawford-town, remarkable for nothing but giving the title of *earl* to the noble family of Lindſay: a title which, by the death of the late earl, has now devolved to the viſcount of Garnock, ſprung from the ſame houſe, though his ſurname is changed from Lindſay to Crawford in conſequence of a marriage. But the chief place of Lanerkſhire, and indeed the great emporium of the weſt of Scotland, is the large, elegant, and flouriſhing city of GLASGOW; for a deſcription of which, ſee that article.

LANFRANC, an Italian, born at Pavia, became archbiſhop of Canterbury in 1070. He diſputed againſt Berengarius, in the council held at Rome in 1059, and wrote againſt him concerning the real preſence in the euchariſt. He had other diſputes, &c. and died in 1089.

Lanfranc (John), an eminent Italian hiſtory-painter, born at Parma in 1581. He was firſt the diſciple of Auguſtin Caracci; and, after his death, of Hannibal, whoſe taſte in deſign and colouring he ſo happily attained, that he was intruſted to execute ſome of his deſigns in the Farneſian palace at Rome. Theſe he finiſhed in ſo maſterly a manner, that the difference is imperceptible to this day between his work and that of his maſter. His genius directed him to grand compoſitions, which he had a peculiar facility in deſigning and in painting either in freſco or in oil: he did indeed aſpire to the grace of Correggio, but could never arrive at his excellence; his greateſt power being manifeſted in compoſition and foreſhortening. He was deficient in correctneſs and expreſſion; and his colouring, though ſometimes admirable, was frequently too dark. By order of pope Urban VIII. he painted in St Peter's church at Rome the repreſentation of that ſaint walking on the water, which afforded the pope ſo much ſatisfaction, that he knighted him. He died in 1647.

LANGBAINE (Gerard), D. D. a learned Engliſh writer, was born in 1608. He was educated at Queen's-college, Oxford; and became keeper of the archives of that univerſity, provoſt of his college, and doctor of divinity. He was highly eſteemed by archbiſhop Uſher, Selden, and ſeveral other learned men; and died in 1657-8. He publiſhed, 1. An edition of Longinus, in Greek and Latin, with notes. 2. A review of the covenant; and other works.

Langbaine (Gerard), an eminent writer, the ſon of the former, was born in 1656. He was put apprentice to Mr Symonds, bookſeller in St Paul's church-yard: but was ſoon after called from thence by his mother, upon the death of his eldeſt brother, and by her entered a gentleman-commoner of Univerſity-college, Oxford, in 1672. Here he run out a good part of his eſtate; but afterwards corrected his manner of living, and for ſome years lived in retirement near Oxford. During this time he improved his taſte for dramatic poetry; and at firſt wrote ſome ſmall pieces without his name, but afterwards publiſhed ſeveral works which he publicly owned. In 1690 he was elected inferior beadle of arts in the univerſity of Oxford; and, in January following, was choſen ſuperior beadle of law, but died ſoon after in 1692. He wrote, 1. The hunter, a diſcourſe on horſemanſhip. 1. A new catalogue of Engliſh plays, with their beſt editions, and divers remarks on the originals of moſt plays, and on the plagiaries of ſeveral authors. 3. An account on the Engliſh dramatic poets.

LANGELAND (Robert), an old Engliſh poet of the 14th century, and one of the firſt diſciples of Wickliffe the reformer. He is ſaid to have been born in Shropſhire, but we have no account of his family. He wrote *The viſions of Pierce Plowman;* a piece which abounds with imagination and humour, though dreſſed to great diſadvantage in very uncouth verſification and obſolete language. It is written without rhyme, an ornament which the poet has endeavoured to ſupply by making every verſe begin with the ſame letter. Dr Hickes obſerves, that this kind of alliterative verſification was adopted by Langeland from the practice of the Saxon poets, and that theſe viſions abound with Saxoniſms: he ſtyles him *celeberrimus ille ſatirographus, morum vindex acerrimus*, &c. Chaucer and Spencer have attempted imitations of his viſions, and the learned Selden mentions him with honour.

Langeland, an iſland of Denmark in the Baltic ſea, in the ſtreight called *the great belt*, and between Zealand, Saland, and Fyonia. It produces plenty of corn, and the principal town is Rutcoping. E. Long. 11. 10. N. Lat. 55. 0.

LANGETZ, a town of France in Touraine, noted for its excellent melons. It is ſeated on the river Loire, in E. Long. 0. 23. N. Lat. 42. 20.

LANGIONA, a large, rich, and ſtrong town of Aſia, capital of the kingdom of Laos, with a large and magnificent palace, where the king reſides. E. Long. 96. 45. N. Lat. 22. 38.

LANGREL-shot, at ſea, that conſiſting of two bars of iron joined by a chain or ſhackle, and having half a ball of iron fixed on each end; by means of which apparatus, it does great execution among the enemy's rigging.

LANGRES, an ancient and conſiderable town of France, in Champagne, with a biſhop's ſee. The cutlery-wares made here are in high eſteem. It is ſeated on a mountain near the river Mearne, in E. Long. 4. 24. N. Lat. 47. 52.

LANGTON (Stephen), was born in England, but educated at Paris, and was greatly eſteemed for his learning by the king and nobility of France. He was chancellor of Paris, a cardinal of Rome, and in the reign of king John was made archbiſhop of Canterbury by Pope Innocent III. in oppoſition both to the monks of Canterbury and to the king. Langton was one of the moſt illuſtrious men of his age for learning; and continued archbiſhop 22 years, dying in 1228. A catalogue of his books is given by Bale and Tanner.

LANGUAGE, in the moſt general meaning of the word, ſignifies any ſound uttered by an animal, by which it expreſſes any of its paſſions, ſenſations, or affections; but it is more particularly underſtood to denote thoſe various modifications of the human voice, by which the ſeveral ſenſations and ideas of one man are communicated to another.

2. Nature has endowed every animal with powers ſufficient to communicate to others of the ſame ſpecies ſome of its ſenſations and deſires. The organs of moſt animals are ſo formed, as readily to perceive and underſtand (as far as is neceſſary for their particular ſpecies of exiſtence) the voice of thoſe of their own kind; by means of which they aſſemble together, for the defence or preſervation of the ſpecies. But as they riſe higher in the order of intellectual powers, the powers of expreſſion likewiſe increaſe; and the voice alone, even when endowed with a great extent of modulation, is incapable of conveying all that variety of emotions and ſenſations which on many occaſions are neceſſary to be communicated. In all theſe caſes, motion and geſture are called in to ſupply the defects of the voice. The amorous pigeon does not truſt ſolely to his plaintive cooing, in order to ſoften the rigour of his reluctant mate, but adds to it the moſt ſubmiſſive and expreſſive geſtures; and the faithful dog, finding his voice alone inſufficient to expreſs his joy at meeting with his maſter, is obliged to have recourſe to a variety of endearing actions. But man —the moſt diſtinguiſhed of all the animal creation,— although endowed with a power of voice and expreſſion of countenance and geſture eminently ſuperior to all the creatures of God, finds, that all theſe united are not ſufficient to expreſs the infinite variety of ideas with which his mind is ſtored: for although theſe may powerfully expreſs the paſſions and ſtronger feelings of the mind; yet as they are incapable of expreſſing the ſeveral progreſſive ſteps of perception by which his *reaſon* aſcends from one degree of knowledge to another, he has been obliged to diſcover, by means of his reaſoning faculty, a method of expreſſing with certainty, and communicating with the utmoſt facility, every perception of his mind.—With this view, having obſerved, that beſides the power of uttering ſimple ſounds, and the ſeveral variations of theſe into acute or grave, open or ſhrill, &c. by which his ſtronger feelings were naturally expreſſed, he was likewiſe endowed with a power of ſtopping or interrupting theſe ſounds, by certain cloſings of the lips with one another, and of the tongue with the palate, &c. he has taken advantage of theſe circumſtances, and formed unto himſelf a language capable of expreſſing every perception of the mind; for, by affixing at all times the ſame idea to any one ſound or combination of ſounds thus modified and joined together, he is enabled at any time to excite in the mind of any other perſon an idea ſimilar to that in his own mind, provided the other perſon has been previouſly ſo far inſtructed as to know the particular modification of ſound which has been agreed upon as the *ſymbol* of that idea.—Thus man is endowed with two different ſpecies of language: one conſiſting of tones and geſtures; which, as it is natural to man conſidered as a diſtinct ſpecies of animals, and neceſſary for the preſervation and well-being of the whole, is univerſally underſtood by all mankind: thus laughter and mirth univerſally expreſs cheerfulneſs of mind; while tears, in every part of the globe, diſcover a heart overflowing with tender ſenſations; and the humble tone of ſupplication, or the acute accent of pain, are equally underſtood by the Hurons of America, and by the more refined inhabitants of Europe. The other ſpecies of language, as it is entirely artificial, and derives its power from particular compact, (for before any thing can be recogniſed as the ſymbol of an idea, ſeveral perſons muſt firſt agree that ſuch an idea ſhall be always denoted by this ſymbol), muſt be different in different parts of the globe; and every diſtinct form which it may aſſume, from the different genius of every ſociety who originally formed a particular language for themſelves, will be altogether unintelligible to every other body of men, but thoſe belonging to the ſame ſociety where that language was originally invented, or thoſe who have been at pains to acquire a knowledge of it by means of ſtudy.

3. It is unneceſſary for us here to draw any parallel between the nature of theſe two different ſpecies of language; it being ſufficiently evident, that the artificial language does not debar the uſe of the tones and geſtures of the natural, but tends to aſcertain the meaning of theſe with greater preciſion, and conſequently to give them greater power. Man muſt therefore reap many advantages from the uſe of artificial language, which he could not have enjoyed without it. It is equally plain, that the one, being natural and inſpired, muſt remain nearly the ſame, without making any progreſs to perfection; whereas the other, being entirely the invention of man, muſt have been exceedingly rude and imperfect at firſt, and muſt have arrived by ſlow degrees at greater and greater perfection, as the reaſoning faculties acquired vigour and acuteneſs. It muſt likewiſe be ſubject to perpetual changes, from that variety of incidents which affect all ſublunary things: and theſe changes muſt always correſpond with the change of circumſtances in the people who make uſe of that particular language: for when any particular ſet of ideas become prevalent among any ſociety of men, words muſt be adopted to expreſs them; and from theſe the language muſt aſſume its character. Hence the reaſon why the language of all barbarous and uncivilized people is rude and uncultivated; while thoſe nations which have improved their reaſoning faculties, and made ſome progreſs in the polite arts, have been no leſs diſtinguiſhed by the ſuperiority of their language than by their pre-eminence in other reſpects.—The language of a brave and martial people is bold and nervous, altho'

perhaps rude and uncultivated; while the language of thoſe nations in which luxury and effeminacy prevail, is flowing and harmonious, but devoid of force and energy of expreſſion.

4. But although it may be conſidered as a general rule, that the language of any nation is a very exact index of the ſtate of their minds; yet it admits of ſome particular exceptions. For as man is naturally an imitative animal, and in matters of this kind never has recourſe to invention but through neceſſity; if by ſome accident any part of a nation ſhould be ſeparated from that community to which they belonged, after a language had been invented, they would retain the ſame general ſounds and *idiom* of language with thoſe from whom they were ſeparated; although in proceſs of time theſe two people, by living in countries of a diſſimilar nature, or being engaged in different occupations, and leading a different manner of life, might loſe all knowledge of one another, aſſume a different national character and oppoſite diſpoſitions of mind, and form each of them a diſtinct language to themſelves, totally different in genius and ſtyle, though agreeing with one another in the fundamental ſounds and general idiom: ſo that if this particular idiom, formed before their ſeparation, ſhould happen to be more peculiarly adapted to the genius of one of theſe people than the other, that particular people whoſe natural genius and ſtyle of language was not in concord with the *idiom* which they had adopted, would labour under an inconvenience on this account which they never would be able entirely to overcome; and this inconvenience would prevent their language from attaining ſuch a degree of perfection, as the genius of the people would otherwiſe naturally have led them to. Thus languages have been originally formed; and thus that happy concord of circumſtances which have concurred to raiſe ſome languages to that height of perfection which they have attained may be eaſily accounted for, while many ineffectual efforts have been made to raiſe other languages to the ſame degree of excellence.

5. We ſhall not here enter upon any fruitleſs inquiries, with a view to diſcover if only one language was originally formed, or if any language that we are acquainted with has a greater claim to that much envied pre-eminence than others. We have ſeen, that the diſcovery of language is entirely within our reach, and evidently the invention of man; and therefore that the invention of different languages by different ſocieties, is extremely probable. But it behoved theſe different ſocieties, in proceſs of time, to intermix by war or commerce, and their different languages would likewiſe become mixed. Hence during the ſucceſſion of many ages, while the principles of language were not underſtood, many different languages muſt have been formed, while others may have ſunk into oblivion, eſpecially in thoſe early ages before the invention of letters, which alone could preſerve their memory. In vain, therefore, would we endeavour to diſcover the ſtate of thoſe nations or languages of which we have but obſcure traces in hiſtory. Indeed we have no reaſon to lament our loſs in this particular; for, ſuppoſing ſuch a diſcovery could be made, we could derive little advantage from it, as the antiquity of a language does not neceſſarily imply any degree of excellence, ſeeing we all know that ſome nations have made more progreſs in improving their mental faculties, and refining their language, in a few years, than others have done in many ages. We ſhall therefore leave this ſubject, and proceed to make ſome remarks on the advantages or defects of ſome of thoſe *idioms* of language with which we are moſt intimately acquainted, as this may perhaps lead us to ſome diſcoveries of real utility to ourſelves.

6. As the words IDIOM and GENIUS of a language are often confounded, it will be neceſſary to inform the reader, that by IDIOM we would here be underſtood to mean *that general mode of arranging words into ſentences which prevails in any particular language*; and by the GENIUS of a language we mean to expreſs *the particular ſet of ideas which the words of any language, either from their formation or multiplicity, are moſt naturally apt to excite in the mind of any one who hears it properly uttered.* Thus although the *Engliſh*, *French*, *Italian*, and *Spaniſh* languages, nearly agree in the ſame general IDIOM; yet the particular GENIUS of each is remarkably different: The *Engliſh* is naturally bold, nervous, and ſtrongly articulated; the *French* is weaker, and more flowing; the *Italian* more ſoothing and harmonious; and the *Spaniſh* more grave, ſonorous, and ſtately. Now, when we examine the ſeveral languages which have been moſt eſteemed in Europe, we find that there are only two diſtinct IDIOMS among them which are eſſentially diſtinguiſhed from one another; and all thoſe languages are divided between theſe two idioms, following ſometimes the one, and ſometimes the other, either wholly or in part. The languages which may be ſaid to adhere to the firſt IDIOM, are thoſe which in their conſtruction follow the order of nature; that is, expreſs their ideas in the natural order in which they occur to the mind; the ſubject which occaſions the action appearing firſt; then the action, accompanied with its ſeveral modifications; and, laſt of all, the object to which it has reference.—Theſe may properly be called ANALOGOUS languages; and of this kind are the Engliſh, French, and moſt of the modern languages in Europe.—The languages which may be referred to the other IDIOM, are thoſe which follow no other order in their conſtruction than what the taſte or fancy of the compoſer may ſuggeſt; ſometimes making the object, ſometimes the action, and ſometimes the modification of the action, to precede or follow the other parts. The confuſion which this might occaſion is avoided by the particular manner of *inflecting* their words, by which they are made to refer to the others with which they ought to be connected, in whatever part of the ſentence they occur, the mind being left at liberty to connect the ſeveral parts with one another after the whole ſentence is concluded. And as the words may be here tranſpoſed at pleaſure, thoſe languages may be called TRANSPOSITIVE languages. To this claſs we muſt, in an eſpecial manner, refer the *Latin* and *Greek* languages.—As each of theſe IDIOMS has ſeveral advantages and defects peculiar to itſelf, we ſhall endeavour to point out the moſt conſiderable of them, in order to aſcertain with greater preciſion the particular character and excellence of ſome of thoſe languages now principally ſpoken or ſtudied in Europe.

7. The partiality which our forefathers, at the revival of letters in Europe, naturally entertained for the Greek and Roman languages, made them look upon every diſtinguiſhing peculiarity belonging to them, as

one of the *many* cauſes of the amazing ſuperiority which thoſe language evidently enjoyed above every other at that time ſpoken in Europe.—This blind deference ſtill continues to be paid to them, as our minds are early prepoſſeſſed with theſe ideas, and as we are taught in our earlieſt infancy to believe, that to entertain the leaſt idea of our own language being equal to the Greek or Latin in any particular whatever, would be a certain mark of ignorance or want of taſte.—Their rights, therefore, like thoſe of the church in former ages, remain ſtill to be examined; and we, without exerting our reaſon to diſcover truth from falſehood, tamely ſit down ſatisfied with the idea of their undoubted pre-eminence in every reſpect.—But if we look around us for a moment, and obſerve the many excellent productions which are to be met with in almoſt every language of Europe, we muſt be ſatisfied, that *even theſe* are now poſſeſſed of *ſome* powers which might afford at leaſt a preſumption, that, if they were cultivated with a proper degree of attention, they might, in *ſome reſpects*, be made to rival, if not to excel, thoſe beautiful and juſtly admired remains of antiquity.—Without endeavouring to derogate from their merit, let us, with the cool eye of philoſophic reaſoning, endeavour to bring before the ſacred tribunal of Truth ſome of thoſe opinions which have been moſt generally received upon this ſubject, and reſt the determination of the cauſe on her impartial deciſion.

8. The learned reader well knows, that the ſeveral changes which take place in the arrangement of the words in every TRANSPOSITIVE language could not be admitted without occaſioning great confuſion, unleſs certain claſſes of words were endowed with particular variations, by means of which they might be made to refer to the other words with which they ought naturally to be connected.—From this cauſe proceeds the neceſſity of ſeveral variations of *verbs*, *nouns*, and *adjectives*; which are not in the leaſt eſſential or neceſſary in the ANALOGOUS languages, as we have pretty fully explained under the article GRAMMAR, to which we refer for ſatisfaction on this head. We ſhall in this place conſider, whether theſe variations are an advantage or a diſadvantage to language.

9. As it is generally ſuppoſed, that every language whoſe verbs admit of *inflection*, is on that account much more perfect than one where they are varied by *auxiliaries*; we ſhall, in the firſt place, examine this with ſome degree of attention; and that what is ſaid on this head may be the more intelligible, we ſhall give examples from the Latin and Engliſh languages. We make choice of theſe languages, becauſe the Latin is more purely *tranſpoſitive* than the Greek, and the Engliſh admits of leſs *inflection* than any other language that we are acquainted with.

10. If any preference be due to a language from the one or the other method of *conjugating* verbs, it muſt in a great meaſure be owing to one or more of theſe three cauſes:—Either it muſt admit of a greater variety of ſounds, and conſequently more room for harmonious diverſity of tones in the language:—or a greater freedom of expreſſion is allowed in uttering any ſimple idea, by the one admitting of a greater variety in the arrangement of the words which are neceſſary to expreſs that idea than the other does:—or, laſtly, a greater preciſion and accuracy in fixing the meaning of the perſon who uſes the language, ariſe from the uſe of one of theſe forms above the other:—for, as every other circumſtance which may ſerve to give a diverſity to language, ſuch as the general and moſt prevalent ſounds, the frequent repetition of any one particular letter, and a variety of other circumſtances of that nature, which may ſerve to debaſe a particular language, are not influenced in the leaſt by the different methods of varying the verbs, they cannot be here conſidered. We ſhall therefore proceed to make a compariſon of the advantages or diſadvantages which may accrue to language by inflecting their verbs, with regard to each of theſe particulars.

11. The *firſt* particular that we have to examine is, Whether the one method of expreſſing the variations of a verb admits of a greater variety of ſounds.—In this reſpect the *Latin* ſeems, at firſt view, to have a great advantage over the *Engliſh:* for the words *amo*, *amabam*, *amaveram*, *amavero*, *amem*, &c. ſeem to be more different from one another than the Engliſh tranſlations of theſe, *I love*, *I did love*, *I had loved*, *I ſhall have loved*, *I may love*, &c.; for, although the ſyllable AM is repeated in every one of the firſt, yet as the laſt ſyllable uſually ſtrikes the ear with greater force, and leaves a greater impreſſion than the firſt, it is very probable that many will think the frequent repetition of the word LOVE will, in the laſt inſtance, appear more ſtriking to the ear than the other. We will therefore allow this its full weight, and grant that there is as great, or even a greater difference between the ſounds of the different *tenſes* of a Latin verb, than there is between the words that are equivalent to them in Engliſh. But as we here conſider the variety of ſounds of the language in general, before any juſt concluſion can be drawn, we muſt not only compare the different parts of the ſame verb, but alſo compare the different verbs with one another in each of theſe languages. And here, at firſt view, we perceive a moſt ſtriking diſtinction in favours of the *analogous* language over the *inflected:* for as it would be impoſſible to form a particular ſet of inflections different from one another for each particular verb, all thoſe languages which have adopted this method have been obliged to reduce their verbs into a ſmall number of claſſes; all the words of each of which claſſes, commonly called *conjugations*, have the ſeveral variations of the *modes*, *tenſes*, and *perſons*, expreſſed exactly in the ſame manner, which muſt of neceſſity introduce a ſimilarity of ſounds into the language in general, much greater than where every particular verb always retains its own diſtinguiſhing ſound.—To be convinced of this, we need only repeat any number of verbs in Latin and Engliſh, and obſerve on which ſide the preference with reſpect to variety of ſounds muſt fall.

Pono,	*I put.*	Moveo,	*I move.*
Dono,	*I give.*	Doleo,	*I ail.*
Cano,	*I ſing.*	Lugeo,	*I mourn.*
Sono,	*I ſound.*	Obeo,	*I die.*
Orno,	*I adorn.*	Gaudeo,	*I rejoice.*
Pugno,	*I fight.*	Incipio,	*I begin.*
Lego,	*I read.*	Faceo,	*I make.*
Scribo,	*I write.*	Fodio,	*I dig.*
Puto,	*I think.*	Rideo,	*I laugh.*
Vivo,	*I live.*	Impleo,	*I fill.*
Ambulo,	*I walk.*	Abſtineo,	*I forbear.*

12. The ſimilarity of ſounds is here ſo obvious in

the Latin as to be perceived at the firſt glance: nor can we be ſurpriſed to find it ſo, when we conſider, that all their regular verbs, amounting to 4000 or upwards, muſt be reduced to four conjugations, and even theſe differing but little from one another, which muſt of neceſſity produce the ſameneſs of ſounds which we here perceive; whereas, every language that follows the natural order, like the Engliſh, inſtead of this ſmall number of uniform terminations, have almoſt as many diſtinct ſounds as original verbs in their language.

13. But if, inſtead of the preſent of the indicative mood, we ſhould take almoſt any other tenſe of the Latin verb, the ſimilarity of ſounds would be ſtill more perceptible, as many of theſe tenſes have the ſame termination in all the four conjugations, particularly in the imperfect of the indicative, as below.

Pone-bam;	*I did put,*	*I put.*
Dona-bam;	*I did give,*	*I gave.*
Cane-bam;	*I did ſing,*	*I ſung.*
Sona-bam;	*I did ſound,*	*I ſounded.*
Orna-bam;	*I did adorn,*	*I adorned.*
Pugna-bam;	*I did fight,*	*I fought.*
Lege-bam;	*I did read,*	*I read.*
Scribe-bam;	*I did write,*	*I wrote.*
Puta-bam;	*I did think,*	*I thought.*
Vive-bam;	*I did live,*	*I lived.*
Ambula-bam;	*I did walk,*	*I walked.*
Move-bam;	*I did move,*	*I moved.*
Dole-bam;	*I did ail.*	*I ailed.*
Luge-bam;	*I did mourn,*	*I mourned.*
Obi-bam;	*I did die,*	*I died.*
Gaude-bam;	*I did rejoice,*	*I rejoiced.*
Incipie-bam;	*I did begin,*	*I began.*
Facie-bam;	*I did make,*	*I made.*
Fodie-bam;	*I did dig.*	*I dug.*
Ride-bam;	*I aid laugh,*	*I laughed.*
Imple-bam;	*I did fill,*	*I filled.*
Abſtine-bam;	*I did forbear,*	*I forbore.*

4. It is unneceſſary to make any remarks on the Latin words in this example: but in the Engliſh tranſlation we have carefully marked, in the firſt column, the words without any inflection; and, in the ſecond, have put down the ſame meaning by an inflection of our verb; which we have been enabled to do, from a peculiar excellency in our own language unknown to any other either ancient or modern. Were it neceſſary to purſue this ſubject farther, we might obſerve, that the *perfect* tenſe in all the conjugations ends univerſally in *I*, the *pluperfect* in ERAM, and the *future* in AM or BO; in the ſubjunctive mood, the *imperfect univerſally* in REM, the *perfect* in ERIM, the *pluperfect* in ISSEM, and the *future* in ERO: and as a ſtill greater ſameneſs is obſervable in the different variations for the perſons in theſe tenſes, ſeeing the firſt perſon plural in all tenſes ends in MUS, and the ſecond perſon in TIS, with little variation in the other perſons; it is evident, that, in reſpect of diverſity of ſounds, this method of conjugating verbs by *inflection*, is greatly inferior to the more natural method of expreſſing the various connections and relations of the verbal attributive by different words, uſually called *auxiliaries*.

15. The *ſecond* particular by which the different methods of marking the relation of the verbal attributive can affect language, ariſes from the variety of expreſſions, which either of theſe may admit of in uttering the ſame ſentiment.—In this reſpect, likewiſe, the method of conjugating by inflection ſeems to be deficient. Thus the preſent of the indicative mood in Latin can at moſt be expreſſed only in two ways, viz. SCRIBO, and EGO SCRIBO; which ought perhaps in ſtrictneſs to be admitted only as one: whereas, in Engliſh, we can vary it in four different ways, viz. *1ſt*, I WRITE; *2dly*, I DO WRITE; *3dly*, WRITE I DO; *4thly*, WRITE DO I (A). And if we conſider the further variation which theſe receive in power as well as in ſound, by having the accent placed on the different words; inſtead of four, we will find eleven different variations: thus, *1ſt*, I *write*, with the emphaſis upon the *I*;—*2dly*, I WRITE, with the emphaſis upon the word WRITE. Let any one pronounce theſe with the different accent neceſſary, and he will be immediately ſatisfied that they are not only diſtinct from each other with reſpect to meaning, but alſo with regard to ſound; and the ſame muſt be underſtood of all the other parts of this example.

3. I *do write*,
4. *I* DO *write*,
5. *I do* WRITE,
6. WRITE *I do*,
7. *Write* I *do*.
8. *Write I* DO,
9. WRITE *do I*,
10. *Write* DO *I*.
11. *Write do* I.

None of the Latin tenſes admit of more variations than the two above mentioned: nor do almoſt any of the Engliſh admit of fewer than in the above example; and ſeveral of theſe phraſes, which muſt be conſidered as exact tranſlations of ſome of the tenſes of the Latin verb, admit of many more. Thus the imperfect of the ſubjunctive mood, which in Latin admits of the above two variations, admits in Engliſh of the following:

1. *I might have wrote.*
2. *Wrote I might have.*
3. *Have wrote I might.*
4. *Wrote might have I.*
5. *I wrote might have.*
6. *Have wrote might I.*

And if we likewiſe conſider the variations which may be produced by a variation of the emphaſis, they will be as under.

(A) We are ſufficiently aware, that the laſt variation cannot in ſtrictneſs be conſidered as good language; although many examples of this manner of uſing it in ſerious compoſitions, both in poetry and proſe, might be eaſily produced from the beſt authors in the Engliſh Language.—But however unjuſtifiable it may be to uſe it in ſerious compoſition; yet, when judiciouſly employed in works of humour, this and other forced expreſſions of the like nature produce a fine effect, by giving a burleſque air to the language, and beautifully contraſting it to the purer diction of ſolid reaſoning. The ſagacious Shakeſpeare has, on many occaſions, ſhewed how ſucceſsfully theſe may be employed in compoſition, particularly in drawing the character of *ancient Piſtol*, in Henry V. Without this liberty, Butler would have found greater difficulty in drawing the inimitable character of Hudibras.—Let this apology ſuffice for our having inſerted this and other variations of the ſame kind; which, although they may be often improper for ſerious compoſition, have ſtill their uſe in language.

1. I *might have wrote.*
2. *I* MIGHT *have wrote.*
3. *I might* HAVE *wrote.*
4. *I might have* WROTE.
5. WROTE *I might have.*
6. *Wrote* I *might have.*
7. *Wrote I* MIGHT *have.*
8. *Wrote I might* HAVE.
9. HAVE *wrote I might.*
10. *Have* WROTE *I might.*
11. *Have wrote* I *might.*
12. *Have wrote I* MIGHT.
13. WROTE *might have I.*
14. *Wrote* MIGHT *have I.*
15. *Wrote might* HAVE *I.*
16. *Wrote might have* I.
17. I *wrote might have.*
18. *I* WROTE *might have.*
19. *I wrote* MIGHT *have.*
20. *I wrote might* HAVE.
21. HAVE *wrote might I.*
22. *Have* WROTE *might I.*
23. *Have wrote* MIGHT *I.*
24. *Have wrote might* I.

In all 24 variations, inſtead of two.—If we likewiſe conſider, that the Latins were obliged to employ the ſame word, not only to expreſs "I *might* have wrote," but alſo, "I *could*, I *would*, or I *ſhould* have wrote;" each of which would admit of the ſame variations as the word *might;* we have in all *ninety-ſix* different expreſſions in Engliſh for the ſame phraſe which in Latin admits only of two, unleſs they have recourſe to other forced turns of expreſſion, which the defects of their verbs in this particular has compelled them to invent.

16. But, if it ſhould be objected, that the laſt circumſtance we have taken notice of as a defect, can only be conſidered as a defect of the Latin language, and is not to be attributed to the *inflection* of their verbs, ſeeing they might have had a particular tenſe for each of theſe different words *might*, *could*, *would*, and *ſhould;* we anſwer, that, even admitting this excuſe as valid, the ſuperiority of the analogous language, as ſuch, ſtill remains in this reſpect as 12 to 1.—Yet even this conceſſion is greater than ought to have been made: For as the difficulty of forming a ſufficient variety of words for all the different modifications which a verb may be made to undergo is too great for any rude people to overcome; we find, that every nation which has adopted this mode of inflection, not excepting the Greeks themſelves, has been obliged to remain ſatisfied with fewer words than would have been neceſſary even to effect this purpoſe, and make the ſame word ſerve a double, treble, or even quadruple office, as in the Latin tenſe which gave riſe to theſe obſervations: So that, however in phyſical neceſſity this may not be chargeable upon this particular mode of conſtruction, yet in moral certainty it muſt always be the caſe; and therefore we may ſafely conclude, that the mode of varying verbs by *inflection* affords leſs variety in the arrangement of the words of the particular phraſes, than the method of varying them by the help of auxiliaries.

17. But if there ſhould ſtill remain any ſhadow of doubt in the mind of the reader, whether the method of varying the verbs by *inflection*, is inferior to that by *auxiliaries*, with regard to diverſity of ſounds, or variety of expreſſion; there cannot be the leaſt doubt, but that, with reſpect to preciſion, diſtinctneſs, and accuracy, in expreſſing any idea, the latter enjoys a ſuperiority beyond all compariſon.—Thus the Latin verb *Amo*, may be Engliſhed either by the words, *I love*, or *I do love*, and the emphaſis placed upon any of the words that the circumſtances may require; by means of which, the meaning is pointed out with a force and energy which it is altogether impoſſible to produce by the uſe of any ſingle word. The following line from Shakeſpear's *Othello* may ſerve as an example:

> ——Excellent wretch!
> Perdition catch my ſoul, but *I* DO *love* thee:

In which the ſtrong emphaſis upon the word DO, gives it a force and energy which conveys, in an irreſiſtible manner, a moſt perfect knowledge of the ſituation of the mind of the ſpeaker at the time.—That the whole energy of the expreſſion depends upon this ſeemingly inſignificant word, we may be at once ſatisfied of, by keeping it away in this manner:

> ——Excellent wretch!
> Perdition catch my ſoul, but *I love* thee.

How poor—how tame—how inſignificant is this, when compared with the other! Here nothing remains but a tame aſſertion, uſhered in with a pompous exclamation which could not here be introduced with any degree of propriety. Whereas, in the way that Shakeſpeare has left it to us, it has an energy which nothing can ſurpaſs; for, overpowered with the irreſiſtible force of Deſdemona's charms, this ſtrong exclamation is extorted from the ſoul of Othello in ſpite of himſelf. Surpriſed at this tender emotion, which brings to his mind all thoſe amiable qualities for which he had ſo much eſteemed her, and at the ſame time fully impreſſed with the firm perſuaſion of her guilt, he burſts out into that ſeemingly inconſiſtent exclamation, *Excellent wretch!* and then he adds in the warmth of his ſurpriſe,—thinking it a thing moſt aſtoniſhing that any warmth of affection ſhould ſtill remain in his breaſt, he even confirms it with an oath,—*Perdition catch my ſoul, but I* DO *love thee.*—"In ſpite of all the falſehoods with which I know thou haſt deceived me—in ſpite of all the crimes of which I know thee guilty—in ſpite of all thoſe reaſons for which I ought to hate thee—in ſpite of myſelf,—ſtill I find that I love,—yes, I DO love thee." We look upon it as a thing altogether impoſſible to transfuſe the energy of this expreſſion into any language whoſe verbs are regularly inflected.

18. In the ſame manner we might go through all the other tenſes, and ſhew that the ſame ſuperiority is to be found in each.—Thus, in the *perfect tenſe* of the Latins, inſtead of the ſimple AMAVI, we ſay, I HAVE LOVED; and by the liberty we have of putting the emphaſis upon any of the words which compoſe this phraſe, we can in the moſt accurate manner fix the preciſe idea which we mean to excite: for if we ſay, I *have loved*, with the emphaſis upon the word *I*, it at once points out the perſon as the principal object in that phraſe, and makes us naturally look for a contraſt in ſome other perſon, and the other parts of the phraſe become ſubordinate to it;—"HE *has loved* thee much, but I *have loved* thee infinitely more." The Latins too, as they were not prohibited from joining the pronoun with their verb, were alſo acquainted with this excellence, which Virgil has beautifully uſed in this verſe:

> ————Nos *patriam fugimus;*
> TU, *Tytere*, *lentus in umbra*, &c.

But *we* are not only enabled thus to diſtinguiſh the perſon in as powerful a manner as the Latins, but can alſo with the ſame facility point out any of the other circumſtances as principals; for if we ſay, with the emphaſis upon the word *have*, "I HAVE *loved*," it as naturally points out the time as the principal object, and makes us look for a contraſt in that peculiarity, I HAVE: "I *have* loved indeed;—my imagination *has* been led aſtray—my reaſon *has* been perverted:—but, *now* that time has opened my eyes, I can ſmile at thoſe imaginary diſtreſſes which once perplexed me."—In the ſame manner we can put the emphaſis upon the other word of the phraſe *loved*,—"I *have* LOVED."—Here the paſſion is exhibited as the principal circumſtance; and as this can never be excited without ſome object, we naturally wiſh to know the object of that paſſion—"Who! what have you *loved?*" are the natural queſtions we would put in this caſe. "I have LOVED——Eliza."——In this manner we are, on all occaſions, enabled to expreſs, with the utmoſt preciſion, that particular idea which we would wiſh to excite, ſo as to give an energy and perſpicuity to the language, which can never be attained by thoſe languages whoſe verbs are conjugated by inflection: and if to this we add the inconvenience which all inflected languages are ſubject to, by having too ſmall a number of tenſes, ſo as to be compelled to make one word, on many occaſions, ſupply the place of two, three, or even four, the balance is turned ſtill more in our favours.—Thus, in Latin, the ſame word AMABO ſtands for *ſhall* or *will* love, ſo that the reader is left to gueſs from the context which of the two meanings it was moſt likely the writer had in view.—In the ſame manner, *may* or *can* love are expreſſed by the ſame word AMEM; as are alſo *might*, *could*, *would*, or *ſhould* love, by the ſingle word AMAREM, as we have already obſerved; ſo that the reader is left to gueſs which of theſe four meanings the writer intended to expreſs: which occaſions a perplexity very different from that clear preciſion which our language allows of, by not only pointing out the different words, but alſo by allowing us to put the emphaſis upon any of them we pleaſe, which ſuperadds energy and force to the preciſion it would have had without that aſſiſtance.

19. Upon the whole, therefore, after the moſt candid examination, we muſt conclude, that the method of conjugating verbs by *inflection* is inferior to that which is performed by the help of *auxiliaries*;—becauſe it does not afford ſuch a diverſity of ſounds,—nor allow ſuch variety in the arrangement of expreſſion for the ſame thought,—nor give ſo great diſtinction and preciſion in the meaning.——It is, however, attended with one conſiderable advantage above the other method: for as the words of which it is formed are neceſſarily of greater length, and more ſonorous, than in the analogous languages, it admits of a more flowing harmony of expreſſion; for the number of monoſyllables in this laſt greatly checks that pompous dignity which naturally reſults from longer words. Whether this ſingle advantage is ſufficient to counterbalance all the other defects with which it is attended, is left to the judgment of the reader to determine:—but we may remark, before we quit the ſubject, that even this excellence is attended with ſome peculiar inconveniences, which ſhall be more particularly pointed out in the ſequel.

20. But perhaps it might ſtill be objected, that although the compariſon we have made above may be fair, and the concluſion juſt, with regard to the Latin and Engliſh languages; yet it does not appear clear, that on that account the method of conjugating verbs by *inflection* is *inferior* to that by *auxiliaries*: for although it be allowed, that the Latin language is defective in point of tenſes; yet if a language were formed which had a ſufficient number of inflected tenſes to anſwer every purpoſe; if it had, for inſtance, a word properly formed for every variation of each tenſe; one for *I love*, another for *I do love*; one for *I ſhall*, another for *I will love*; one for *I might*, another for *I could*, and *would*, and *ſhould love*; and ſo on through all the other tenſes; that this language would not be liable to the objections we have brought againſt the inflection of verbs; and that of courſe, the objections we have brought are only valid againſt thoſe languages which have followed that mode and executed it imperfectly.——We anſwer, that although this would in ſome meaſure remedy the evil, yet it would not remove it entirely. For in the firſt place, unleſs every verb, or a very ſmall number of verbs, were conjugated in one way, having the ſound of the words in each tenſe, and diviſions of tenſes, as we may ſay, different from all the other conjugations,—it would always occaſion a ſameneſs of ſound, which would in ſome meaſure prevent that variety of ſounds ſo proper for a language. And even if this could be effected, it would not give ſuch a latitude to the expreſſion as auxiliaries allow: for although there ſhould be two words, one for *I might*, and another for *I could* love; yet as theſe are ſingle words, they cannot be varied; whereas, by auxiliaries, either of theſe can be varied 24 different ways, as has been ſhewn above.—In the laſt place, no ſingle word can ever expreſs all that variety of meaning which we can do by the help of our auxiliaries and the emphaſis. *I have loved*, if expreſſed by any one word, could only denote at all times one diſtinct meaning; ſo that, to give it the power of ours, three diſtinct words at leaſt would be neceſſary. However, if all this were done;—that is, if there were a diſtinct conjugation formed for every 40 or 50 verbs;—if each of the tenſes were properly formed, and all of them different from every other tenſe as well as every other verb; and theſe all carried thro' each of the different perſons, ſo as to be all different from one another;—and if likewiſe there were a diſtinct word to mark each of the ſeparate meanings which the ſame tenſe could be made to aſſume by means of the emphaſis; and if all this infinite variety of words could be formed in a diſtinct manner, different from each other, and harmonious;—this language would have powers greater than any that could be formed by auxiliaries, if it were poſſible for the human powers to acquire ſuch a degree of knowledge as to be able to employ it with facility. But how could this be attained, ſince upwards of ten thouſand words would be neceſſary to form the variations of any one verb, and a hundred times that number would not include the knowledge of the verbs alone of ſuch a language (B)!—How much, therefore, ought we to admire the ſimple perſpicuity of our language, which

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(B) This aſſertion may perhaps appear to many very much exaggerated: but if any ſhould think ſo, we only beg the favour that he will ſet himſelf to mark all the variations of tenſes, mode, perſon, and number, which an Engliſh verb which enables us, by the proper application of ten or twelve ſeemingly trifling words, the meaning and uſe of which can be attained with the utmoſt eaſe, to expreſs all that could be expreſſed by this unwieldy apparatus? What can equal the ſimplicity or the power of the one method, but the well-known powers of the 24 letters, the knowledge of which can be obtained with ſo much eaſe—and their powers know no limits?—or what can be compared to the facied perfection of the other, but the tranſcript of it which the Chineſe ſeem to have formed in their unintelligible language?

21. Having thus conſidered pretty fully the advantages and defects of each of theſe two methods of varying verbs, we cannot help feeling a ſecret wiſh ariſe in our mind, that there had been a people ſagacious enough to have united the powers of the one method with thoſe of the other; nor can we help being ſurpriſed, that, among the changes which took place in the ſeveral languages of Europe after the downfall of the Roman monarchy, ſome of them did not accidentally ſtumble on the method of doing it. From many concurring circumſtances, it ſeems probable, that the greateſt part, if not all the Gothic nations that overran Italy at that time, had their verbs varied by the help of auxiliaries; and many of the modern European languages which have ſprung from them, have ſo far borrowed from the Latin, as to have ſome of the tenſes of their verbs inflected: yet the Engliſh alone have in any inſtance combined the joint powers of the two: which could only be done by forming inflections for the different tenſes in the ſame manner as the Latins, and at the ſame time retaining the original method of varying them by auxiliaries; by which means either the one or the other method could have been employed as occaſion required. We have luckily two tenſes formed in that way; the *preſent* of the indicative, and the *paſt*. In almoſt all our verbs theſe can be declined either with or without auxiliaries. Thus the preſent, without an auxiliary, is, *I love, I write, I ſpeak;* with an auxiliary, *I do write, I do love, I do ſpeak.* In the ſame manner, the paſt tenſe, by inflection, is, *I loved, I wrote, I ſpoke;* by auxiliaries, *I did love, I did ſpeak, I did write.* Every author, who knows any thing of the power of the Engliſh language, knows the uſe which may be made of this diſtinction. What a pity is it that we ſhould have ſtopt ſhort ſo ſoon! how blind was it in ſo many other nations to imitate the defects, without making a proper uſe of that beautiful language which is now numbered among the dead!

22. After the verbs, the next moſt conſiderable variation we find between the *analogous* and *tranſpoſitive* languages is in the nouns; the latter varying the different caſes of theſe by *inflection;* whereas the former expreſs all the different variations of them by the help of other words prefixed, called *prepoſitions.* Now, if we conſider the advantages or diſadvantages of either of theſe methods under the ſame heads as we have done the verbs, we will find, that with regard to the firſt particular, *viz.* variety of ſounds, almoſt the ſame remarks may be made as upon the verbs; for if we compare any particular noun by itſelf, the variety of ſound appears much greater between the different caſes in the *Tranſpoſitive*, than between the tranſlation of theſe in the *Analogous* language. Thus, REX, REGIS, REGI, REGEM, &c. are more diſtinct from one another in point of ſound, than the tranſlation of theſe, *a king, of a king, to a king, a king,* &c. But if we proceed one ſtep further, and conſider the variety which is produced in the language *in general*, by the one or the other of theſe methods, the caſe is entirely reverſed. For as it would have been impoſſible to form diſtinct variations, different from one another, for each caſe of every noun, they have been obliged to reduce all their nouns into a few general claſſes, called *declenſions*, and endowed all thoſe included under each claſs with the ſame termination in every caſe; which produces a like ſimilarity of ſound with what we already obſerved was occaſioned to the verbs from the ſame cauſe; whereas in the analogous languages, as there is no neceſſity for any conſtraint, there is almoſt as great a variety of ſounds as there are of nouns. The Latins have only five different declenſions; ſo that all the great number of words of this general order muſt be reduced to the very ſmall diverſity of ſounds which theſe few claſſes admit of; and even the ſounds of theſe few claſſes are not ſo much diverſified as they might have been, as many of the different *caſes* in the different *declenſions* have exactly the ſame ſounds, as we ſhall have occaſion to remark more fully hereafter. We might here produce examples to ſhew the great *ſimilarity* of ſounds between different nouns in the Latin language, and *variety* in the Engliſh, in the ſame way as we did of the verbs: but that every reader in the leaſt acquainted with theſe two languages can ſatisfy himſelf in this particular, without any further trouble than by marking down any number of Latin nouns, with their tranſlations into Engliſh, we thought it unneceſſary to dwell longer on this particular.

23. But if the inflection of nouns is a diſadvantage to a language in point of diverſity of ſounds, it is very much the reverſe with regard to the variety it allows in the arranging the words of the phraſe. Here, indeed, the Tranſpoſitive language ſhines forth in all its glory, and the Analogous muſt yield the palm without the ſmalleſt diſpute. For as the *nominative caſe* (or that noun which is the cauſe of that energy expreſſed by the verb) is different from the *accuſative* (or that noun upon which the energy expreſſed by the verb is exerted), theſe may be placed in any ſituation that the writer ſhall think proper, without occaſioning the ſmalleſt confuſion: whereas in the analogous languages, as theſe two different ſtates of the noun are expreſſed by the ſame word, they cannot be diſtinguiſhed but by their poſition alone: ſo that the noun which is the efficient cauſe muſt always precede the verb, and that which is the active ſubject muſt follow; which greatly cramps the harmonious flow of compoſition.—Thus the Latins, without the ſmalleſt perplexity in the meaning, could ſay either *Brutum amavit Caſſius*, or *Caſſius amavit Brutum*, or *Brutum Caſſius amavit*, or *Caſſius Brutum amavit*. As the termination of the word *Caſſius* always points out that it is in the *nominative caſe*, and therefore that he is the perſon from whom the energy proceeds; and in the ſame manner, as the termination of the word *Brutum* points out that it is in the *accuſative caſe*, and conſequently that he is the object

verb can be made to aſſume, varying each of theſe in every way that it will admit, both as to the diverſity of expreſſion and the emphaſis; he will ſoon be convinced that we have here ſaid nothing more than enough.

ject upon whom the energy is exerted; the meaning continues ſtill diſtinct and clear, notwithſtanding of all theſe ſeveral variations: whereas in the Engliſh language, we could only ſay *Caſſius loved Brutus*, or, by a more forced phraſeology, *Caſſius Brutus loved:* Were we to reverſe the caſe, as in the Latin, the meaning alſo would be reverſed; for if we ſay *Brutus loved Caſſius*, it is evident, that, inſtead of being the perſon beloved, as before, *Brutus* now becomes the perſon from whom the energy proceeds, and *Caſſius* becomes the object beloved.—In this reſpect, therefore, the analogous languages are greatly inferior to the tranſpoſitive; and indeed it is from this ſingle circumſtance alone that they derive their chief excellence.

24. But although it thus appears evident, that any language, which has a particular variation of its nouns to diſtinguiſh the *accuſative* from the *nominative caſe*, has an advantage over thoſe languages which have none; yet it does not appear that any other of their *caſes* adds to the variety, but rather the reverſe: for, in Latin, we can only ſay *Amor Dei;* in Engliſh the ſame phraſe may be rendered, either,—*the love of God*,—*of God the love*,—or, by a more forced arrangement, *God the love of*. And as theſe oblique caſes, as the Latins called them, except the accuſative, are clearly diſtinguiſhed from one another, and from the nominative, by the prepoſition which accompanies them, we are not confined to any particular arrangement with regard to theſe as with the accuſative, but may place them in what order we pleaſe, as in Milton's elegant invocation at the beginning of Paradiſe Loſt:—

> Of man's firſt diſobedience, and the fruit
> Of that forbidden tree, whoſe mortal taſte
> Brought death into the world, and all our wo,
> With loſs of Eden, till one greater Man
> Reſtore us, and regain the bliſsful ſeat,
> Sing, heavenly Muſe.

In this ſentence the tranſpoſition is almoſt as great as the Latin language would admit of, and the meaning as diſtinct as if Milton had begun with the plain language of proſe, thus,—"Heavenly muſe, ſing of man's firſt diſobedience," &c.

Before we leave this head, we may remark, that the little attention which ſeems to have been paid to this peculiar advantage derived from the uſe of an accuſative caſe different from the nominative, is ſomewhat ſurpriſing.—The Latins, who had more occaſion to attend to this with care than any other nation, have in many caſes overlooked it, as is evident from the various inſtances we meet with in their language where this is not diſtinguiſhed. For all their nouns in UM of the ſecond declenſion, in E of the third, and in U of the fourth, have each their nominative and accuſative ſingular alike. Nor in the plural is there any diſtinction between theſe two caſes in thoſe of the ſecond declenſion ending in UM, nor in all thoſe of the third, fourth, and fifth, of every termination, the number of which is very conſiderable. So that their language reaps no advantage in this reſpect from almoſt one half of their nouns. Nor have any of the modern languages in Europe, however much they may have borrowed from the ancient languages in other reſpects, attempted to copy from them in this particular; from which perhaps more advantage would have been gained, than from copying all the other ſuppoſed excellencies of their language.—But to return to our ſubject.

25. It remains that we conſider, whether the inflection of nouns gives any advantage over the method of defining them by prepoſitions, in point of diſtinctneſs and preciſion of meaning. But in this reſpect, too, the analogous languages muſt come off victorious.—Indeed this is the particular in which their greateſt excellence conſiſts; nor was it, we believe, ever diſputed, but that, in point of accuracy and preciſion, this method muſt excel all others, however it may be defective in other reſpects.—We obſerved under this head, when ſpeaking of verbs, that it might perhaps be poſſible to form a language by inflection which ſhould be capable of as great accuracy as in the more ſimple order of auxiliaries: but this would have been ſuch an infinite labour, that it was not to be expected that ever human powers would have been able to accompliſh it. More eaſy would it have been to have formed the ſeveral inflections of the nouns ſo different from one another, as to have rendered it impoſſible ever to miſtake the meaning. Yet even this has not been attempted. And as we find that thoſe languages which have adopted the method of inflecting their verbs are more imperfect in point of preciſion than the other, ſo the ſame may be ſaid of inflecting the nouns: for, not to mention the energy which the analogous languages acquire by putting the accent upon the noun, or its prepoſition (when in an oblique caſe), according as the ſubject may require, to expreſs which variation of meaning no particular variety of words have been invented in any inflected language, they are not even complete in other reſpects.—The Latin, in particular, is in many caſes defective, the ſame termination being employed in many inſtances for different caſes of the ſame noun.—Thus the genitive and dative ſingular, and nominative and vocative plural, of the firſt declenſion, are all exactly alike, and can only be diſtinguiſhed from one another by the formation of the ſentences;—as are alſo the nominative, vocative, and ablative ſingular, and the dative and ablative plural. In the ſecond, the genitive ſingular, and nominative and vocative plural, are the ſame; as are alſo the dative and ablative ſingular, and dative and ablative plural; except thoſe in UM, whoſe nominative, accuſative, and vocative ſingular, and nominative, accuſative, and vocative plural, are alike. The other three declenſions agree in as many of their caſes as theſe do; which evidently tends to perplex the meaning, unleſs the hearer is particularly attentive to, and well acquainted with, the particular conſtruction of the other parts of the ſentence; all of which is totally removed, and the cleareſt certainty exhibited at once, by the help of prepoſitions in the analogous languages.

It will hardly be neceſſary to enter into ſuch a minute examination of the advantages or diſadvantages attending the variation of *adjectives;* as it will appear evident, from what has been already ſaid, that the endowing them with terminations ſimilar to, and correſponding with the nouns, muſt tend ſtill more to increaſe the ſimilarity of ſounds in any language, than any of thoſe particulars we have already taken notice of; and were it not for the liberty which they have, in tranſpoſitive languages, of ſeparating the adjective from the noun, this muſt have occaſioned ſuch a jingle of ſimilar ſounds as could not fail to have been moſt diſguſting to the ear: but as it would have been impoſſible in many caſes, in thoſe languages where the verbs and nouns are inflected, to have pronounced the words which ought to have followed each other, unleſs their adjectives could have been ſeparated from the nouns; therefore, to remedy this inconvenience, they were forced to deviſe this unnatural method of inflecting them alſo; by which means it is eaſy to recognize to what noun any adjective has a reference, in whatever part of the ſentence it may be placed.—In theſe languages, therefore, this inflection, both as to gender, number, and caſe, becomes abſolutely neceſſary; and, by the diverſity which it admitted in the arranging the words of the ſeveral phraſes, might counterbalance the jingle of ſimilar ſounds which it introduced into the language.—But what ſhall we ſay of thoſe European nations, who, although poſſeſſed of a language in every reſpect different from the tranſpoſitive idiom, have nevertheleſs adopted the variations of their adjectives in the fulleſt ſenſe? for here they have nothing to counterbalance this diſagreeable jingle of ſimilar ſounds, ſo deſtructive of all real harmony.—In the days of monkiſh ignorance, when this cuſtom was probably introduced, the claſhing of words with one another might be eſteemed an ornament; but now that mankind have attained a higher ſenſe of harmony and propriety, we in Britain may felicitate ourſelves to find, that our language has eſcaped this mark of barbarity, to which ſo many others are now ſubjected.

26. Having thus examined the moſt ſtriking particulars in which the the tranſpoſitive and analogous languages differ, and endeavoured to ſhow the general tendency of every one of the particulars ſeparately, it would not be fair to diſmiſs the ſubject without conſidering each of theſe as a whole, and pointing out their general tendency in that light: for we all know, that it often happens in human inventions, that every part which compoſes a whole, taken ſeparately, may appear extremely fine; and yet, when all theſe parts are put together, they may not agree, but produce a jarring and confuſion very different from what we might have expected. We therefore imagine a few remarks upon the genius of each of theſe two diſtinct IDIOMS of language conſidered as a whole will not be deemed uſeleſs.

Although all languages agree in this reſpect, that they are the means of conveying the ideas of one man to another; yet as there is an infinite variety of ways in which we might wiſh to convey theſe ideas, ſometimes by the eaſy and familiar mode of converſation, and at other times by more ſolemn addreſſes to the underſtanding, by pompous declamation, &c. it may ſo happen, that the genius of one language may be more properly adapted to the one of theſe than the other, while another language may excel in the oppoſite particnlar. This is exactly the caſe in the two general IDIOMS of which we now treat.—Every particular in a *tranſpoſitive* language, is peculiarly calculated for that ſolemn dignity which is neceſſary for pompous orations. Long ſounding words, formed by the inflection of the different parts of ſpeech,—flowing periods, in which the attention is kept awake by the harmony of the ſounds, and an expectation of that word which is to unravel the whole,—if compoſed by a ſkilful artiſt, are admirably ſuited to that ſolemn dignity and awful grace which conſtitute the eſſence of a public harangue. On the contrary, in private converſation, where the mind wiſhes to unbend itſelf with eaſe, theſe become ſo many cloggs which encumber and perplex. At theſe moments we wiſh to transfuſe our thoughts with eaſe and facility—we are tired with every unneceſſary ſyllable—and wiſh to be freed from the trouble of attention as much as may be. Like our ſtate-robes, we would wiſh to lay aſide our pompous language, and enjoy ourſelves at home with freedom and eaſe. Here the ſolemnity and windings of the *tranſpoſitive* language are burdenſome; while the facility with which a ſentiment can be expreſſed in the *analogous* language is the thing that we wiſh to acquire.—In this humble, though moſt engaging ſphere, the analogous language moves unrivalled;—in this it wiſhes to indulge, and never tires. But it in vain attempts to rival the *tranſpoſitive* in dignity and pomp: The number of monoſyllables interrupt the flow of harmony; and although they may give a greater variety of ſounds, yet they do not naturally poſſeſs that dignified gravity which ſuits the other language. This, then, muſt be conſidered as the ſtriking particular in the genius of theſe two different IDIOMS, which marks their characters.

If we conſider the effects which theſe two different characters of language muſt naturally produce upon the people who employ them, we will ſoon perceive, that the genius of the *analogous* language is much more favourable for the moſt engaging purpoſes of life, the civilizing the human mind by mutual intercourſe of thought, *than the tranſpoſitive*. For as it is chiefly by the uſe of ſpeech that man is raiſed above the brute creation;—as it is by this means he improves every faculty of his mind, and, to the obſervations which he may himſelf have made, has the additional advantage of the experience of thoſe with whom he may converſe, as well as the knowledge which the human race have acquired by the accumulated experience of all preceding ages;—as it is by the enlivening glow of converſation that kindred-ſouls catch fire from one another, that thought produces thought, and each improves upon the other, till they ſoar beyond the bounds which human reaſon, if left alone, could ever have aſpired to;—we muſt ſurely conſider that language as the moſt beneficial to ſociety, which moſt effectually removes theſe bars that obſtruct its progreſs. Now, the genius of the *analogous* languages is ſo eaſy, ſo ſimple and plain, as to be within the reach of every one who is born in the kingdom where it is uſed, to ſpeak it with facility; even the rudeſt among the vulgar can hardly fall into any conſiderable grammatical errors: whereas, in the *tranſpoſitive* languages, ſo many rules are neceſſary to be attended to, and ſo much variation is produced in the meaning by the ſlighteſt variations in the ſound, that it requires a ſtudy far above the reach of the illiterate mechanic ever to attain. So that, how perfect ſoever the language may be when ſpoken with purity, the bulk of the nation muſt ever labour under the inconvenience of rudeneſs and inaccuracy of ſpeech, and all the evils which this naturally produces.—Accordingly, we find, that in Rome, a man, even in the higheſt rank, received as much honour, and was as much diſtinguiſhed among his equals, for being able to converſe with eaſe, as a modern author would be for writing in an eaſy and elegant ſtyle; and Cæſar among his cotemporaries was as much eſteemed for his ſuperiority in ſpeaking the language in ordinary converſation with eaſe and elegance, as for his powers of oratory, his ſkill in arms, or his excellence in literary compoſition. It is needleſs to point out the many inconveniences which this muſt unavoiably produce in a ſtate. It is ſufficient to obſerve, that it naturally tends to introduce a vaſt diſtinction between the different orders of men; to ſet an impenetrable barrier between thoſe born in a high and thoſe born in a low ſtation; to keep the latter in ignorance and barbarity, while it elevates the former to ſuch a height as muſt ſubject the other to be eaſily led by every popular demagogue.—How far the hiſtory of the nations who have followed this IDIOM of language confirms this obſervation, every one is left to judge for himſelf.

Having thus conſidered LANGUAGE in general, and pointed out the genius and tendency of the two moſt diſtinguiſhed IDIOMS which have prevailed; we ſhall cloſe theſe remarks with a few obſervations upon the particular nature and genius of thoſe languages which are now chiefly ſpoken or ſtudied in Europe.

27. Of all the nations whoſe memory hiſtory has tranſmitted to us, none have been ſo eminently diſtinguiſhed for their literary accompliſhments, as well as acquaintance with the polite arts, as the Greeks; nor are we as yet acquainted with a language poſſeſſed of ſo many advantages, with ſo few defects, as that which they uſed, and which continues ſtill to be known by their name.—The neceſſary connection between the progreſs of knowledge and the improvement of language has been already explained; ſo that it will not be ſurpriſing to find their progreſs in the one keep pace with that of the other: but it will be of utility to point out ſome advantages which that diſtinguiſhed people poſſeſſed, which other nations, perhaps not leſs diſtinguiſhed for talents or taſte, have not enjoyed, which have contributed to render their language the moſt univerſally admired in ancient as well as in modern times.

As it is probable, that many different ſocieties of men, in the early ages of antiquity, may have found themſelves in ſuch circumſtances as to be obliged to invent a language to themſelves; each would naturally adopt thoſe ſounds into their language which chance might ſuggeſt, or were moſt agreeable to their perception of harmony, or moſt conſonant to the diſpoſition of mind of the original inventors; in the ſame manner as we ſee that each compoſer of muſic has a particular ſpecies of ſounds of which he is fonder than any other, which will predominate through all his compoſitions, and give them a certain characteriſtic tone by which they may be diſtinguiſhed from that of other compoſers:—So the language of each particular ſet of people would have originally a certain characteriſtic tone of harmony, which would diſtinguiſh it from all others; and which would neceſſarily be more or leſs perfect, according to the greater or leſs degree of that delicate ſenſe of harmony, diſtinguiſhed by the name of *taſte*, which theſe original inventors were poſſeſſed of. Theſe ſounds, then, being once eſtabliſhed by cuſtom, would become familiar to the ear of the deſcendents of theſe particular tribes: new words would be invented as knowledge increaſed; but it behoved theſe to be modulated ſo as to be agreeable to the general tenor of their language, from the neceſſity of making it conſonant as well to the organs of hearing as the organs of ſpeech.—Hence it happens, that the characteriſtic tones of a language are preſerved much longer without variation than any other particular relating to it; and if it change at all, the change muſt be ſlow and imperceptible. Knowledge after this may increaſe; taſte may be improved: it may be perceived that the language is not copious enough to expreſs the ideas, or not harmonious enough to pleaſe the ear of the compoſer:—he may readily invent words to ſupply the deficiency in that reſpect; but the ſounds in a great meaſure remain without the reach of his power, and he muſt reſt ſatisfied with theſe, ſuch as they are, without attempting innovations.——Happy therefore, in this reſpect, muſt we deem thoſe nations, whoſe earlieſt anceſtors have been ſo fortunate as to adopt no unharmonious ſounds into their language, whereby they are freed from one bar to the cultivating thoſe refined pleaſures which proceed from the uſe of a delicate taſte, which others may perhaps never be able to ſurmount: and in this reſpect no nation was ever ſo eminently diſtinguiſhed as the Greeks; which no doubt contributed its ſhare to promote that general elegance and harmony of proportion which prevailed in all their arts. The original ſounds and fundamental tones of that language are the moſt harmonious, and the moſt agreeable to the ear, of any that have hitherto been invented; inſomuch, that from this principle alone, the ſound of their language is agreeable to every nation who has heard it, even when the meaning of the words are not underſtood; whereas almoſt all other languages, till they are underſtood, appear, to an ear which has not been accuſtomed to them, jarring and diſcordant. This is the fundamental excellence of that juſtly admired language; nor have the people failed to improve this to the utmoſt of their power, by many aids of their own invention. The Greek language is of the *tranſpoſitive* kind: but a people ſo lively, ſo acute, and ſo loquacious, could ill bear the ceremonious reſtraint to which that mode of language naturally ſubjected them; and have therefore, by various methods, freed it in a great meaſure from the ſtiffneſs which that produced. In inflecting their nouns and verbs, they ſometimes prefix a ſyllable, and ſometimes add one; which, beſides the variety that it gives to the ſounds of the language, adds greatly to the diſtinctneſs, and admits of a more natural arrangement of the words than in the Latin, and of conſequence renders it much fitter for the eaſineſs of private converſation: and indeed, the genius of the people ſo far prevailed over the *idiom* of the language, as to render it, in the age of its greateſt perfection, capable of almoſt as much eaſe, and requiring almoſt as little tranſpoſition of words, as thoſe languages which have been called analogous. But as thoſe nations who ſpoke this language were all governed by popular aſſemblies, and as no authority could be obtained among them but by a ſkill in rhetoric and the powers of perſuaſion; it became neceſſary for every one, who wiſhed to acquire power or conſideration in the ſtate, to improve himſelf in the knowledge of that language, in the uſe of which alone he could expect honours or reputation. Hence it happened, that while the vivacity of the people rendered it eaſy, the great men ſtudiouſly improved every excellence that it could reap from its powers as a *tranſpoſitive* language; ſo that, when brought to its utmoſt perfection by the amazing genius of the great Demoſthenes, it attained a power altogether unknown to any other language.—Thus happily circumſtanced, the Greek language arrived at that envied pre-eminence which it ſtill juſtly retains. From the progreſs of arts and ſciences; from the gaiety and inventive genius of the people; from the number of free ſtates into which Greece was divided, each of which invented words of its own, all of which contributed to the general ſtock; and from the natural communication which took place between theſe ſtates, which excited in the ſtrongeſt degree the talents of the people; it acquired a copiouſneſs unknown to any ancient language, and excelled by few of the moderns.---In point of harmony of numbers, it is altogether unrivalled; and on account of the eaſe as well as dignity of which it admitted from the cauſes above aſſigned, it admits of perfection in a greater number of particular kinds of compoſition than any other language known.—The irreſiſtible force and overwhelming impetuoſity of Demoſthenes ſeems not more natural to the genius of the language, than the more flowery charms of Plato's calm and harmonious cadences, or the unadorned ſimplicity of Xenophon; nor does the majeſtic pomp of Homer ſeem to be more agreeable to the genius of the language in which he wrote, than the more humble ſtrains of Theocritus, or the laughing feſtivity of Anacreon: Equally adapted to all purpoſes, when we peruſe any of theſe authors, we would imagine the language was moſt happily adapted for his particular ſtyle alone. The ſame powers it likewiſe, in a great meaſure, poſſeſſed for converſation; and the dialogue ſeems not more natural for the dignity of Sophocles or Euripides, than for the more eaſy tenderneſs of Menander, or buffoonery of Ariſtophanes.—With all theſe advantages, however, it muſt be acknowledged, that it did not poſſeſs that unexceptionable clearneſs of meaning which ſome analogous languages enjoy, or that characteriſtic force which the accent has power to give it, were not theſe defects counterbalanced by other cauſes which we ſhall afterwards point out.

28. The Romans, a people of fierce and warlike diſpoſitions, for many ages during the infancy of their republic, more intent on purſuing conqueſts and military glory than in making improvements in literature or the fine arts, beſtowed little attention to their language. Of a diſpoſition leſs ſocial or more phlegmatic than the Greeks, they gave themſelves no trouble about rendering their language fit for converſation; and it remained ſtrong and nervous, but, like their ideas, was limited and confined. More diſpoſed to command reſpect by the power of their arms than by the force of perſuaſion, they deſpiſed the more effeminate powers of ſpeech: ſo that, before the Punic wars, their language was perhaps more reſerved and uncourtly than any other at that time known.—But after their rival Carthage was deſtroyed, and they had no longer that powerful curb upon their ambition; when riches flowed in upon them by the multiplicity of their conqueſts;—luxury began to prevail, the ſtern auſterity of their manners to relax, and ſelfiſh ambition to take place of that diſintereſted love for their country ſo eminently conſpicuous among all orders of men before that period.—Popularity began then to be courted: ambitious men, finding themſelves not poſſeſſed of that merit which inſured them ſucceſs with the virtuous ſenate, amuſed the mob with artful and ſeditious harangues; and by making them believe that they were poſſeſſed of all power, and had their ſacred rights encroached upon by the ſenate, led them about at their pleaſure, and got themſelves exalted to honours and riches by theſe inſidious arts. It was then the Romans firſt began to perceive the uſe to which a command of language could be put. Ambitious men then ſtudied it with care, to be able to accompliſh their ends; while the more virtuous were obliged to acquire a ſkill in this, that they might be able to repel the attacks of their adverſaries.—Thus it happened, that in a ſhort time that people, from having entirely neglected, began to ſtudy their language with the greateſt aſſiduity; and as Greece happened to be ſubjected to the Roman yoke about that time, and a friendly intercourſe was eſtabliſhed between theſe two countries, this greatly conſpired to nouriſh in the minds of the Romans a taſte for that art of which they had lately become ſo much enamoured. Greece had, long before this period, been corrupted by luxury; their taſte for the fine arts had degenerated into unneceſſary refinement; and all their patriotiſm conſiſted in popular harangues and unmeaning declamation. Oratory was then ſtudied as a refined art; and all the ſubtleties of it were taught by rule, with as great care as the gladiators were afterwards trained up in Rome. But while they were thus idly trying who ſhould be the lord of their own people, the nerves of government were relaxed, and they became an eaſy prey to every invading power. In this ſituation they became the *ſubjects*, under the title of the *allies*, of Rome, and introduced among them the ſame taſte for haranguing which prevailed among themſelves. Well acquainted as they were with the powers of their own language, they ſet themſelves with unwearied aſſiduity to poliſh and improve that of their new maſters: but with all their aſſiduity and pains, they never were able to make it arrive at that perfection which their own language had acquired; and in the Auguſtan age, when it had arrived at the ſummit of its glory, Cicero bitterly complains of its want of copiouſneſs in many particulars.

But as it was the deſire of all who ſtudied this language with care, to make it capable of that ſtately dignity and pomp neceſſary for public harangues, they followed the genius of the language in this particular, and in a great meaſure neglected thoſe leſſer delicacies which form the pleaſure of domeſtic enjoyment; ſo that, while it acquired more copiouſneſs, more harmony, and preciſion, it remained ſtiff and inflexible for converſation: nor could the minute diſtinction of nice grammatical rules be ever brought down to the apprehenſion of the vulgar; whence the language ſpoken among the lower claſs of people remained rude and unpoliſhed even to the end of the monarchy. The Huns who over-run Italy, incapable of acquiring any knowledge of ſuch a difficult and abſtruſe language, never adopted it; and the native inhabitants being made acquainted with a language more natural and eaſily acquired, quickly adopted that idiom of ſpeech introduced by their conquerors, although they ſtill retained many of thoſe words which the confined nature of the barbarian language made neceſſary to allow them to expreſs their ideas.—And thus it was that the language of Rome, that proud miſtreſs of the world, from an original defect in its formation, although it had been carried to a perfection in other reſpects far ſuperior to any northern language at that time, eaſily gave way to them, and in a few ages the knowledge of it was loſt among mankind: while, on the contrary, the more eaſy nature of the Greek language has ſtill been able to keep ſome ſlight footing in the world, although the nations in which it has been ſpoken have been ſubjected to the yoke of foreign dominion for upwards of two thonſand years, and their country has been twice ravaged by barbarous nations, and more cruelly depreſſed than ever the Romans were.

From the view which we have already given of the Latin language, it appears evident, that its idiom was more ſtrictly tranſpoſitive than that of any other language yet known, and was attended with all the defects to which that idiom is naturally ſubjected: nor could it boaſt of ſuch favourable alleviating circumſtances as the Greek, the prevailing ſounds of the Latin being far leſs harmonious to the ear: and although the formation of the words are ſuch as to admit of full and diſtinct ſounds, and ſo modulated as to lay no reſtraint upon the voice of the ſpeaker; yet, to a perſon unacquainted with the language, they do not convey that enchanting harmony ſo remarkable in the Greek language. The Latin is ſtately and ſolemn; it does not excite diſguſt; but at the ſame time it does not charm the ear, ſo as to make it liſten with delighted attention. To one acquainted with the language indeed, the nervous boldneſs of the thoughts, the harmonious rounding of the periods, the full ſolemn ſwelling of the ſounds, ſo diſtinguiſhable in the moſt eminent writers in that language which have been preſerved to us, all conſpire to make it pleaſing and agreeable.—In theſe admired works we meet with all its beauties, without perceiving any of its defects; and we naturally admire, as perfect, a language which is capable of producing ſuch excellent works.—Yet with all theſe ſeeming excellencies, this language is leſs copious, and more limited in its ſtyle of compoſition, than many modern languages; far leſs capable of preciſion and accuracy than almoſt any of theſe; and infinitely behind them all in point of eaſineſs in converſation. But theſe points have been ſo fully proved already, as to require no further illuſtration.—Of the compoſitions in that language which have been preſerved to us, the *orations* of Cicero are beſt adapted to the genius of the language, and we there ſee it in its utmoſt perfection. In the *philoſophical works* of that great author we perceive ſome of its defects; and it requires all the powers of that great man to render his *epiſtles* agreeable, as theſe have the genius of the language to ſtruggle with.---Next to oratory, hiſtory agrees with the genius of this language; and Cæſar, in his Commentaries, has exhibited the language in its pureſt elegance, without the aid of pomp or foreign ornament.——Among the poets, Virgil has beſt adapted his words to his language. The flowing harmony and pomp of it is well adapted for the epic ſtrain, and the correct delicacy of his taſte rendered him perfectly equal to the taſk. But Horace is the only poet whoſe force of genius was able to overcome the bars which the language threw in his way, and ſucceed in lyric poetry. Were it not for the brilliancy of the thoughts, and acuteneſs of the remarks, which ſo eminently diſtinguiſh this author's compoſitions, his odes would long ere now have ſunk into utter oblivion.---But ſo conſcious have all the Roman poets been of the unfitneſs of their language for eaſy dialogue, that almoſt none of them, after Plautus and Terence, have attempted any dramatic compoſitions in that language.---Nor have we any reaſon to regret that they neglected this branch of poetry, as it is probable, if they had ever become fond of theſe, they would have been obliged to have adopted ſo many unnatural contrivances to render them agreeable, as would have prevented us (who of courſe would have conſidered ourſelves as bound to follow them) from making that progreſs in the drama which ſo particularly diſtinguiſhes the productions of modern times.

29. The modern *Italian* language, from an inattention too common in literary ſubjects, has been uſually called a *child of the Latin language*, and is commonly believed to be the ancient Latin a little debaſed by the mixture of the barbarous language of thoſe people who conquered Italy. The truth is, the caſe is directly the reverſe: for this language, in its general idiom and fundamental principles, is evidently of the analogous kind, firſt introduced by thoſe fierce invaders, altho' it has borrowed many of its words, and ſome of its modes of phraſeology, from the Latin, with which they were ſo intimately blended that this could ſcarcely be avoided; and it has been from remarking this ſlight connection ſo obvious at firſt ſight, that ſuperficial obſervers have been led to draw this general concluſion, ſo contrary to fact.

When Italy was over-run with the Lombards, and the empire deſtroyed by theſe northern invaders, they, as conquerors, continued to ſpeak their own native language. Fierce and illiterate, they would not ſtoop to the ſervility of ſtudying a language ſo clogged with rules, and difficult of attainment, as the Latin would naturally be to a people altogether unacquainted with nice grammatical diſtinctions: while the Romans of neceſſity were obliged to ſtudy the language of their conquerors, as well to obtain ſome relief of their grievances by prayers and ſupplications, as to deſtroy that odious diſtinction which ſubſiſted between the conquerors and conquered while they continued as diſtinct people. As the language of their new maſters, although rude and confined, was natural in its order, and eaſy to be acquired, the Latins would ſoon attain a competent ſkill in it: and as they bore ſuch a proportion to the whole number of people, the whole language would partake ſomewhat of the general ſound of the former: for, in ſpite of all their efforts to the contrary, the organs of ſpeech could not at once be made to acquire a perfect power of uttering any unacuſtomed ſounds; and as it behoved the language of the barbarians to be much leſs copious than the Latin, whenever they found themſelves at a loſs for a word, they would naturally adopt thoſe which moſt readily preſented themſelves from their new ſubjects. Thus a language in time was formed, ſomewhat reſembling the Latin, both in the general tenor of the ſounds, and in the meaning of many words: and as the barbarians gave themſelves little trouble about language, and in ſome caſes perhaps hardly knew the general analogy of their own language, it is not ſurpriſing if their new ſubjects ſhould find themſelves ſometimes at a loſs on that account, or if, in theſe ſituations, they followed, on ſome occaſions, the analogy ſuggeſted to them by their own: which accounts for the ſtrange degree of mixture of heterogeneous grammatical analogy we meet with in the Italian as well as Spaniſh and French languages.—The idiom of all the Gothic languages is purely analogous; and in all probability, before their mixture with the Latins and other people in their provinces, the ſeveral grammatical parts of ſpeech followed the plain ſimple idea which that ſuppoſes; the verbs and nouns were all probably varied by auxiliaries, and their adjectives retained their ſimple unalterable ſtate:—but by their mixture with the Latins, this ſimple form has been in many caſes altered; their verbs became in ſome caſes inflected; but their nouns in all theſe languages ſtill retained their original form; although they have varied their adjectives, and fooliſhly clogged their nouns with gender, according to the Latin idioms. From this heterogeneous and fortuitous (as we may ſay, becauſe injudicious) mixture of parts, reſults a language poſſeſſing almoſt all the defects of each of the languages of which it is compoſed, with few of the excellencies of either: for it has neither the eaſe and preciſion of the *analogous* nor the pomp and boldneſs of the *tranſpoſitive* languages; at the ſame time that it is clogged with almoſt as many rules, and liable to as great abuſes.

30. Theſe obſervations are equally applicable to the French and Spaniſh, as to the Italian language.—With regard to this laſt in particular, we may obſerve, that as the natural inhabitants of Italy, before the laſt invaſion of the barbarians, were ſunk and enervated by luxury, and that by depreſſion of mind and genius which anarchy always produces, they had become fond of feaſting and entertainments, and the enjoyment of ſenſual pleaſures conſtituted their higheſt delight; and their language partook of the ſame debility as their body.——The barbarians too, unaccuſtomed to the ſeductions of pleaſure, ſoon fell from their original boldneſs and intrepidity, and, like Hannibal's troops of old, were enervated by the ſenſual gratifications in which a nation of conquerors unaccuſtomed to the reſtraint of government freely indulged. The ſoftneſs of the air,—the fertility of the climate,—the unaccuſtomed flow of riches which they at once acquired,—together with the voluptuous manner of their conquered ſubjects,—all conſpired to enervate their minds, and render them ſoft and effeminate. No wonder then, if a language new-moulded at this juncture ſhould partake of the genius of the people who formed it; and, inſtead of participating of the martial boldneſs and ferocity of either of their anceſtors, ſhould be ſoftened and enfeebled by every device which an effeminate people could invent.——The ſtrong conſonants which terminated the words, and gave them life and boldneſs, being thought too harſh for the delicate ears of theſe ſons of ſloth, were baniſhed their language; while ſonorous vowels, which could be protracted to any length in muſic, were ſubſtituted in their ſtead.——Thus the Italian language is formed flowing and harmonious, but deſtitute of thoſe nerves which conſtitute the ſtrength and vigour of a language: at the ſame time, the ſounds are neither enough diverſified, nor in themſelves of ſuch an agreeable tone, as to afford great pleaſure without the aid of muſical notes;—and the ſmall pleaſure which this affords is ſtill leſſened by the little variety of meaſure which the great ſimilarity of the terminations of the words occaſions. Hence it happens, that this language is fitted for excelling in fewer branches of literature than almoſt any other: and although we have excellent hiſtorians, and more than ordinary poets, in Italian, yet they labour under great inconveniences, from the language wanting nerves and ſtatelineſs for the former, and ſufficient variety of modulation for the latter. It is, more particularly on this account, altogether unfit for an epic poem: and though attempts have been made in this way by two men whoſe genius, if not fettered by the language, might have been crowned with ſucceſs; yet theſe, notwithſtanding the fame that with ſome they may have acquired, muſt, in point of poetic harmony, be deemed defective by every impartial perſon. Nor is it poſſible that a language which hardly admits of poetry without rhime, can ever be capable of producing a perfect poem of great length; and the ſtanza to which their poets have ever confined themſelves, muſt always produce the moſt diſagreeable effect in a poem where unreſtrained pomp or pathos are neceſſary qualifications. The only ſpecies of poetry in which the Italian language can claim a ſuperior excellence, is the tender tone of elegy: and here it remains unrivalled and alone; the plaintive melody of the ſounds, and ſmooth flow of the language, being perfectly adapted to expreſs that ſoothing melancholy which this ſpecies of poetry requires. On this account the plaintive ſcenes of the *Paſtor Fido* of *Guarini* have juſtly gained to that poem an univerſal applauſe; although, unleſs on this account alone, it is perhaps inferior to almoſt every other poem of the kind which ever appeared.——We muſt obſerve with ſurpriſe, that the Italians, who have fettered every other ſpecies of poetry with the ſevereſt ſhackles of rhime, have in this ſpecies ſhowed an example of the moſt unreſtrained freedom; the happy effects of which ought to have taught all Europe the powerful charms attending it: yet with amazement we perceive, that ſcarce an attempt to imitate them has been made by any poet in Europe except by Milton in his Lycidas; no dramatic poet, even in Britain, having ever adopted the unreſtrained harmony of numbers to be met with in this and many other of their beſt dramatic compoſitions.

Of all the languages which ſprung up from the mixture of the Latins with the northern people on the deſtruction of the Roman empire, none of them approach ſo near to the genius of the Latin as the Spaniſh does. For as the Spaniards have been always remarkable for their military prowefs and dignity of mind, their language is naturally adapted to expreſs ideas of that kind. Sonorous and ſolemn, it admits nearly of as much dignity as the Latin. For converſation, it is the moſt elegant and courteous language in Europe.

The humane and generous order of chivalry was firſt in-

invented, and kept its footing longeſt, in this nation; and although it run at laſt into ſuch a ridiculous exceſs as deſervedly made it fall into univerſal diſrepute, yet it left ſuch a ſtrong tincture of romantic heroiſm upon the minds of all ranks of people, as made them jealous of their glory, and ſtrongly emulous of cultivating that heroic politeneſs, which they conſidered as the higheſt perfection they could attain. Every man diſdained to flatter, or to yield up any point of honour which he poſſeſſed: at the ſame time, he rigorouſly exacted from others all that was his due. Theſe circumſtances have given riſe to a great many terms of reſpect, and courteous condeſcenſion, without meanneſs or flattery, which give their dialogue a reſpecful politeneſs and elegance unknown to any other European language. This is the reaſon why the characters ſo finely drawn by Cervantes in Don Quixote are ſtill unknown to all but thoſe who underſtand the language in which he wrote. Nothing can be more unlike the gentle meekneſs and humane heroiſm of the knight, or the native ſimplicity, warmth of affection, and reſpectful loquacity of the ſquire, than the inconſiſtent follies of the one, or the impertinent forwardneſs and diſreſpectful petulance of the other, as they are exhibited in every Engliſh tranſlation. Nor is it, as we imagine, poſſible to repreſent ſo much familiarity, united with ſuch becoming condeſcenſion in the one, and unfeigned deference in the other, in any other European language, as is neceſſary to paint theſe two admirable characters.

Although this language, from the ſolemn dignity and majeſtic elegance of its ſtructure, is perhaps better qualified than any other modern one for the ſublime ſtrains of epic poetry; yet as the poets of this nation have all along imitated the Italians by a moſt ſervile ſubjection to rhime, they never have produced one poem of this ſort, which in point of poeſy of ſtyle deſerves to be tranſmitted to poſterity. And in any other ſpecies of poetry but this, or the higher tragedy, it is not naturally fitted to excel. But although the drama and other polite branches of literature were early cultivated in this country, and made conſiderable progreſs in it, before the thirſt of gain debaſed their ſouls, or the deſire of univerſal dominion made them forfeit that liberty which they once ſo much prized; ſince they became enervated by an overbearing pride, and their minds enſlaved by ſuperſtition; all the polite arts have been neglected: ſo that, while other European nations have been advancing in knowledge, and improving their language, they have remained in a ſtate of torpid inactivity; and their language has not arrived at that perfection which its nature would admit, or the acute genius of the people might have made us naturally expect.

31. It will perhaps, by ſome, be thought an unpardonable inſult, if we do not allow the French the preference of all modern languages in many reſpects. But ſo far muſt we pay a deference to truth, as to be obliged to rank it among the pooreſt languages in Europe. Every other language has ſome ſounds which can be uttered clearly by the voice: even the Italian, although it wants energy, ſtill poſſeſſes diſtinctneſs of articulation. But the French is almoſt incapable of either of theſe beauties; for in that language the vowels are ſo much curtailed in the pronunciation, and the words run into one another in ſuch a manner, as neceſſarily to produce an indiſtinctneſs which renders it incapable of meaſure or harmony. From this cauſe, it is in a great meaſure incapable of poetic modulation, and rhime has been obliged to be ſubſtituted in its ſtead; ſo that this pooreſt of all contrivances which has ever yet been invented to diſtinguiſh poetry from proſe, admitted into all the modern languages when ignorance prevailed over Europe, has ſtill kept ſome footing in the greateſt part of theſe, rather through a deference for eſtabliſhed cuſtoms, than from any neceſſity. Yet as the French language admits of ſo little poetic modulation, rhime is in ſome meaſure *neceſſary* to it; and therefore this poor deviation from proſe has been adopted by it, and dignified with the name of *Poetry*. But by their blind attachment to this artifice, the French have neglected to improve ſo much as they might have done the ſmall powers for harmony of which their language is poſſeſſed; and by being long accuſtomed to this falſe taſte, have become fond of it to ſuch a ridiculous exceſs, as to have all their tragedies, nay even their comedies, in rhime. While the poet is obliged to enervate his language, and check the flow of compoſition, for the ſake of linking his lines together, the judicious actor finds more difficulty in deſtroying the appearance of that meaſure, and preventing the clinking of the rhimes, than in all the reſt of his taſk.——After this, we will not be ſurpriſed to find Voltaire attempt an epic poem in this ſpecies of poetry; although the more judicious Fenelon in his *Telemaque* had ſhown to his countrymen the only ſpecies of poeſy that their language could admit of for any poem which aſpired to the dignity of the epic ſtrain.——Madam Deſhouliers, in her *Idyllie*, has ſhewn the utmoſt extent of harmony to which their language can attain in ſmaller poems: indeed in the tenderneſs of an elegy, or the gaiety of a ſong, it may ſucceed; but it is ſo deſtitute of force and energy, that it can never be able to reach the pindaric, or even perhaps the lyric ſtrain, —as the ineffectual efforts even of the harmonious Rouſſeau, in his tranſlation of the pſalms of David of this ſtamp, may fully convince us.

With regard to its powers in other ſpecies of compoſition, the ſententious rapidity of Voltaire, and the more nervous dignity of Rouſſeau, afford us no ſmall preſumption, that, in a ſkilful hand, it might acquire ſo much force, as to tranſmit to futurity hiſtorical facts in a ſtyle not altogether unworthy of the ſubject. In attempts at pathetic declamation, the ſuperior abilities of the compoſer may perhaps on ſome occaſions excite a great idea, but this is ever cramped by the genius of the language: and although no nation in Europe can boaſt of ſo many orations where this grandeur is attempted; yet perhaps there are few who cannot produce more perfect, although not more laboured, compoſitions of this kind.

But notwithſtanding the French language labours under all theſe inconveniences; although it can neither equal the dignity or genuine politeneſs of the Spaniſh, the nervous boldneſs of the Engliſh, nor the melting ſoftneſs of the Italian; although it is deſtitute of poetic harmony, and ſo much cramped in ſound as to be abſolutely unfit for almoſt every ſpecies of mufical compoſition (A); yet the ſprightly genius of that volatile people has been able to ſurmount all theſe difficulties, and render it the language moſt generally eſteemed, and moſt univerſally ſpoken, of any in Europe: for this people, naturally gay and loquacious, and fond to exceſs of thoſe ſuperficial accompliſhments which engage the attention of the fair ſex, have invented ſuch an infinity of words capable of expreſſing vague and unmeaning compliment, now dignified by the name of *politeneſs*, that, in this ſtrain, one who uſes the French can never be at a loſs; and as it is eaſy to converſe *more*, and really ſay *leſs*, in this than in any other language, a man of very moderate talents may diſtinguiſh himſelf much more by uſing this than any other that has ever yet been invented. On this account, it is peculiarly well adapted for that ſpecies of converſation which muſt ever take place in thoſe general and promiſcuous companies, where many perſons of both ſexes are met together for the purpoſes of relaxation or amuſement; and muſt of courſe be naturally admitted into the courts of princes, and aſſemblies of great perſonages; who, having fewer equals with whom they can aſſociate, are more under a neceſſity of converſing with ſtrangers, in whoſe company the tender ſtimulus of friendſhip does not ſo naturally expand the heart to mutual truſt or unreſtrained confidence. In theſe circumſtances, as the heart remaineth diſengaged, converſation muſt neceſſarily flag; and mankind in this ſituation will gladly adopt that language in which they can converſe moſt eaſily without being deeply intereſted. On theſe accounts the French now is, and probably will continue to be reckoned the moſt polite language in Europe, and therefore the moſt generally ſtudied and known: nor ſhould we envy them this diſtinction, if our countrymen would not weaken and enervate their own manly language, by adopting too many of their unmeaning phraſes.

32. The Engliſh is perhaps poſſeſſed of a greater degree of excellence, blended with a greater number of defects, than any of the languages we have hitherto mentioned. As the people of Great Britain are a bold, daring, and impetuous race of men; ſubject to ſtrong paſſions, and, from the abſolute freedom and independence which reigns among all ranks of people throughout this happy iſle, little ſolicitous about controlling theſe paſſions;—our language takes its ſtrongeſt characteriſtical diſtinction from the genius of the people; and, being bold, daring, and abrupt, is admirably well adapted to expreſs thoſe great emotions which ſpring up in an intrepid mind at the proſpect of intereſting events. Peculiarly happy too in the full and open ſound of the vowels, which forms the characteriſtic *tone* of the language, and in the ſtrong uſe of the aſpirate H in almoſt all thoſe words which are uſed as exclamations, or marks of ſtrong emotions upon intereſting occaſions, that particular claſs of words called *interjections* have, in our language, more of that fulneſs and unreſtrained freedom of tones, in which their chief power conſiſts, and are puſhed forth from the inmoſt receſſes of the ſoul in a more forcible and unreſtrained manner, than any other language whatever. Hence it is more peculiarly adapted for the great and intereſting ſcenes of the *drama* than any language that has yet appeared in the globe. Nor has any other nation ever arrived at that perfection which the Engliſh may juſtly claim in that reſpect; for however faulty our dramatic compoſitions may be in ſome of the critical niceties which relate to this art,—in nervous force of diction, and in the natural expreſſion of thoſe great emotions which conſtitute its ſoul and energy, we claim, without diſpute, an unrivalled ſuperiority. Our language too, from the great intercourſe that we have had with almoſt all the nations of the globe by means of our extenſive commerce, and from the eminent degree of perfection which we have attained in all the arts and ſciences, has acquired a copiouſneſs beyond what any other modern nation can lay claim to; and even the moſt partial favourers of the Greek language are forced to acknowledge, that in this reſpect it muſt give place to the Engliſh. Nor is it leſs happy in that facility of conſtruction which renders it more peculiarly adapted to the genius of a free people, than any other form of language. Of an *idiom* purely analogous, it has deviated leſs from the genius of that *idiom*, and poſſeſſes more of the characteriſtic advantages attending it, than any other language that now exiſts: for, while *others*, perhaps by their more intimate connection with the Romans, have adopted ſome of their tranſpoſitions, and clogged their language with unneceſſary fetters, *we* have preſerved ourſelves free from the contagion, and ſtill retain the primitive ſimplicity of our language. Our *verbs* are all varied by auxiliaries (except in the inſtance we have already given, which is ſo much in our favours); our *nouns* remain free from the perplexing embarraſſment of *genders*, and our pronouns mark this diſtinction where neceſſary with the moſt perfect accuracy; our *articles* alſo are of courſe freed from this unnatural encumbrance, and our *adjectives* preſerve their natural freedom and independence. From theſe cauſes, our language follows an order of conſtruction ſo

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(A) An author of great diſcernment, and well acquainted with the French language, has lately made the ſame remark; and as the loftineſs of his genius often prevents him from bringing down his illuſtrations to the level of ordinary comprehenſion, he has on this, and many other occaſions, been unjuſtly accuſed of being fond of paradoxes.---But as muſic never produces its full effect but when the tones it aſſumes are in uniſon with the idea that the words naturally excite, it of neceſſity follows, that if the words of any language do not admit of that fulneſs of ſound, or of that ſpecies of tones, which the paſſion or affection that may be deſcribed by the words would naturally require to excite the ſame idea in the mind of one who was unacquainted with the language, it will be impoſſible for the muſic to produce its full effect, as it will be cramped and confined by the ſound of the words;---and as the French language does not admit of thoſe full and open ſounds which are neceſſary for pathetic expreſſion in muſic, it muſt of courſe be unfit for muſical compoſition.---It is true indeed, that in modern times, in which ſo little attention is beſtowed on the ſimple and ſublime charms of pathetic expreſſion, and a fantaſtical tingling of unmeaning ſounds is called *muſic*---where the ſenſe of the words are loſt in fugues, quavers, and unneceſſary repetition of particular ſyllables,---all languages are nearly fitted for it; and among theſe the French: nor is it to be doubted, that, in the eaſy gaiety of a ſong, this language can properly enough admit of all the muſical expreſſion which that ſpecies of compoſition may require.

ſo natural and eaſy, and the rules of *ſyntax* are ſo few and obvious, as to be within the reach of the moſt ordinary capacity. So that from this, and the great clearneſs and diſtinctneſs of meaning with which this mode of conſtruction is neceſſarily accompanied, it is much better adapted for the familiar intercourſe of private ſociety, and liable to fewer errors in uſing it, than any other language yet known; and on this account we may boaſt, that in no nation of Europe do the lower claſs of people ſpeak their language with ſo much accuracy, or have their minds ſo much enlightened by knowledge, as in Great Britain.——What then ſhall we ſay of the diſcernment of thoſe grammarians, who are every day echoing back to one another complaints of the poverty of our language on account of the few and ſimple rules which it requires in ſyntax? As juſtly might we complain of an invention in mechanics, which, by means of one or two ſimple movements, obvious to an ordinary capacity, little liable to accidents, and eaſily put in order by the rudeſt hand, ſhould poſſeſs the whole powers of a complex machine, which had required an infinite apparatus of wheels and contrary movements, the knowledge of which could only be acquired, or the various accidents to which it was expoſed by uſing it be repaired, by the powers of an ingenious artiſt, as complain of this characteriſtic excellence of our language as a defect.

But if we thus enjoy in an eminent degree the advantages attending an *analogous* language, we likewiſe feel in a conſiderable meaſure the defects to which it is expoſed; as the number of monoſyllables with which it always muſt be embarraſſed, notwithſtanding the great improvements which have been made in our language ſince the revival of letters in Europe, prevents in ſome degree that ſwelling fulneſs of ſound which ſo powerfully contributes to harmonious dignity and graceful cadences in literary compoſitions. And as the genius of the people of Britain has always been more diſpoſed to the rougher arts of command than to the ſofter inſinuations of perſuaſion, no pains have been taken to correct theſe natural defects of our language; but, on the contrary, by an inattention of which we have hardly a parallel in the hiſtory of any civilized nation, we meet with many inſtances, even within this laſt century, of the harmony of ſound being ſacrificed to that brevity ſo deſirable in converſation, as many elegant words have been curtailed, and harmonious ſyllables ſuppreſſed, to ſubſtitute in their ſtead others, ſhorter indeed, but more barbarous and uncouth. Nay, ſo little attention have our forefathers beſtowed upon the harmony of ſounds in our language, that one would be tempted to think, on looking back to its primitive ſtate, that they had on ſome occaſions ſtudiouſly debaſed it. Our language, at its firſt formation, ſeems to have laboured under a capital defect in point of ſound, as ſuch a number of S's enter into the formation of our words, and ſuch a number of letters and combinations of other letters aſſume a ſimilar ſound, as to give a general hiſs through the whole tenor of our language, which muſt be exceedingly diſagreeable to every unprejudiced ear. We would therefore have naturally expected, that at the revival of letters, when our forefathers became acquainted with the harmonious languages of Greece and Rome, they would have acquired a more correct taſte, and endeavoured, if poſſible, to have diminiſhed the prevalence of this diſguſting ſound. But ſo far have they been from thinking of this, that they have multiplied this letter exceedingly. The plurals of almoſt all our nouns were originally formed by adding the harmonious ſyllable *en* to the ſingular, which has given place to the letter *s*; and inſtead of *houſen* formerly, we now ſay *houſes*. In like manner, many of the variations of our verbs were formed by the ſyllable *eth*, which we have likewiſe changed into the ſame diſagreeable letter; ſo that, inſtead of *loveth*, *moveth*, *writeth*, *walketh*, &c. we have changed them into the more modiſh form of *loves*, *moves*, *writes*, *walks*, &c. Our very auxiliary verbs have ſuffered the ſame change; and inſtead of *hath* and *doth*, we now make uſe of *has* and *does*. From theſe cauſes, notwithſtanding the great improvements which have been made in language, within theſe few centuries, in other reſpects; yet, with regard to the pleaſingneſs of ſound alone, it was perhaps much more perfect in the days of Chaucer than at preſent: and although cuſtom may have rendered theſe ſounds ſo familiar to our ear, as not to affect us much; yet to an unprejudiced perſon, unacquainted with our language, we have not the ſmalleſt doubt, but the language of *Bacon* or *Sidney* would appear more harmonious than that of *Robertſon* or *Hume*. This is indeed the fundamental defect of our language, and loudly calls for reformation.

But notwithſtanding this great and radical defect with regard to pleaſingneſs of ſounds, which muſt be ſo ſtrongly perceived by every one who is unacquainted with the meaning of our words; yet to thoſe who underſtand the language, the exceeding copiouſneſs which it allows in the choice of words proper for the occaſion, and the nervous force which it derives from the accent, with the perſpicuity and graceful elegance the emphaſis beſtows upon it, makes this defect be totally overlooked; and we could produce ſuch numerous works of proſe which excel in almoſt every different ſtyle of compoſition as would be tireſome to enumerate: every reader of taſte and diſcernment will be able to recollect a ſufficient number of writings which excel in point of ſtyle, between the graceful and becoming gravity ſo conſpicuous in all the works of the author of the *Whole Duty of Man*, and the animated and nervous diction of Robertſon in his hiſtory of Charles the Fifth,—the more flowery ſtyle of Shafteſbury, or the Attic ſimplicity and elegance of Addiſon. But although we can equal, if not ſurpaſs, every modern language in works of proſe, it is in its poetical powers that our language ſhines forth with the greateſt luſtre. The brevity to which we muſt here neceſſarily confine ourſelves, prevents us from entering into a minute examination of the poetical powers of our own, compared with other languages: otherwiſe it would be eaſy to ſhew, that every other modern language labours under great reſtraints in this reſpect which ours is freed from;—that our language admits of a greater variety of poetic movements, and diverſity of cadence, than any of the admired languages of antiquity;—that it diſtinguiſhes with the greateſt accuracy between accent and quantity, and is poſſeſſed of every other poetic excellence which their languages were capable of: ſo that we are poſſeſſed of all the ſources of harmony which they could boaſt; and, beſides all theſe, have one ſuperadded, which is the cauſe of greater variety and more forcible expreſſion in numbers than all the reſt; that is, the unlimited power given by the emphaſis over quantity and cadence; by means whereof, a neceſſary union between ſound and ſenſe, numbers and meaning, in verſification, unknown to the ancients, has been brought about, which gives our language in this reſpect a ſuperiority over all thoſe juſtly admired languages. But as we cannot here further purſue this ſubject, we ſhall only obſerve, that theſe great and diſtinguiſhing excellencies far more than counter-balance the inconveniencies that we have already mentioned: and although, in mere pleaſantneſs of ſounds, or harmonious flow of ſyllables, our language may be inferior to the Greek, the Latin, Italian, and Spaniſh; yet in point of manly dignity, graceful variety, intuitive diſtinctneſs, nervous energy of expreſſion, unconſtrained freedom and harmony of poetic numbers, it will yield the palm to none. Our immortal Milton, ſlowly riſing, in graceful majeſty ſtands up as equal, if not ſuperior in theſe reſpects to any poet, in any other language, that ever yet exiſted;—while Thomſon, with more humble aim, in melody more ſmooth and flowing, ſoftens the ſoul to harmony and peace:—the plaintive moan of Hammond calls forth the tender tear and ſympathetic ſigh; while Gray's more ſoothing melancholy fixes the ſober mind to ſilent contemplation:—more tender ſtill than theſe, the amiable Shenſton comes; and from his Doric reed, ſtill free from courtly affectation, flows a ſtrain ſo pure, ſo ſimple, and of ſuch tender harmony, as even Arcadian ſhepherds would be proud to own. But far before the reſt, the daring Shakeſpeare ſteps forth conſpicuous, clothed in native dignity; and, preſſing forward with unremitting ardour, boldly lays claim to both dramatic crowns held out to him by Thalia and Melpomene:—his rivals, far behind, look up, and envy him for theſe unfading glories; and the aſtoniſhed nations round, with diſtant awe, behold and tremble at his daring flight.——Thus the language, equally obedient to all, bends with eaſe under their hands, whatever form they would have it aſſume; and, like the yielding wax, readily receives, and faithfully tranſmits to poſterity, thoſe impreſſions which they have ſtamped upon it.

Such are the principal outlines of the language of Great Britain, ſuch are its beauties, and ſuch its moſt capital defects; a language more peculiarly circumſtanced than any that has ever yet appeared.——It is the language of a great and powerful nation, whoſe fleets ſurround the globe, and who ſemerchants are in every port; a people admired or revered by all the world:—and yet it is leſs known in every foreign country, than any other language in Europe.—In it are written more perfect treatiſes on every art and ſcience, than are to be found in any other language;—yet it is leſs ſought after or eſteemed by the literati in any part of the globe, than almoſt any of theſe. Its ſuperior powers for every purpoſe of language are ſufficiently obvious from the models of perfection, in almoſt every particular, which can be produced in it:—yet it is neglected, deſpiſed, and vilified by the people who uſe it; and many of thoſe authors who owe almoſt the whole of their fame to the excellence of the language in which they wrote, look upon that very language with the higheſt contempt.—Neglected and deſpiſed, it has been trodden under foot as a thing altogether unworthy of cultivation or attention. Yet in ſpite of all theſe inconveniencies, in ſpite of the many wounds it has thus received, it ſtill holds up its head, and preſerves evident marks of that comelineſs and vigour which are its characteriſtical diſtinction. Like a healthy oak planted in a rich and fertile ſoil, it has ſprung up with vigour: and although neglected, and ſuffered to be over-run with weeds; although expoſed to every blaſt, and unprotected from every violence; it ſtill beareth up under all theſe inconveniencies, and ſhoots up with a robuſt healthineſs and wild luxuriance of growth. Should this plant, ſo ſound and vigorous, be now cleared from thoſe weeds with which it has been ſo much encumbered;—ſhould every obſtacle which now buries it under thick ſhades, and hides it from the view of every paſſenger, be cleared away;—ſhould the ſoil be cultivated with care, and a ſtrong fence be placed around it, to prevent the idle or the wicked from breaking or diſtorting its branches;—who can tell with what additional vigour it would flouriſh, or what amazing magnitude and perfection it might at laſt attain!——How would the aſtoniſhed world behold, with reverential awe, the majeſtic gracefulneſs of that object which they ſo lately deſpiſed!

Beauty of LANGUAGE *conſidered in regard to Compoſition.* The beauties of language may be divided into three claſſes: 1. Thoſe which ariſe from ſound; 2. Thoſe which reſpect ſignificance; 3. Thoſe derived from a reſemblance between ſound and ſignification.

Elements of Crit.

I. *With reſpect to ſound.* In a curſory view, one would imagine, that the agreeableneſs or diſagreeableneſs of a word with reſpect to ſound, ſhould depend upon the agreeableneſs or diſagreeableneſs of its component ſyllables: which is true in part, but not entirely; for we muſt alſo take under conſideration the effect of ſyllables in ſucceſſion. In the firſt place, ſyllables in immediate ſucceſſion, pronounced, each of them, with the ſame, or nearly the ſame aperture of the mouth, produce a ſucceſſion of weak and feeble ſounds; witneſs the French words *dit-il, pathetique:* on the other hand, a ſyllable of the greateſt aperture ſucceeding one of the ſmalleſt, or the contrary, makes a ſucceſſion, which, becauſe of its remarkable diſagreeableneſs, is diſtinguiſhed by a proper name, viz. *hiatus.* The moſt agreeable ſucceſſion is, where the cavity is increaſed and diminiſhed alternately, within moderate limits: examples, *Alternative, longevity, puſillanimous.* Secondly, words conſiſting wholly of ſyllables pronounced ſlow, or of ſyllables pronounced quick, commonly called *long* and *ſhort ſyllables*, have little melody in them; witneſs the words *petitioner, fruiterer, dizzineſs:* on the other hand, the intermixture of long and ſhort ſyllables is remarkably agreeable; for example, *degree, repent, wonderful, altitude, rapidity, independent, impetuoſity*; the cauſe of which is explained in POETRY, Part II.

To proceed to the muſic of periods. As the arrangement of words in ſucceſſion, ſo as to afford the greateſt pleaſure to the ear, depends on principles remote

mote from common view, it will be neceſſary to premiſe ſome general obſervations upon the appearance that objects make when placed in an increaſing or decreaſing ſeries; which appearance will vary according to the prevalence of reſemblance or of contraſt. Where the objects vary by ſmall differences ſo as to have a mutual reſemblance, we in aſcending conceive the ſecond object of no greater ſize than the firſt, the third of no greater ſize than the ſecond, and ſo of the reſt; which diminiſheth in appearance the ſize of every object except the firſt: but when, beginning at the greateſt object, we proceed gradually to the leaſt, reſemblance makes us imagine the ſecond as great as the firſt, and the third as great as the ſecond; which in appearance magnifies every object except the firſt. On the other hand, in a ſeries varying by large differences, where contraſt prevails, the effects are directly oppoſite: a great object ſucceeding a ſmall one of the ſame kind, appears greater than uſual; and a little object ſucceeding one that is great, appears leſs than uſual *. Hence a remarkable pleaſure in viewing a ſeries aſcending by large differences; directly oppoſite to what we feel when the differences are ſmall. The leaſt object of a ſeries aſcending by large differences has the ſame effect upon the mind as if it ſtood ſingle without making a part of the ſeries: but the ſecond object, by means of contraſt, appears greater than when view'd ſingly and apart; and the ſame effect is perceived in aſcending progreſſively, till we arrive at the laſt object. The oppoſite effect is produced in deſcending; for in this direction, every object, except the firſt, appears leſs than when viewed ſeparately and independent of the ſeries. We may then aſſume as a maxim, which will hold in the compoſition of language as well as of other ſubjects, That a ſtrong impulſe ſucceeding a weak, makes a double impreſſion on the mind; and that a weak impulſe ſucceeding a ſtrong, makes ſcarce any impreſſion.

After eſtabliſhing this maxim, we can be at no loſs about its application to the ſubject in hand. The following rule is laid down by Diomedes †. "In verbis obſervandum eſt, ne a majoribus ad minora deſcendat oratio; melius enim dicitur, *Vir eſt optimus*, quam, *Vir optimus eſt*." This rule is alſo applicable to entire members of a period, which, according to our author's expreſſion, ought not, more than ſingle words, to proceed from the greater to the leſs, but from the leſs to the greater. In arranging the members of a period, no writer equals Cicero: The following examples are too beautiful to be ſlurred over by a reference.

Quicum quæſtor fueram,
Quicum me ſors conſuetudoque majorum,
Quicum me deorum hominumque judicium conjunxerat.

Again:

Habet honorem quem petimus,
Habet ſpem quam præpoſitam nobis habemus,
Habet exiſtimationem, multo ſudore, labore, vigiliiſque, collectam.

Again:

Eripite nos ex miſeriis,
Eripite nos ex faucibus eorum,
Quorum crudelitas noſtro ſanguine non poteſt expleri.
De oratore, *l.* 1. § 52.

This order of words or members gradually increaſing in length, may, ſo far as concerns the pleaſure of ſound, be denominated *a climax in ſound*.

With reſpect to the muſic of periods as united in a diſcourſe, this depends chiefly on variety. Hence a rule for arranging the members of different periods with relation to each other, That to avoid a tedious uniformity of ſound and cadence, the arrangement, the cadence, and the length of the members, ought to be diverſified as much as poſſible: and if the members of different periods be ſufficiently diverſified, the periods themſelves will be equally ſo.

II. *With reſpect to ſignification.* The beauties of language with reſpect to ſignification, may not improperly be diſtinguiſhed into two kinds: firſt, the beauties that ariſe from a right choice of words or materials for conſtructing the period; and next, the beauties that ariſe from a due arrangement of theſe words or materials.

1. Communication of thought being the chief end of language, it is a rule, That perſpicuity ought not to be ſacrificed to any other beauty whatever. Nothing therefore in language ought more to be ſtudied, than to prevent all obſcurity in the expreſſion; for to have no meaning, is but one degree worſe than to have a meaning that is not underſtood. We ſhall here give a few examples where the obſcurity ariſes from a wrong choice of words.

Livy, ſpeaking of a rout after a battle, "Multique in ruina *majore* quam fuga oppreſſi obtruncatique." This author is frequently obſcure by expreſſing but part of his thought, leaving it to be completed by his reader. His deſcription of the ſea-fight, *l.* 28. *cap.* 30. is extremely perplexed.

Unde tibi reditum *certo ſubtemine* Parcæ
Rupere. *Hor.*

Qui perſæpe cava teſtudine flevit amorem,
Non elaboratum ad pedem. *Id.*

Me fabuloſæ Vulture in Appulo,
Altricis extra limen Apuliæ,
Ludo, fatigatumque *ſomno*,
Fronde nova puerum palumbes
Texere. *Id.*

Puræ rivus aquæ, ſilvaque jugerum
Paucorum, et ſegetis certa fides meæ,
Fulgentem imperio fertilis Africæ
Fallit ſorte beatior. *Id.*

Cum fas atque nefas exiguo *fine* libidinum
Diſcernunt avidi. *Id.*

Ac ſpem fronte ſerenat. *Virg.*

The rule next in order is, That the language ought to correſpond to the ſubject: heroic actions or ſentiments require elevated language; tender ſentiments ought to be expreſſed in words ſoft and flowing; and plain language void of ornament, is adapted to ſubjects grave and didactic. Language may be conſidered as the dreſs of thought; and where the one is not ſuited to the other, we are ſenſible of incongruity, in the ſame manner as where a judge is dreſſed like a fop, or a peaſant like a man of quality. Where the impreſſion made by the words reſembles the impreſſion made by the thought, the ſimilar emotions mix ſweetly in the mind, and double the pleaſure; but where the impreſſions made by the thought and the words are diſſimilar, the unnatural union they are forced into is diſagreeable.

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* See *Reſemblance.*

† De ſtruct perfectæ orat. lib. ii.

This concordance between the thought and the words has been obſerved by every critic, and is ſo well underſtood as not to require any illuſtration. But there is a concordance of a peculiar kind that has ſcarcely been touched in works of criticiſm, though it contributes to neatneſs of compoſition. It is what follows.

In a thought of any extent, we commonly find ſome parts intimately united, ſome ſlightly, ſome disjoined, and ſome directly oppoſed to each other. To find theſe conjunctions and disjunctions imitated in the expreſſion, is a beauty; becauſe ſuch imitation makes the words concordant with the ſenſe. This doctrine may be illuſtrated by a familiar example: When we have occaſion to mention the intimate connection that the ſoul hath with the body, the expreſſion ought to be, *the ſoul and body;* becauſe the article *the*, relative to both, makes a connection in the expreſſion, reſembling in ſome degree the connection in the thought: but when the ſoul is diſtinguiſhed from the body, it is better to ſay *the ſoul and the body;* becauſe the disjunction in the words reſembles the disjunction in the thought. We proceed to other examples, beginning with conjunctions.

“ Conſtituit agmen; et expedire tela animoſque, equitibus juſſis,” &c. *Livy, l.* 38. § 25. Here the words that expreſs the connected ideas are artificially connected by ſubjecting them both to the regimen of one verb. And the two following are of ſame kind.

“ Quum ex paucis quotidie aliqui eorum caderent aut vulnerarentur, et qui ſuperarent, feſſi et corporibus et animis eſſent,” &c. *Ibid.* § 29.

Poſt acer Mneſtheus adducto conſtitit arcu,
Alta petens, pariterque oculos telumque tetendit.
Æneid, v. 507.

But to juſtify this artificial connection among the words, the ideas they expreſs ought to be intimately connected; for otherwiſe that concordance which is required between the ſenſe and the expreſſion will be impaired. In that view, the following paſſage from Tacitus is exceptionable; where words that ſignify ideas very little connected, are however forced into an artificial union. “ Germania omnis a Gallis, Rhætiiſque, et Pannoniis, Rheno et Danubio fluminibus; a Sarmatis Daciſque, mutuo metu aut montibus ſeparatur.”

Upon the ſame account, the following paſſage ſeems equally exceptionable.

———The fiend look'd up, and knew
His mounted ſcale aloft; nor more, but fled
Murm'ring, and with him fled the ſhades of night.
Paradiſe Loſt, B. iv. *at the end.*

There is no natural connection between a perſon's flying or retiring, and the ſucceſſion of day-light to darkneſs; and therefore to connect artificially the terms that ſignify theſe things cannot have a ſweet effect.

Two members of a thought connected by their relation to the ſame action, will naturally be expreſſed by two members of the period governed by the ſame verb; in which caſe theſe members, in order to improve their connection, ought to be conſtructed in the ſame manner. This beauty is ſo common among good writers as to have been little attended to; but the neglect of it is remarkably diſagreeable: for example, “ He did not mention Leonora, nor that her father was dead.” Better thus: “ He did not mention Leonora, nor her father's death.”

Where two ideas are ſo connected as to require but a copulative, it is pleaſant to find a connection in the words that expreſs theſe ideas, were it even ſo ſlight as where both begin with the ſame letter. Thus,

“ The peacock, in all his pride, does not diſplay half the colour that appears in the garments of a Britiſh lady, when ſhe is either dreſſed for a ball or a birthday.” *Spect.*

“ Had not my dog of a ſteward run away as he did, without making up his accounts, I had ſtill been immerſed in ſin and ſea-coal.” *Ib.*

My life's companion, and my boſom-friend,
One faith, one fame, one fate ſhall both attend.
Dryden, *Tranſlation of Æneid.*

Next as to examples of disjunction and oppoſition in the parts of the thought, imitated in the expreſſion; an imitation that is diſtinguiſhed by the name of *antitheſis.*

Speaking of Coriolanus ſoliciting the people to be made conſul:

With a proud heart he wore his humble weeds.
Coriolanus.

“ Had you rather Cæſar were living, and die all ſlaves, than that Cæſar were dead, to live all free men?”
Julius Cæſar.

He hath cool'd my friends and heated mine enemies.
Shakeſpear.

An artificial connection among the words, is undoubtedly a beauty when it repreſents any peculiar connection among the conſtituent parts of the thought; but where there is no ſuch connection, it is a poſitive deformity, becauſe it makes a diſcordance between the thought and expreſſion. For the ſame reaſon, we ought alſo to avoid every artificial oppoſition of words where there is none in the thought. This laſt, termed *verbal antitheſis*, is ſtudied by low writers, becauſe of a certain degree of livelineſs in it. They do not conſider how incongruous it is, in a grave compoſition, to cheat the reader, and to make him expect a contraſt in the thought, which upon examination is not found there.

A fault directly oppoſite to the laſt mentioned, is to conjoin artificially words that expreſs ideas oppoſed to each other. This is a fault too groſs to be in common practice; and yet writers are guilty of it in ſome degree, when they conjoin by a copulative things tranſacted at different periods of time. Hence a want of neatneſs in the following expreſſion: “ The nobility too, whom the king had no means of retaining by ſuitable offices and preferments, had been ſeized with the general diſcontent, and unwarily threw themſelves into the ſcale which began already too much to preponderate.” *Hume.* In periods of this kind, it appears more neat to expreſs the paſt time by the participle paſſive, thus: “ The nobility having been ſeized with the general diſcontent, unwarily threw themſelves,” &c. Or, “ The nobility, who had been ſeized, &c. unwarily threw themſelves,” &c.

It is unpleaſant to find even a negative and affirmative propoſition connected by a copulative:

If it appear not plain, and prove untrue,
Deadly divorce ſtep between me and you.
Shakeſpear.

In mirth and drollery it may have a good effect to connect verbally things that are oppoſite to each other in the thought. Example: Henry IV. of France introducing the Mareſchal Biron to ſome of his friends, “ Here, gentlemen, (ſays he), is the Mareſchal Biron, whom I freely preſent both to my friends and enemies.”

This rule of ſtudying uniformity between the thought and expreſſion, may be extended to the conſtruction of ſentences or periods. A ſentence or period ought to expreſs one entire thought or mental propoſition; and different thoughts ought to be ſeparated in the expreſſion by placing them in different ſentences or periods. It is therefore offending againſt neatneſs, to crowd into one period entire thoughts requiring more than one; which is joining in language things that are ſeparated in reality. Of errors againſt this rule take the following examples.

“ Behold, thou art fair, my beloved, yea pleaſant: alſo our bed is green.”

Burnet, in the hiſtory of his own times, giving lord Sunderland's character, ſays, “ His own notions were always good; but he was a man of great expence.”

“ I have ſeen a woman's face break out in heats, as ſhe has been talking againſt a great Lord, whom ſhe had never ſeen in her life; and indeed never knew a party-woman that kept her beauty for a twelvemonth.” *Spect.*

Lord Bolingbroke, ſpeaking of Strada: “ I ſingle him out among the moderns, becauſe he had the fooliſh preſumption to cenſure Tacitus, and to write hiſtory himſelf; and your Lordſhip will forgive this ſhort excurſion in honour of a favourite writer.”

To crowd into a ſingle member of a period different ſubjects, is ſtill worſe than to crowd them into one period:

——————Trojam, genitore Adamaſto
Paupere (manſiſſetque utinam fortuna) profectus.
Æneid iii. 614.

From conjunctions and disjunctions in general, we proceed to compariſons, which make one ſpecies of them, beginning with ſimilies. And here alſo, the intimate connection that words have with their meaning requires, that in deſcribing two reſembling objects a reſemblance in the two members of the period ought to be ſtudied. To begin with examples of reſemblances expreſſed in words that have no reſemblance.

“ I have obſerved of late, the ſtyle of ſome great miniſters very much to exceed that of any other productions.” *Swift.* This, inſtead of ſtudying the reſemblance of words in a period that expreſſes a compariſon, is going out of one's road to avoid it. Inſtead of *productions*, which reſemble not miniſters great nor ſmall, the proper word is *writers* or *authors*.

“ I cannot but fancy, however, that this imitation, which paſſes ſo currently with *other judgments*, muſt at ſome time or other have ſtuck a little with your *Lordſhip*.” *Shafteſb.* Better thus: “ I cannot but fancy, however, that this imitation, which paſſes paſſes ſo currently with *others*, muſt at ſome time or other have ſtuck a little with your *Lordſhip*.”

“ A glutton or mere ſenſualiſt is as ridiculous as the other two characters.” *Id.*

“ They wiſely prefer *the generous efforts of goodwill and affection*, to the reluctant compliances *of ſuch as* obey by force.” *Bolingb.*

It is a ſtill greater deviation from congruity, to affect not only variety in the words, but alſo in the conſtruction.

Hume ſpeaking of Shakeſpear: “ There may remain a ſuſpicion that we over-rate the greatneſs of his genius, in the ſame manner as bodies appear more gigantic on account of their being diſproportioned and miſhapen.” This is ſtudying variety in a period where the beauty lies in uniformity. Better thus: “ There may remain a ſuſpicion that we over-rate the greatneſs of his genius, in the ſame manner as we over-rate the greatneſs of bodies that are diſproportioned and miſhapen.”

Next of a compariſon where things are oppoſed to each other. And here it muſt be obvious, that if reſemblance ought to be ſtudied in the words which expreſs two reſembling objects, there is equal reaſon for ſtudying oppoſition in the words which expreſs contraſted objects. This rule will be beſt illuſtrated by examples of deviations from it.

“ A friend exaggerates a man's virtues; an enemy inflames his crimes.” *Spect.* Here the oppoſition in the thought is neglected in the words; which at firſt view ſeem to import, that the friend and enemy are employed in different matters, without any relation to each other, whether of reſemblance or of oppoſition. And therefore the contraſt or oppoſition will be better marked by expreſſing the thought as follows: “ A friend exaggerates a man's virtues, an enemy his crimes.”

“ The wiſe man is happy when he gains his approbation; the fool when he recommends himſelf to the applauſe of thoſe about him.” *Ib.* Better: “ The wiſe man is happy when he gains his own approbation, the fool when he gains that of others.”

We proceed to a rule of a different kind. During the courſe of a period, the ſcene ought to be continued without variation: the changing from perſon to perſon, from ſubject to ſubject, or from perſon to ſubject, within the bounds of a ſingle period, diſtracts the mind, and affords no time for a ſolid impreſſion.

Hook, in his Roman hiſtory, ſpeaking of Eumenes, who had been beat to the ground with a ſtone, ſays, “ After a ſhort time *he* came to himſelf; and the next day, *they* put him on board his ſhip, *which* conveyed him firſt to Corinth, and thence to the iſland of Ægina.”

The following period is unpleaſant, even by a very ſlight deviation from the rule: “ That ſort of inſtruction which is acquired by inculcating an important moral truth,” &c. This expreſſion includes two perſons, one acquiring, and one inculcating; and the ſcene is changed without neceſſity. To avoid this blemiſh, the thought may be expreſſed thus: "That ſort of inſtruction which is afforded by inculcating," &c.

The bad effect of ſuch a change of perſon is remarkable in the following paſſage: "The *Britons*, daily harraſſed by cruel inroads from the Picts, were forced to call in the Saxons for their defence, *who* conſequently reduced the greateſt part of the iſland to their own power, drove the Britons into the moſt remote and mountainous parts, and *the reſt of the country*, in cuſtoms, religion, and language, became wholly Saxon." *Swift.*

The following paſſage has a change from ſubject to perſon: "*This proſtitution of praiſe* is not only a deceit upon the groſs of mankind, who take their notion of characters from the learned; but alſo *the better ſort* muſt by this means loſe ſome part at leaſt of that deſire of fame which is the incentive to generous actions, when they find it promiſcuouſly beſtowed on the meritorious and undeſerving." *Guardian*, N° 4.

The preſent head, which relates to the choice of materials, ſhall be cloſed with a rule concerning the uſe of copulatives. Longinus obſerves, that it animates a period to drop the copulatives; and he gives the following example from Xenophon: "Cloſing their ſhields together, they were puſh'd, they fought, they ſlew, they were ſlain." The reaſon may be what follows. A continued ſound, if not loud, tends to lay us aſleep: an interrupted ſound rouſes and animates by its repeated impulſes; thus feet compoſed of ſyllables, being pronounced with a ſenſible interval between each, make more lively impreſſions than can be made by a continued ſound. A period of which the members are connected by copulatives, produceth an effect upon the mind approaching to that of a continued ſound; and therefore the ſuppreſſing copulatives muſt animate a deſcription. It produces a different effect akin to that mentioned: the members of a period connected by proper copulatives, glide ſmoothly and gently along; and are a proof of ſedateneſs and leiſure in the ſpeaker: on the other hand, one in the hurry of paſſion, neglecting copulatives and other particles, expreſſes the principal image only; and for that reaſon, hurry or quick action is beſt expreſſed without copulatives:

Veni, vidi, vici.

——————Ite:
Ferte citi flammas, data vela, impellite remos.
Æneid. iv. 593.

Quis globus, O cives, caligine volvitur atra?
Ferte citi ferrum, date tela, ſcandite muros.
Hoſtis adeſt, eja. *Æneid.* ix. 37.

In this view Longinus juſtly compares copulatives in a period to ſtrait tying, which in a race obſtructs the freedom of motion.

It follows, that a plurality of copulatives in the ſame period ought to be avoided; for if the laying aſide copulatives give force and livelineſs, a redundancy of them muſt render the period languid. The following inſtance may be appealed to, though there are but two copulatives: "Upon looking over the letters of my female correſpondents, I find ſeveral from women complaining of jealous huſbands; and at the ſame time proteſting their own innocence, and deſiring my advice upon this occaſion." *Spect.*

Where the words are intended to expreſs the coldneſs of the ſpeaker, there indeed the redundancy of copulatives is a beauty:

'Dining one day at an alderman's in the city, Peter 'obſerved him expatiating after the manner of his brethren, in the praiſes of his ſirloin of beef. "Beef, "(ſaid the ſage magiſtrate), is the king of meat: beef "comprehends in it the quinteſſence of patridge, and "quail, and veniſon, and pheaſant, and plum-pudding, "and cuſtard." *Tale of a Tub*, § 4. And the author ſhows great delicacy of taſte by varying the expreſſion in the mouth of Peter, who is repreſented more animated: "Bread, (ſays he), dear brothers, is the "ſtaff of life, in which bread is contained, *incluſive*, "the quinteſſence of beef, mutton, veal, veniſon, partridge, plum-pudding, and cuſtard."

Another caſe muſt alſo be excepted. Copulatives have a good effect where the intention is to give an impreſſion of a great multitude conſiſting of many diviſions; for example: 'The army was compoſed of, Grecians, and Carians, and Lycians, and Pamphylians, and Phrygians." The reaſon is, that a leiſurely ſurvey, which is expreſſed by the copulatives, makes the parts appear more numerous than they would do by a haſty ſurvey: in the latter caſe, the army appears in one group; in the former, we take as it were an accurate ſurvey of each nation, and of each diviſion.

2. To pave the way for the rules of arrangement, it will be here neceſſary to explain the difference between a natural ſtyle, and that where tranſpoſition or inverſion prevails. In a natural ſtyle, relative words are by juxtapoſition connected with thoſe to which they relate, going before or after, according to the peculiar genius of the language. Again, a circumſtance connected by a prepoſition, follows naturally the word with which it is connected. But this arrangement may be varied, when a different order is more beautiful: a circumſtance may be placed before the word with which it is connected by a prepoſition; and may be interjected even between a relative word and that to which it relates. When ſuch liberties are frequently taken, the ſtyle becomes inverted or tranſpoſed.

But as the liberty of inverſion is a capital point in the preſent ſubject, it will be neceſſary to examine it more narrowly, and in particular to trace the ſeveral degrees in which an inverted ſtyle recedes more and more from that which is natural. And firſt, as to the placing a circumſtance before the word with which it is connected, this is the eaſieſt of all inverſion, even ſo eaſy as to be conſiſtent with a ſtyle that is properly termed *natural:* witneſs the following examples.

"In the ſincerity of my heart, I profeſs," &c.

"By our own ill management, we are brought to ſo low an ebb of wealth and credit, that," &c.

"On Thurſday morning there was little or nothing tranſacted in Change-alley."

"At St Bride's church in Fleetſtreet, Mr Woolſton, (who writ againſt the miracles of our Saviour), in the utmoſt terrors of conſcience, made a public recantation."

The interjecting a circumſtance between a relative word and that to which it relates, is more properly termed *inverſion;* becauſe, by a diſjunction of words intimately connected, it recedes farther from a natural ſtyle. But this licence has degrees; for the disjunction

tion is more violent in ſome caſes than in others.

In nature, though a ſubject cannot exiſt without its qualities, nor a quality without a ſubject; yet in our conception of theſe, a material difference may be remarked. We cannot conceive a quality but as belonging to ſome ſubject: it makes indeed a part of the idea which is formed of the ſubject. But the oppoſite holds not; for though we cannot form a conception of a ſubject void of all qualities, a partial conception may be formed of it, abſtracting from any particular quality: we can, for example, form the idea of a fine Arabian horſe without regard to his colour, or of a white horſe without regard to his ſize. Such partial conception of a ſubject, is ſtill more eaſy with reſpect to action or motion; which is an occaſional attribute only, and has not the ſame permanency with colour or figure: we cannot form an idea of motion independent of a body; but there is nothing more eaſy than to form an idea of a body at reſt. Hence it appears, that the degree of inverſion depends greatly on the order in which the related words are placed: when a ſubſtantive occupies the firſt place, the idea it ſuggeſts muſt ſubſiſt in the mind at leaſt for a moment, independent of the relative words afterward introduced; and that moment may without difficulty be prolonged by interjecting a circumſtance between the ſubſtantive and its connections. This liberty therefore, however frequent, will ſcarce alone be ſufficient to denominate a ſtyle *inverted*. The caſe is very different, where the word that occupies the firſt place denotes a quality or an action; for as theſe cannot be conceived without a ſubject, they cannot without greater violence be ſeparated from the ſubject that follows; and for that reaſon, every ſuch ſeparation by means of an interjected circumſtance belongs to an inverted ſtyle.

To illuſtrate this doctrine, examples are neceſſary. In the following, the word firſt introduced does not imply a relation:

——————Nor Eve to iterate
Her former treſpaſs fear'd.

——————Hunger and thirſt at once,
Powerful perſuaders, quicken'd at the ſcent
Of that alluring fruit, urg'd me ſo keen.

Moon that now meet'ſt the orient ſun, now fli'ſt
With the fix'd ſtars, fixed in their orb that flies,
And ye five other wand'ring fires that move
In myſtic dance not without ſong, reſound
His praiſe.

Where the word firſt introduced imports a relation, the disjunction will be found more violent:

Of man's firſt diſobedience, and the fruit
Of that forbidden tree, whoſe mortal taſte
Brought death into the world, and all our wo,
With loſs of Eden, till one greater man
Reſtore us, and regain the bliſsful ſeat,
Sing heav'nly muſe.

——————Upon the firm opacous globe
Of this round world, whoſe firſt convex divides
The luminous inferior orbs, incloſ'd
From chaos and th' inroad of darkneſs old,
Satan alighted walks.

——————On a ſudden open fly,
With impetuous recoil and jarring ſound,
Th' infernal doors.

——————Wherein remain'd,
For what could elſe? to our almighty foe
Clear victory, to our part loſs and rout.

Language would have no great power, were it confined to the natural order of ideas: By inverſion a thouſand beauties may be compaſſed, which muſt be relinquiſhed in a natural arrangement.

Rules. 1. In the arrangement of a period, as well as in a right choice of words, the firſt and great object being perſpicuity, the rule above laid down, that perſpicuity ought not to be ſacrificed to any other beauty, holds equally in both. Ambiguities occaſioned by a wrong arrangement are of two ſorts; one where the arrangement leads to a wrong ſenſe, and one where the ſenſe is left doubtful. The firſt, being the more culpable, ſhall take the lead, beginning with examples of words put in a wrong place.

"How much the imagination of ſuch a preſence muſt exalt a genius, we may obſerve *merely* from the influence which an ordinary preſence has over men." *Shafteſb.* This arrangement leads to a wrong ſenſe: the adverb *merely* ſeems by its poſition to affect the preceding word; whereas it is intended to affect the following words, *an ordinary preſence*; and therefore the arrangement ought to be thus: "How much the imagination of ſuch a preſence muſt exalt a genius, we may obſerve from the influence which an ordinary preſence merely has over men." [Or better],—"which even an ordinary preſence has over men."

"Sixtus the Fourth was, if I miſtake not, a great collector of books at leaſt." *Boling.* The expreſſion here leads evidently to a wrong ſenſe; the adverb *at leaſt*, ought not to be connected with the ſubſtantive *books*, but with *collector*, thus: "Sixtus the Fourth was a great collector at leaſt, of books."

Speaking of Lewis XIV. "If he was not the greateſt king, he was the beſt actor of majeſty at leaſt, that ever filled a throne." *Id.* Better thus: "If he was not the greateſt king, he was at leaſt the beſt actor of majeſty," &c. This arrangement removes the wrong ſenſe occaſioned by the juxtapoſition of *majeſty* and *at leaſt*.

The following examples are of a wrong arrangement of members.

"I have confined myſelf to thoſe methods for the advancement of piety, which are in the power of a prince limited like ours by a ſtrict execution of the laws." *Swift.* The ſtructure of this period leads to a meaning which is not the author's, viz. power limited by a ſtrict execution of the laws. That wrong ſenſe is removed by the following arrangement: "I have confined myſelf to thoſe methods for the advancement of piety, which, by a ſtrict execution of the laws, are in the power of a prince limited like ours."

"This morning, when one of lady Lizard's daughters was looking over ſome hoods and ribbands brought by her tirewoman, with great care and diligence, I employ'd no leſs in examining the box which contained them." *Guardian.* The wrong ſenſe occaſioned by this arrangement, may be eaſily prevented by varying it thus: "This morning, when, with great care and diligence, one of Lady Lizard's daughters was looking over ſome hoods and ribbands," &c.

"A great ſtone that I happened to find after a long ſearch by the ſea-ſhore, ſerved me for an anchor." *Swift.* One would think that the ſearch was confined to the ſea-ſhore; but as the meaning is, that the great ſtone was found by the ſea-ſhore, the period ought to be arranged thus: "A great ſtone, that, after a long ſearch, I happened to find by the ſea-ſhore, ſerved me for an anchor."

Next of a wrong arrangement where the ſenſe is left doubtful; beginning, as in the former ſort, with examples of a wrong arrangement of words in a member.

"Theſe forms of converſation *by degrees* multiplied and grew troubleſome." *Spect.* Here it is left doubtful whether the modification *by degrees* relates to the preceeding member or to what follows: it ſhould be, "Theſe forms of converſation multiplied by degrees."

"Nor does this falſe modeſty expoſe us *only* to ſuch actions as are indiſcreet, but very often to ſuch as are highly criminal." *Spect.* The ambiguity is removed by the following arrangement: "Nor does this falſe modeſty expoſe us to ſuch actions only as are indiſcreet." &c.

"The empire of Blefuſcu is an iſland ſituated to the north-eaſt ſide of Lilliput, from whence it is parted *only* by a channel of 800 yards wide." *Swift.* The ambiguity may be removed thus: ——— "from whence it is parted by a channel of 800 yards wide only."

In the following examples the ſenſe is left doubtful by wrong arrangement of members.

"The miniſter who grows leſs by his elevation, *like a little ſtatue placed on a mighty pedeſtal*, will always have his jealouſy ſtrong about him." *Bolingb.* Here, ſo far as can be gathered from the arrangement, it is doubtful, whether the object introduced by way of ſimile relates to what goes before or to what follows. The ambiguity is removed by the following arrangement: "The miniſter, who, like a little ſtatue placed on a mighty pedeſtal, grows leſs by his elevation, will always," &c.

Speaking of the ſuperſtitious practice of locking up the room where a perſon of diſtinction dies: "The knight, ſeeing his habitation reduced to ſo ſmall a compaſs, and himſelf in a manner ſhut out of his own houſe, *upon the death of his mother*, ordered all the apartments to be flung open, and exorciſed by his chaplain." *Spect.* Better thus: "The knight, ſeeing his habitation reduced to ſo ſmall a compaſs, and himſelf in a manner ſhut out of his own houſe, ordered, upon the death of his mother, all the apartments to be flung open."

Speaking of ſome indecencies in converſation: "As it is impoſſible for ſuch an irrational way of converſation to laſt long among a people that make any profeſſion of religion, or ſhow of modeſty, *if the country-gentlemen get into it*, they will certainly be left in the lurch." *Ib.* The ambiguity vaniſhes in the following arrangement: ——— "the country-gentlemen, if they get into it, will certainly be left in the lurch."

"And ſince it is neceſſary that there ſhould be a perpetual intercourſe of buying and ſelling, and dealing upon credit, *where fraud is permitted or connived at, or hath no law to puniſh it*, the honeſt dealer is always undone, and the knave gets the advantage." *Swift.* Better thus: "And ſince it is neceſſary that there ſhould be a perpetual intercourſe of buying and ſelling, and dealing upon credit, the honeſt dealer, where fraud is permitted or connived at, or hath no law to puniſh it, is always undone, and the knave gets the advantage."

From theſe examples, the following obſervation will occur: That a circumſtance ought never to be placed between two capital members of a period; for by ſuch ſituation it muſt always be doubtful, ſo far as we gather from the arrangement, to which of the two members it belongs: where it is interjected, as it ought to be, between parts of the member to which it belongs, the ambiguity is removed, and the capital members are kept diſtinct, which is a great beauty in compoſition. In general, to preſerve members diſtinct that ſignify things diſtinguiſhed in the thought, the beſt method is, to place firſt in the conſequent member, ſome word that cannot connect with what precedes it.

If it ſhall be thought, that the objections here are too ſcrupulous, and that the defect of perſpicuity is eaſily ſupplied by accurate punctuation; the anſwer is, That punctuation may remove an ambiguity, but will never produce that peculiar beauty which is perceived when the ſenſe comes out clearly and diſtinctly by means of a happy arrangement. Such influence has this beauty, that, by a natural tranſition of perception, it is communicated to the very ſound of the words, ſo as in appearance to improve the muſic of the period. But as this curious ſubject comes in more properly elſewhere, it is ſufficient at preſent to appeal to experience, that a period, ſo arranged as to bring out the ſenſe clear, ſeems always more muſical than where the ſenſe is left in any degree doubtful.

The next rule is, That words expreſſing things connected in the thought, ought to be placed as near together as poſſible. This rule is derived immediately from human nature, prone in every inſtance to place together things in any manner connected: where things are arranged according to their connections, we have a ſenſe of order; otherwiſe we have a ſenſe of diſorder, as of things placed by chance: and we naturally place words in the ſame order in which we would place the things they ſignify. The bad effect of a violent ſeparation of words or members thus intimately connected, will appear from the following examples.

"For the Engliſh are naturally fanciful, and very often diſpoſed, by that gloomineſs and melancholy of temper which is ſo frequent in our nation, to many wild notions and viſions, to which others are not ſo liable." *Spect.* Here the verb or aſſertion is, by a pretty long circumſtance, violently ſeparated from the ſubject to which it refers: this makes a harſh arrangement; the leſs excuſeable that the fault is eaſily prevented by placing the circumſtance before the verb, after the following manner: "For the Engliſh are naturally fanciful, and, by that gloomineſs and melancholy of temper which is ſo frequent in our nation, are often diſpoſed to many wild notions, &c."

"From whence we may date likewiſe the rivalſhip of the houſe of France, for we may reckon that of Valois and that of Bourbon as one upon this occaſion, and the houſe of Auſtria, that continues at this day, and has oft coſt ſo much blood and ſo much treaſure in the courſe of it." *Bolingbr.*

"It cannot be impertinent or ridiculous therefore in ſuch a country, whatever it might be in the abbot of St Real's, which was Savoy I think; or in Peru, under the incas, where Garcilaſſo de la Vega ſays it was lawful for none but the nobility to ſtudy—for men of all degrees to inſtruct themſelves in thoſe affairs wherein they may be actors, or judges of thoſe that act, or controllers of thoſe that judge." *Ibid.*

"If Scipio, who was naturally given to women, for which anecdote we have, if I miſtake not, the authority of Polybius, as well as ſome verſes of Nevius preſerved by Aulus Gellius, had been educated by Olympias at the court of Philip, it is improbable that he would have reſtored the beautiful Spaniard." *Ibid.*

If any one have a curioſity for more ſpecimens of this kind, they will be found without number in the works of the ſame author.

A pronoun, which ſaves the naming a perſon or thing a ſecond time, ought to be placed as near as poſſible to the name of that perſon or thing. This is a branch of the foregoing rule; and with the reaſon there given, another concurs, viz. That if other ideas intervene, it is difficult to recal the perſon or thing by reference.

"If I had leave to print the Latin letters tranſmitted to me from foreign parts, they would fill a volume, and be a full defence againſt all that Mr Patridge, or his accomplices of the Portugal inquiſition, will be ever able to object; *who*, by the way, are the only enemies my predictions have ever met with at home or abroad." Better thus: ——— "and be a full defence againſt all that can be objected by Mr Patridge, or his accomplices of the Portugal inquiſition; who, by the way, are," &c.

"There being a round million of creatures in human figure, throughout this kingdom, *whoſe* whole ſubſiſtence," &c. *Swift.* Better: "There being, throughout this kingdom, a round million of creatures in human figure, whoſe whole ſubſiſtence," &c.

The following rule depends on the communication of emotions to related objects; a principle in human nature that hath an extenſive operation: and we find this operation, even where the objects are not otherwiſe related than by juxtapoſition of the words that expreſs them. Hence, to elevate or depreſs an object, one method is, to join it in the expreſſion with another that is naturally high or low: witneſs the following ſpeech of Eumenes to the Roman ſenate.

"Cauſam veniendi ſibi Romam fuiſſe, præter cupiditatem viſendi *deos homineſque*, quorum beneficio in ea fortuna eſſet, ſupra quam ne optare quidem auderet, etiam ut coram moneret ſenatum ut Perſei conatus obviam iret." *Livy.* To join the Romans with the gods in the ſame enunciation, is an artful ſtroke of flattery, becauſe it tacitly puts them on a level.

On the other hand, the degrading or vilifying an object, is done ſucceſsfully by ranking it with one that is really low: "I hope to have this entertainment in readineſs for the next winter; and doubt not but it will pleaſe more than the opera or puppet-ſhow." *Spect.*

"Manifold have been the judgments which Heaven from time to time, for the chaſtiſement of a ſinful people, has inflicted upon whole nations. For when the degeneracy becomes common, it is but juſt the puniſhment ſhould be general. Of this kind, in our own unfortunate country, was that deſtructive peſtilence, whoſe mortality was ſo fatal as to ſweep away, if Sir William Petty may be believed, five millions of Chriſtian ſouls, beſides women and Jews." *Arbuthnot.*

"Such alſo was that dreadful conflagration, enſuing in this famous metropolis of London, which conſumed, according to the computation of Sir Samuel Moreland, 100,000 houſes, not to mention churches and ſtables." *Ibid.*

But on condition it might paſs into a law, I would gladly exempt both lawyers of all ages, ſubaltern and field-officers, young heirs, dancing-maſters, pick-pockets, and players. *Swift.*

Sooner let earth, air, ſea, to chaos fall,
Men, monkeys, lap dogs, parrots, periſh all.
Rape of the Lock.

Circumſtances in a period reſemble ſmall ſtones in a building, employed to fill up vacuities among thoſe of a larger ſize. In the arrangement of a period, ſuch under-parts crowded together make a poor figure; and never are graceful but when interſperſed among the capital parts.

"It is likewiſe urged, that there are, by computation, in this kingdom, above 10,000 parſons, whoſe revenues, added to thoſe of my lords the biſhops, would ſuffice to maintain, &c." *Swift.* Here two circumſtances, viz. *by computation*, and *in this kingdom*, are crowded together unneceſſarily. They make a better appearance ſeparated in the following manner: "It is likewiſe urged, that in this kingdom there are, by computation, above 10,000 parſons, &c."

If there be room for a choice, the ſooner a circumſtance is introduced, the better; becauſe circumſtances are proper for that coolneſs of mind, with which we begin a period as well as a volume: in the progreſs, the mind warms, and has a greater reliſh for matters of importance. When a circumſtance is placed at the beginning of the period, or near the beginning, the tranſition from it to the principal ſubject is agreeable: it is like aſcending, or going upward. On the other hand, to place it late in the period has a bad effect; for after being engaged in the principal ſubject, one is with reluctance brought down to give attention to a circumſtance. Hence evidently the preference of the following arrangement, "Whether in any country a choice altogether unexceptionable has been made, ſeems doubtful;" before this other, "Whether a choice altogether unexceptionable has in any country been made," &c.

For this reaſon the following period is exceptionable in point of arrangement. "I have conſidered formerly, with a good deal of attention, the ſubject upon which you command me to communicate my thoughts to you." *Boling.* Which, with a ſlight alteration, may be improved thus: "I have formerly, with a good deal of attention, conſidered the ſubject," &c.

Swift, ſpeaking of a virtuous and learned education: "And although they may be, and too often are drawn, by the temptations of youth, and the opportunities of a large fortune, into ſome irregularities, *when they come forward into the great world*; it is ever with reluctance and compunction of mind, becauſe their bias to virtue ſtill continues." Better: "And although, *when they come forward into the great world*, they may be, and too often," &c.

In arranging a period, it is of importance to determine in what a part of it a word makes the greateſt figure, whether at the beginning, during the courſe, or at the cloſe. The breaking ſilence rouſes the attention, and prepares for a deep impreſſion at the beginning: the beginning, however, muſt yield to the cloſe; which being ſucceeded by a pauſe, affords time for a word to make its deepeſt impreſſion. Hence the following rule, That to give the utmoſt force to a period, it ought, if poſſible, to be cloſed with that word which makes the greateſt figure. The opportunity of a pauſe ſhould not be thrown away upon acceſſories, but reſerved for the principal object, in order that it may make a full impreſſion: which is an additional reaſon againſt cloſing a period with a circumſtance. There are, however, periods, that admit not ſuch a ſtructure; and in that caſe, the capital word ought, if poſſible, to be placed in the front, which next to the cloſe is the moſt advantageous for making an impreſſion. Hence, in directing our diſcourſe to a man of figure, we ought to begin with his name; and one will be ſenſible of a degradation when this rule is neglected, as it frequently is for the ſake of verſe. We give the following examples.

Integer vitæ, ſceleriſque purus,
Non eget Mauri jaculis, neque arcu,
Nec venenatis gravidâ ſagittis,
Fuſce, pharetrâ. *Horat. Carm. l.* 1. *ode* 22.

Je crains Dieu, cher Abner, et n'ai point d'autre crainte.

In theſe examples, the name of the perſon addreſſed to, make a mean figure, being like a circumſtance ſlipt into a corner. That this criticiſm is well founded, we need no other proof than Addiſon's tranſlation of the laſt example:

O Abner! I fear my God, and I fear none but him. *Guardian*, n° 117.

O father, what intends thy hand, ſhe cry'd,
Againſt thy only ſon? What fury, O ſon,
Poſſeſſes thee to bend that mortal dart
Againſt thy father's head?
Paradiſe loſt, book ii. *l.* 727.

Every one muſt be ſenſible of a dignity in the invocation at the beginning, which is not attained by that in the middle. It is not meant, however, to cenſure this paſſage: on the contrary, it appears beautiful, by diſtinguiſhing the reſpect that is due to a father from that which is due to a ſon.

The ſubſtance of what is ſaid in this and the foregoing ſection, upon the method of arranging words in a period, ſo as to make the deepeſt impreſſion with reſpect to ſound as well as ſignification, is comprehended in the following obſervation: That order of words in a period will always be the moſt agreeable, where, without obſcuring the ſenſe, the moſt important images, the moſt ſonorous words, and the longeſt members, bring up the rear.

Hitherto of arranging ſingle words, ſingle members, and ſingle circumſtances. But the enumeration of many particulars in the ſame period is often neceſſary: and the queſtion is, In what order they ſhould be placed. And, firſt, with reſpect to the enumerating particulars of equal rank: As there is no cauſe for preferring any one before the reſt, it is indifferent to the mind in what order they be viewed; therefore it is indifferent in what order they be named. 2dly, If a number of objects of the ſame kind, differing only in ſize, are to be ranged along a ſtraight line, the moſt agreeable order to the eye is that of an increaſing ſeries: in ſurveying a number of ſuch objects, beginning at the leaſt, and proceeding to greater and greater, the mind ſwells gradually with the ſucceſſive objects, and in its progreſs has a very ſenſible pleaſure. Preciſely for the ſame reaſon, words expreſſive of ſuch objects ought to be placed in the ſame order. The beauty of this figure, which may be termed *a climax in ſenſe*, has eſcaped Lord Bolingbroke in the firſt member of the following period: "Let but one, great, brave, diſintereſted, active man ariſe, and he will be received, followed, and almoſt adored." The following arrangement has ſenſibly a better effect: "Let but one brave, great, active, diſintereſted man ariſe, &c." Whether the ſame rule ought to be followed in enumerating men of different ranks, ſeems doubtful: on the one hand, a number of perſons preſented to the eye in form of an increaſing ſeries, is undoubtedly the moſt agreeable order; on the other hand, in every liſt of names, we ſet the perſon of the greateſt dignity at the top, and deſcend gradually through his inferiors. Where the purpoſe is to honour the perſons named according to their rank, the latter ought to be followed; but every one who regards himſelf only, or his reader, will chooſe the former order. 3dly, As the ſenſe of order directs the eye to deſcend from the principal to its greateſt acceſſory, and from the whole to its greateſt part, and in the ſame order through all the parts and acceſſories, till we arrive at the minuteſt; the ſame order ought to be followed in the enumeration of ſuch particulars.

When force and livelineſs of expreſſion are demanded, the rule is, to ſuſpend the thought as long as poſſible, and to bring it out full and entire at the cloſe: which cannot be done but by inverting the natural arrangement. By introducing a word or member before its time, curioſity is raiſed about what is to follow; and it is agreeable to have our curioſity gratified at the cloſe of the period: the pleaſure we feel reſembles that of ſeeing a ſtroke exerted upon a body by the whole collected force of the agent. On the other hand, where a period is ſo conſtructed as to admit more than one complete cloſe in the ſenſe, the curioſity of the reader is exhauſted at the firſt cloſe, and what follows appears languid or ſuperfluous: his diſappointment contributes alſo to that appearance, when he finds, contrary to expectation, that the period is not yet finiſhed. Cicero, and after him Quintilian, recommend the verb to the laſt place. This method evidently tends to ſuſpend the ſenſe till the cloſe of the period; for without the verb the ſenſe cannot be complete: and when the verb happens to be the capital word, which it frequently is, it ought at any rate to be the laſt, according to another rule above laid down. The following period is placed in its natural order: "Were inſtruction an eſſential circumſtance in epic poetry, I doubt whether a ſingle inſtance could be given of this ſpecies of compoſition in any language." The period thus arranged admits a full cloſe upon the word *compoſition;* after which it goes on languidly, and cloſes without force. This blemiſh will be avoided by the following arrangement: "Were inſtruction an eſſential circumſtance in epic poetry, I doubt whether, in any language, a ſingle inſtance could be given of this ſpecies of compoſition."

"Some of our moſt eminent divines have made uſe of this Platonic notion, as far as it regards the ſubſiſtence of our paſſions after death, with great beauty and ſtrength of reaſon." *Spect.* Better thus: "Some of our moſt eminent divines have, with great beauty and ſtrength of reaſon, made uſe of this Platonic notion," *&c.*

"Men of the beſt ſenſe have been touched, more or leſs, with theſe groundleſs horrors and preſages of futurity, upon ſurveying the moſt indifferent works of nature." *Ib.* Better, "Upon ſurveying the moſt indifferent works of nature, men of the beſt ſenſe," &c.

"She ſoon informed him of the place he was in, which, notwithſtanding all its horrors, appeared to him more ſweet than the bower of Mahomet, in the company of his Balſora." *Guardian.* Better, "She ſoon, &c. which appeared to him, in the company of his Balſora, more ſweet than the bower of Mahomet."

None of the rules for the compoſition of periods are more liable to be abuſed, than thoſe laſt mentioned; witneſs many Latin writers, among the moderns eſpecially, whoſe ſtyle, by inverſions too violent, is rendered harſh and obſcure. Suſpenſion of the thought till the cloſe of the period, ought never to be preferred before perſpicuity. Neither ought ſuch ſuſpenſion to be attempted in a long period; becauſe in that caſe the mind is bewildered amidſt a profuſion of words: a traveller, while he is puzzled about the road, reliſhes not the fineſt proſpect: "All the rich preſents which Aſtyages had given him at parting, keeping only ſome Median horſes, in order to propagate the breed of them in Perſia, he diſtributed among his friends whom he left at the court of Ecbatana." *Trav. of Cyrus.*

III. *Beauties from a reſemblance between Sound and Signification.* There being frequently a ſtrong reſemblance of one ſound to another, it will not be ſurpriſing to find an articulate ſound reſembling one that is not articulate: thus the ſound of a bow-ſtring is imitated by the words that expreſs it:

——————The ſtring let fly,
Twang'd ſhort and ſharp, like the ſhrill ſwallow's cry.
Odyſſey, xxi. 449.

The ſound of felling trees in a wood:

Loud ſounds the ax, redoubling ſtrokes on ſtrokes,
On all ſides round the foreſt hurls her oaks
Headlong. Deep echoing groan the thickets brown,
Then *ruſtling*, *crackling*, *craſhing*, thunder down.
Iliad, xxiii. 144.

But when loud ſurges laſh the ſounding ſhore,
The hoarſe rough verſe ſhould like the torrent roar.
Pope's Eſſay on Criticiſm, 369.

Dire Scylla there a ſcene of horror forms,
And here Charybdis fills the deep with ſtorms:
When the tide ruſhes from her rumbling caves,
The rough rock roars; tumultuous boil the waves.
Pope.

No perſon can be at a loſs about the cauſe of this beauty: it is obviouſly that of imitation.

That there is any other natural reſemblance of ſound to ſignification, muſt not be taken for granted. There is no reſemblance of ſound to motion, nor of ſound to ſentiment. We are, however, apt to be deceived by artful pronunciation: the ſame paſſage may be pronounced in many different tones, elevated or humble, ſweet or harſh, briſk or melancholy, ſo as to accord with the thought or ſentiment: ſuch concord muſt be diſtinguiſhed from that concord between ſound and ſenſe which is perceived in ſome expreſſions independent of artful pronunciation; the latter is the poet's work, the former muſt be attributed to the reader. Another thing contributes ſtill more to the deceit: in language, ſound and ſenſe being intimately connected, the properties of the one are readily communicated to the other; for example, the quality of grandeur, of ſweetneſs, or of melancholy, though belonging to the thought ſolely, is tranſferred to the words, which by that means reſemble in appearance the thought that is expreſſed by them. That there may be a reſemblance of articulate ſounds to ſome that are not articulate, is ſelf-evident; and that in fact there exiſt ſuch reſemblances ſucceſsfully employed by writers of genius, is clear from the foregoing examples, and from many others that might be given. But we may ſafely pronounce, that this natural reſemblance can be carried no farther: the objects of the different ſenſes differ ſo widely from each other, as to exclude any reſemblance; ſound in particular, whether articulate or inarticulate, reſembles not in any degree taſte, ſmell, nor motion; and as little can it reſemble any internal ſentiment, feeling, or emotion. But muſt we then admit, that nothing but ſound can be imitated by ſound? Taking imitation in its proper ſenſe, as importing a reſemblance between two objects, the propoſition muſt be admitted: and yet in many paſſages that are not deſcriptive of ſound, every one muſt be ſenſible of a peculiar concord between the ſound of the words and their meaning. As there can be no doubt of the fact, what remains is to inquire into its cauſe.

Reſembling cauſes may produce effects that have no reſemblance; and cauſes that have no reſemblance may produce reſembling effects. A magnificent building, for example, reſembles not in any degree an heroic action; and yet the emotions they produce are concordant, and bear a reſemblance to each other. We are ſtill more ſenſible of this reſemblance in a ſong, when the muſic is properly adapted to the ſentiment: there is no reſemblance between thought and ſound; but there is the ſtrongeſt reſemblance between the emotion raiſed by muſic tender and pathetic, and that raiſed by the complaint of an unſucceſsful lover. Applying this obſervation to the preſent ſubject, it appears, that, in ſome inſtances, the ſound even of a ſingle word makes an impreſſion reſembling that which is made by the thing it ſignifies: witneſs the word *running*, compoſed of two ſhort ſyllables; and more remarkably the words *rapidity*, *impetuoſity*, *precipitation*. Brutal manners produce in the ſpectator an emotion not unlike what is produced by a harſh and rough ſound; and hence the beauty of the figurative expreſſion, *rugged* manners. Again, the word *little*, being pronounced with a very ſmall aperture of the mouth, has a weak and faint ſound, which makes an impreſſion reſembling that made by a diminutive object. This reſemblance of effects is ſtill more remarkable where a number of words are connected in a period: words pronounced in ſucceſſion make often a ſtrong impreſſion; and when this impreſſion happens to accord with that made by the ſenſe, we are ſenſible of a complex emotion, peculiarly pleaſant; one proceeding from the ſentiment, and one from the melody or ſound of the words. But the chief pleaſure proceeds from having theſe two concordant emotions combined in perfect harmony, and carried on in the mind to a full cloſe. Except in the ſingle caſe where ſound is deſcribed, all the examples given by critics of ſenſe being imitated in ſound, reſolve into a reſemblance of effects: emotions raiſed by ſound and ſignification may have a reſemblance; but ſound itſelf cannot have a reſemblance to any thing but ſound.

Proceeding now to particulars, and beginning with thoſe caſe caſes where the emotions have the ſtrongeſt reſemblance, we obſerve, firſt, That by a number of ſyllables in ſucceſſion, an emotion is ſometimes raiſed, extremely ſimilar to that raiſed by ſucceſſive motion; which may be evident even to thoſe who are defective in taſte, from the following fact, that the term *movement* in all languages is equally applied to both. In this manner, ſucceſſive motion, ſuch as walking, running, galloping, can be imitated by a ſucceſſion of long or ſhort ſyllables, or by a due mixture of both: for example, ſlow motion may be juſtly imitated in a verſe where long ſyllables prevail; eſpecially when aided by a ſlow pronunciation:

Illi inter ſeſe magnâ vi brachia tollunt.
Georg. iv. 174.

On the other hand, ſwift motion is imitated by a ſucceſſion of ſhort ſyllables:

Quadrupedante patrem ſonitu quatit ungulo campum.

Again:

Radit iter liquidum, celeres neque commovet alas.

Thirdly, A line compoſed of monoſyllables makes an impreſſion, by the frequency of its pauſes, ſimilar to what is made by laborious interrupted motion:

With many a weary ſtep, and many a groan,
Up the high hill he heaves a huge round ſtone.
Odyſſey, xi. 736.

Firſt march the heavy mules ſecurely ſlow;
O'er hills, o'er dales, o'er craggs, o'er rocks they go.
Iliad, xxiii. 138.

Fourthly, The impreſſion made by rough ſounds in ſucceſſion, reſembles that made by rough or tumultuous motion: on the other hand, the impreſſion of ſmooth ſounds reſembles that of gentle motion. The following is an example of both:

Two craggy rocks projecting to the main,
The roaring wind's tempeſtuous rage reſtrain;
Within, the waves in ſofter murmurs glide,
And ſhips ſecure without their haulſers ride.
Odyſſey, iii. 118.

Another example of the latter:

Soft is the ſtrain when Zephyr gently blows,
And the ſmooth ſtream in ſmoother numbers flows.
Eſſay on Criticiſm, 366.

Fifthly, Prolonged motion is expreſſed in an Alexandrine line. The firſt example ſhall be of a ſlow motion prolonged:

A needleſs Alexandrine ends the ſong;
That, like a wounded ſnake, drags its ſlow length along.
Ib. 356.

The next example is of forcible motion prolonged:

The waves behind impel the waves before,
Wide-rolling, foaming high, and tumbling to the ſhore.
Iliad, xiii. 1004.

The laſt ſhall be of rapid motion prolonged:

Not ſo when ſwift Camilla ſcours the plain,
Flies o'er th'unbending corn, and ſkims along the main.
Eſſay on Criticiſm, 373.

Again, ſpeaking of a rock torn from the brow of a mountain:

Still gath'ring force, it ſmokes, and, urg'd amain,
Whirls, leaps, and thunders down, impetuous to the plain.
Iliad, xiii. 197.

Sixthly, A period conſiſting moſtly of long ſyllables, that is, of ſyllables pronounced ſlow, produceth an emotion reſembling faintly that which is produced by gravity and ſolemnity. Hence the beauty of the following verſe:

Olli ſedato reſpondit corde Latinus.

It reſembles equally an object that is inſipid and unintereſting.

Tædet quotidianarum harum formarum.
Terence.

Seventhly, A ſlow ſucceſſion of ideas is a circumſtance that belongs equally to ſettled melancholy, and to a period compoſed of polyſyllables pronounced ſlow; and hence, by ſimilarity of emotions, the latter is imitative of the former:

In thoſe deep ſolitudes, and awful cells,
Where heav'nly-penſive Contemplation dwells,
And ever-muſing Melancholy reigns.
Pope, Eloiſa to Abelard.

Eighthly, A long ſyllable made ſhort, or a ſhort ſyllable made long, raiſes, by the difficulty of pronouncing contrary to cuſtom, a feeling ſimilar to that of hard labour:

When Ajax ſtrives ſome rock's *vaſt* weight to throw,
The line too labours, and the words move ſlow.
Eſſay on Criticiſm, 370.

Ninthly, Harſh or rough words pronounced with difficulty, excite a feeling ſimilar to that which proceeds from the labour of thought to a dull writer:

Juſt writes to make his barrenneſs appear,
And ſtrains from hard-bound brains eight lines a year.
Pope's Epiſtle to Dr Arbuthnot, *l.* 181.

We ſhall cloſe with one example more, which of all makes the fineſt figure. In the firſt ſection mention is made of a climax in ſound; and in the ſecond of a climax in ſenſe. It belongs to the preſent ſubject to obſerve, that when theſe coincide in the ſame paſſage, the concordance of ſound and ſenſe is delightful: the reader is conſcious of pleaſure not only from the two climaxes ſeparately, but of an additional pleaſure from their concordance, and from finding the ſenſe ſo juſtly imitated by the ſound. In this reſpect, no periods are more perfect than thoſe borrowed from Cicero in the firſt ſection.

The concord between ſenſe and ſound is not leſs agreeable in what may be termed an *anticlimax*, where the progreſs is from great to little; for this has the effect to make diminutive objects appear ſtill more diminutive. Horace affords a ſtriking example:

Parturiunt montes, naſcetur ridiculus mus.

The arrangement here is ſingularly artful: the firſt place is occupied by the verb, which is the capital word by its ſenſe as well as ſound: the cloſe is reſerved for the word that is the meaneſt in ſenſe as well as in ſound: and it muſt not be overlooked, that the reſembling ſounds of the two laſt ſyllables give a ludicrous air to the whole.

In this article we have mentioned none of the beauties of language but what ariſe from words taken in their proper ſenſe. Beauties that depend on the metaphorical and figurative power of words, are treated under the ſeparate articles of FIGURES, PERSONIFICATION, APOSTROPHE, HYPERBOLE, METAPHOR, &c. See alſo ORATORY.

Law LANGUAGE. See LAW-*Language*.

Written LANGUAGE. See READING, n° xiii.

LANGUED, in heraldry, expreſſes ſuch animals whoſe tongue, appearing out of the mouth, is borne of a different colour from the reſt of the body.

LANGUEDOC, a large and maritime province of France; bounded on the north by Quercy, Rouerque, Auvergne, and Lionnois; on the eaſt by Dauphiny and Provence; on the weſt by Gaſcony; and on the ſouth by the Mediterranean Sea and Rouſillon. It is 225 miles in length, and 100 in breadth where broadeſt. The clergy are more rich and numerous here than in the reſt of France, there being three archbiſhops and 20 biſhops. Languedoc is divided into the Upper and Lower; and in general it is a very pleaſant country, fertile in corn, fruits, and excellent wines; and the inhabitants carry on a conſiderable trade. There are many curious medicinal plants, with iron mines, quarries of marble, and turquoiſe ſtones. There is alſo a great deal of kelp, and on the heaths are conſiderable numbers of the kermes oak. The principal rivers are the Rhone, the Garronne, the Aude, the Tarne, the Allier, and the Loire. There are alſo a great number of mineral ſprings. Thoulouſe is the capital town. This province is famous for the royal canal, which divides it in two, joining the Mediterranean with the Atlantic Ocean. This canal was undertaken in 1666, and finiſhed in 1680; the mathematician who undertook it made a baſon 400 yards long, 300 broad, and ſeven feet deep, which is always kept full of water, and may be let out by means of a ſluice on the ſide of the Mediterranean, as well as by another on the ſide of the Atlantic.

LANGUET (Hubert), born at Viteaux in Burgundy in 1518, gained great reputation by his learning and virtue, in the 16th century. Having read one of Melancthon's books at Bologna, he conceived ſo high an eſteem for the author, that he went to Wirtemberg purpoſely to viſit him; he arrived there in 1549, when he contracted a ſtrict friendſhip with Melancthon, and embraced the Proteſtant religion. In 1565, he was one of the firſt counſellors of Auguſtus elector of Saxony, who employed him in ſeveral important affairs and negociations. He was afterwards admitted to the confidence of William prince of Orange; and died at Antwerp, on the 30th of September 1581. We have many of his letters written in Latin to Sir Philip Sidney, to Camerarius the father and ſon, and to Auguſtus elector of Saxony, which have been ſeveral times reprinted, in three volumes; and there is alſo attributed to him a famous treatiſe, intitled *Vindiciæ contra Tyrannos*, and other works. His life is written by Philibert de la Mare.

LANGUET (John Baptiſt Joſeph), the celebrated vicar of St Sulpice at Paris, and a doctor of the Sorbonne, was born at Dijon in 1675. He was received into the Sorbonne in 1698; and attached himſelf to the community of St Sulpice, to which pariſh he was of great ſervice. M. de la Chetardie the vicar, conſcious of his talents, choſe him for his curate, in which capacity he officiated near ten years; and in 1714, ſucceeded to the vicarage. His pariſh-church being ſmall and out of repair, he conceived the deſign of building a church ſuitable to the ſize of his pariſh, which he began with the ſum of 100 crowns, but ſoon obtained conſiderable donations; and the duke of Orleans, regent of the kingdom, granted him a lottery, and laid the firſt ſtone of the porch in 1718. It was conſecrated in 1745, after M. Languet had ſpared neither labour nor expence to render it one of the fineſt churches in the world both for architecture and ornament. Another work which did him no leſs honour, was the *Maiſon de l'enfant Jeſus*. This eſtabliſhment conſiſts of two parts; the firſt compoſed of about 35 poor ladies of good families, and the ſecond of more than 400 poor women and children of town and country. The order and œconomy in this houſe, for the education and employment of ſo many perſons, gave cardinal Fleury ſo high an idea of the vicar of St Sulpice, that he propoſed to make him ſuperintendant-general of all the hoſpitals in the kingdom; which, however, was declined. Never man took more pains then he did to procure charitable donations and legacies, which he diſtributed with admirable diſcretion: he is ſaid from good authority to have deburſed near a million of livres to the poor annually. When there was a general dearth in 1725, he ſold, in order to relieve the poor, his houſehold goods, pictures, and ſome curious pieces of furniture that he had procured with difficulty; and when the plague raged at Marſeilles, he ſent large ſums into Provence for the relief of the diſtreſſed. M. Languet was not only ſingular in this warm, diſintereſted, benevolent conduct, but alſo in another circumſtance equally rare; and this was in the refuſal of ſeveral biſhoprics that were offered him: he reſigned even his vicarage in 1748; but continued to preach every Sunday at his own pariſh-church, and to ſupport the *Maiſon de l'enfant Jeſus* to his death, which happened in 1750. It is obſerved, that his piety and charity did not proceed from poverty of talents; for he was ſenſible and lively in coverſation, and his genius often diſcovered itſelf in his agreeable repartees.

LANGUOR, among phyſicians, ſignifies great weakneſs and loſs of ſtrength, attended with a dejection of mind; ſo that the patients can ſcarce walk, or even ſtand upright, but are apt to faint away.

LANIARD, (from *Lanier*, Fr.) a ſhort piece of cord or line faſtened to ſeveral machines in a ſhip, and ſerving to ſecure them in a particular place, or to manage them more conveniently. Such are the laniards of the gun-ports, the laniard of the buoy, the laniard of the cat-hook, &c.—The principal laniards uſed in a ſhip, however, are thoſe employed to extend the ſhrouds and ſtays of the maſts by their communication with the dead-eyes, ſo as to form a ſort of mechanical power reſembling that of a tackle.—Theſe laniards are fixed in the dead-eyes as follows: one end of the laniard is thruſt through one of the holes of the upper dead-eye, and than knotted, to prevent it from drawing out; the other is then paſſed through one of the holes in the lower dead-eye, whence, returning upward, it is inſerted through the ſecond hole in the upper dead-eye, and next through the ſecond in the lower dead-eye, and finally through the third holes in both dead-eyes. The end of the laniard being then directed upwards from the loweſt dead-eye, is ſtretched as ſtiff as poſſible by the application of tackles; and that the ſeveral parts of it may ſlide with more facility through the holes in the dead-eyes, it is well ſmeared with hog's-lard or tallow, ſo that the ſtrain is immediately communicated to all the turns at once.

LANIGEROUS, an appellation given to whatever bears wool.

LANISTA, in antiquity, is ſometimes uſed to ſignify an executioner; but more frequently for a maſter-gladiator, who taught the uſe of arms, and had always people under them ready to exhibit ſhews of that kind. For this purpoſe, they either purchaſed gladiators, or educated children, that had been expoſed, in that art.

LANIUS, the SHRIKE, or *Butcher-bird*, in ornithology, a genus belonging to the order of accipitres; the characters of which are theſe: The beak is ſomewhat ſtrait, with a tooth on each ſide towards the apex, and naked at the baſe; and the tongue is lacerated. There are 26 ſpecies, diſtinguiſhed by the ſhape of the tail and colour. The following are thoſe known in Britain.

1. The excubitor, or greater butcher-bird, weighs three ounces: its length is 10 inches; its breadth 14: its bill is black, one inch long, and hooked at the end; the upper mandible furniſhed with a ſharp proceſs: the noſtrils are oval, covered with black briſtles pointing downwards: the muſcles that move the bill are very thick and ſtrong; which makes the head very large. This apparatus is quite requiſite in a ſpecies whoſe method of killing its prey is ſo ſingular, and whoſe manner of devouring it is not leſs extraordinary: ſmall birds it will ſeize by the throat, and ſtrangle; which probably is the reaſon the Germans call this bird *wurchangl*, or the ſuffocating angel. It feeds on ſmall birds, young neſtlings, beetles, and caterpillars. When it has killed the prey, it fixes them on ſome thorn, and when thus ſpitted pulls them to pieces with its bill: on this account the Germans call it *thorntraer* and *thornſreker*. We have ſeen them, when confined in a cage, treat their food in much the ſame manner, ſticking it againſt the wires before they would devour it. Mr Edwards very juſtly imagines, that as nature has not given theſe birds ſtrength ſufficient to tear their prey to pieces with their feet, as the hawks do, they are obliged to have recourſe to this artifice. It makes its neſt with heath and moſs, lining it with wool and goſſamer; and lays ſix eggs, of a dull olive green, ſpotted at the thickeſt end with black.

The crown of the head, the back, and the coverts that lie immediately on the joints of the wings, are aſh-coloured; the reſt of the coverts black: the quill-feathers are black, marked in their middle with a broad white bar; and except the four firſt feathers, and the ſame number of thoſe next the body, are tipt with white: the tail conſiſts of 12 feathers of unequal lengths, the middle being the longeſt; the two middlemoſt are black, the next on each ſide tipt with white, and in the reſt the white gradually increaſes to the utmoſt, where the colour has entire poſſeſſion, or there remains only a ſpot of black: the cheeks are white, but croſſed from the bill to the hind-part of the head with a broad black ſtroke: the throat, breaſt, and belly are of a dirty white: the legs are black. The female is of the ſame colour with the male, the breaſt and belly excepted, which are marked tranſverſely with numerous ſemicircular brown lines.

2. The collurio, or leſſer butcher-bird. The male weighs two ounces; the female two ounces two drams. The length of the former is ſeven inches and a half; the breadth eleven inches. The irides are hazel; the bill reſembles that of the preceding ſpecies: the head and lower part of the back are of a fine light grey: acroſs the eyes from the bill runs a broad black ſtroke: the upper part of the back, and coverts of the wings, are of a bright ferruginous colour; the breaſt, belly, and ſides, are of an elegant bloſſom colour; the two middle feathers of the tail are longeſt, and entirely black; the lower part of the others white, and the exterior webs of the outmoſt feather on each ſide wholly ſo. In the female, the ſtroke acroſs the eyes is of a reddiſh brown: the head of a dull ruſt-colour mixed with grey; the breaſt, belly, and ſides, of a dirty white, marked with ſemicircular duſky lines: the tail is of a deep brown; the outward feather on each ſide excepted, whoſe exterior webs are white. Theſe birds build their neſts in low buſhes, and lay ſix eggs of a white colour, but encircled at the bigger end with a ring of browniſh red.

3. The woodchat in ſize ſeems equal to the preceding: the bill is horn-coloured; the feathers that

ſurround the baſe are whitiſh; above is a black line drawn croſs the eyes, and then downwards each ſide the neck; the head and hind part of the back are of a bright bay; the upper part of the back duſky, the coverts of the tail grey, the ſcapulars white; the coverts of the wings duſky, the quill-feathers black, marked towards the bottom with a white ſpot; the throat, breaſt, and belly, of a yellowiſh white. The two middle feathers appear to be entirely black; the exterior edges and tips of the reſt white; the legs black. The female differs: the upper part of head, neck, and body, are reddiſh, ſtriated tranſverſely with brown; the lower parts of the body are of a dirty white, rayed with brown; the tail is of a reddiſh brown, marked near the end with duſky, and tipped with red.

LANNER, or **Lannar**, the name of a bird of the long-winged hawk-kind, the male of which is called the *lannaret*. Its beak and legs are blue, and its head and neck variegated with large ſtreaks of black and white. Its back, wings, and tail, are not variegated, except with a few ſmall white ſpots, and its wings, when extended, are ſeen ſpeckled underneath with ſmall round white ſpots. Its neck is very ſhort, as are alſo its legs. It is common in France, and abides there the whole year; it is very docile, and ſerves all the purpoſes of hawking. In Italy the ſpecies ſeems ſomething different, having much of a yellowiſh brown about the ſhoulders, and being indocile, and of no uſe in ſporting.

LANSDOWNE (Lord). See Granville.

LANTANA, American viburnum; a genus of the angioſpermia order, belonging to the didynamia claſs of plants. There are ſeven ſpecies, conſiſting of ſhrubby exotics from Africa and America for the green-houſe or ſtove; growing to the height of a yard or two, and adorned with oblong, oval, and roundiſh ſimple leaves, with monopetalous, tubular, four-parted flowers of different colours.—They may be propagated either by ſeeds or cuttings.

LANTERN, or **Lanthorn**, a device to carry a candle in; being a kind of cover uſually made of white iron, with ſaſhes of ſome tranſparent matter, as glaſs, horn, &c. to tranſmit the light.

Dark **Lantern**, one with only one opening, which may alſo be cloſed up when the light is to be entirely hid, or opened when there is occaſion for the aſſiſtance of the light to diſcover ſome object.

Magic **Lantern**, an optic machine, whereby little painted images are repreſented ſo much magnified, as to be accounted the effect of magic by the ignorant. See Dioptrics, Art. ix. p. 2478.

Lantern, in architecture, a little dome raiſed over the roof of a building, to give light, and ſerve as a crowning to the fabric.

The term *lantern* is alſo uſed for a ſquare cage of carpentry, placed over the ridge of a corridor or gallery, between two rows of ſhops, to illumine them, like that of the royal exchange London.

Lantern, on ſhip-board, a well-known machine, of which there are many in a ſhip, particularly for the purpoſe of directing the courſe of other ſhips in a fleet or convoy; ſuch are the poop and top lanterns, &c.

Feaſt of **Lanterns**, in China, is a celebrated feaſt held on the 15th day of the firſt month; ſo called from the infinite number of lanterns hung out of the houſes and ſtreets; which, it is ſaid, is not leſs than two hundred millions. On this day are expoſed lanterns of all prices, whereof ſome are ſaid to coſt 2000 crowns.—Some of their grandees retrench ſomewhat every day out of their table, out of their dreſs, equipage, &c. to appear the more magnificent in lanterns. They are adorned with gilding, ſculpture, painting, japanning, &c. And as to their ſize, it is extravagant; ſome being from 25 to 30 foot diameter: they repreſent halls and chambers, and two or three ſuch machines together would make handſome houſes; ſo that in China they are able to eat, lodge, receive viſits, have balls, and act plays in a lantern. To illumine them, they ſhould have bonfires; but as that would be inconvenient, they content themſelves with lighting up in them an infinite number of torches or lamps, which at a diſtance have a beautiful effect. In theſe they exhibit various kinds of ſhews to divert the people.—Beſides theſe enormous lanterns, there is a multitude of others ſmaller: theſe uſually conſiſt of ſix faces or lights, each about four feet high, and one and a half broad, framed in wood finely gilt and adorned; over theſe they ſtretch a fine tranſparent ſilk, curiouſly painted with flowers, trees, and ſometimes human figures: the painting is very extraordinary, and the colours extremely bright; and when the torches are lighted, they appear highly beautiful and ſurpriſing.

Lantern-*Fly*, in natural hiſtory, the name of a very ſingular kind of inſect produced in the Weſt Indies, and carrying a ſtrong light with it in the night. The ſtructure of the trunk of this inſect is of the ſame kind with that of the cicada; and, as it wants the power of making the noiſe for which the cicada is ſo famous, it belongs, according to Mr Reamur's diſtinctions, to that ſpecies of inſect called the *procigale*, or *procicada*.

The glow-worm, and the luminous beetles, with all the other luminous inſects we are acquainted with in this part of the world, diffuſe their light from a part which is near the extremity of the body, and under the belly; but the lantern-fly gives it from its head. It differs alſo greatly in the degree of light: for this, in all the inſects we are acquainted with, is very feeble; whereas in this fly it is ſo ſtrong, that Mrs Morian, who is the firſt that hath well deſcribed it, ſays ſhe could read a ſmall print in a dark night by the light that one of them gave. The eyes of this creature are placed very near the part from whence the light iſſues; and it is commonly ſuppoſed that the uſe of the light is to ſhow the creature the objects it paſſes by in its flight; but if we conſider the effect of a light ſo placed, in regard to ourſelves, we ſhall find, that it would by no means anſwer the ſame purpoſe to us. If our whole forehead was covered with a lambent flame in the night, it would rather blind us than ſhew us any diſtant objects.—The head of this creature, ſtrictly ſpeaking, is very ſhort, not exceeding the length of one of the rings of the body, if it be meaſured from its joining with the corcelet to its joining with the lantern; but if that part be accounted a portion of the head, then the head is equal in length to the whole body.—This lantern is wider than it is deep or thick; and has, near its origin, a large protuberance, which gives it a bunched or humped look. There are ſeveral tubercles and lines on it of a reddiſh colour. The ground colour is an olive brown; and underneath, it has one large rib running all the way along it from end to end, dividing it in two; and by the ſides of that there are ſome others. Theſe are all reddiſh, and thoſe neareſt the edges have ſmall rows of ſpines running along them. Over each of the eyes there is a round granulated prominence, which ſeems to have been a collection of ſmaller eyes; and if ſo, the animal is ſupplied with the organs of viſion in a different manner from all other known creatures. But an examination of the creature on the ſpot, and while alive, is requiſite to find out this. The upper pair of wings is not perfectly tranſparent; they are dotted with white in ſome places, and are variegated near their origin with ſeveral blackiſh ſpots. The under pair are more tranſparent than the upper; they are much ſhorter and broader than the others. Theſe have each a large and beautiful round ſpot near the extremity, reſembling that on the wing of the peacock butterfly. The colours of the circles of theſe eyes are brown and olive; the laſt colour very bright and clear, the other very duſky and obſcure. The ſpots are ſo large, that they appear very beautiful.

LANUGO, the ſoft down of plants, like that growing on the fruit of the peach-tree. See Hair.

LAODICÆA *on the Lycus*, (anc. geog.), a town of Phrygia, at firſt called *Dioſpolis*, then *Rhoas*. It was built by Antiochus ſon of Stratonice, and called after his conſort *Laodice*. Its memory is conſecrated in ſcripture, being one of the ſeven churches to which St John in the Apocalypſe addreſſes himſelf, commended by St Paul; the town is mentioned by Cicero as conſiderable for trading.

Laodicæa *on the Sea*, (anc. geog.), according to Strabo, was a town of Seleucis in Syria, extremely well built, with a commodious harbour. The country about it yielded great quantities of wine. The city took its name from *Laodice*, mother of Seleucus the founder of it.

LAOMEDON king of Troy, whoſe hiſtory is involved in fables. He built the famous walls round that city, and is ſaid to have been killed by Hercules.

LAON, a conſiderable town of the Iſle of France, and capital of the Laonis, with a caſtle and biſhop's ſee. Its principal trade conſiſts in corn and wine; and it is very advantageouſly ſeated on a mountain, in E. Long. 3. 42. N. Lat. 49. 34.

LAOS, a kingdom of Aſia beyond the Ganges; bounded on the north, by China; on the eaſt, by Tonquin and Cochin-China; on the ſouth, by Cambodia; and on the weſt, by the kingdom of Siam, and by the territories of the king of Ava. This country is full of foreſts, and abounds in rice, fruits, and fiſh. The inhabitants are well made, robuſt, of an olive complexion, and mild in their diſpoſition; but very ſuperſtitious, and much addicted to women. Their principal occupation is tilling the ground and fiſhing. The king ſhews himſelf but twice a-year, and has large revenues from the elephant's teeth found in his dominions. Their religion is a kind of idolatry, and much the ſame as in China. Langiona is the capital town.

LAPIDARY, an artificer, who cuts precious ſtones.

The art of cutting precious ſtones is of great antiquity. The French, though they fell into it but lately, have notwithſtanding carried this art to a very great perfection, but not in any degree ſuperior to the Engliſh.

There are various machines employed in the cutting of precious ſtones, according to their quality: the diamond, which is extremely hard, is cut on a wheel of ſoft ſteel, turned by a mill, with diamond-duſt, tempered with olive-oil, which alſo ſerves to poliſh it.

The deſcription of the diamond-cutter's wheel or mill, as repreſented in Plate CLXI. fig. 8. is as follows: *a* is the pincers; *b*, the ſcrew of the pincers; *c*, the ſhell that carries the maſtic and the diamond; *d*, the maſtic that ſoftens the diamond at the end of the ſhell; *e*, the diamond preſented to the wheel, to be cut facetwiſe; *f*, the iron-wheel turning on its pivot; *g*, iron-pegs, to fix and keep the pincers ſteady; *h*, ſmall pegs of lead of different weights, wherewith the pincers are loaded at pleaſure to keep them ſteady; *i*, a wooden wheel; *k*, the axis of the wheel. It is bended, and makes an elbow under the wheel, to receive the impulſion of a bar that does the office of a turning handle; *l*, the ſole, or ſquare piece of ſteel, wherein the pivot of the tree or axis moves; *m*, the turning handle, that ſets the wheel a-going by means of the elbow of its axis; the elbow of the piercer wherewith a hogſhead is broached, will give an idea of this kind of motion; *n*, the cat-gut ſtring that goes round both the iron and the wooden wheels. If the wooden wheel is twenty times larger than the iron one, the latter ſhall make twenty turns upon the diamond, whilſt the large wheel makes but one round its axis; and whilſt the boy gives, without any reſiſtance, a hundred impulſions to the turning handle, the diamond experiences a thouſand times the friction of the whole grinding wheel.

The diamond-cutter follows the work with his eyes, without taking any other ſhare in it than that of changing the place of the diamond to bite on a new ſurface; and of timely throwing upon it, with a few drops of oil, the minute particles of the diamonds firſt ground one againſt the other, to begin the cutting of them.

The oriental ruby, ſapphire, and topaz, are cut on a copper-wheel with diamond duſt tempered with olive-oil, and are poliſhed on another copper wheel with tripoli and water. The hyacinth, emerald, amethyſt, garnets, agates, and other ſtones not of an equal degree of hardneſs with the other, are cut on a leaden wheel with ſmalt and water, and poliſhed on a tin-wheel with tripoli. The turquois of the old and new rock, giraſol, and opal, are cut and poliſhed on a wooden wheel with tripoli alſo.

The lapidaries of Paris have been a corporation ſince the year 1290. It is governed by four jurats, who ſuperintend their rights and privileges, viſit the maſter-workmen, take care of the maſter piece of workmanſhip, bind apprentices, and adminiſter the freedom.

LAPIS, in general, is uſed to denote a ſtone of any kind.

Lapis, in Roman antiquity, a geographical meaſure denoting a mile; becauſe miles were diſtinguiſhed ed by erecting a ſtone at the end of each; from the number marked on which, the length of way from Rome might be known. The device is by Plutarch aſcribed to Caius Gracchus. This was more accurately executed by Auguſtus, who erected a gilt pillar in the forum, at which all the public ways of Italy, diſtinguiſhed by ſtones, were terminated. The ſame thing was done in the Roman provinces. Hence the phraſes *tertius lapis*, *centeſimus lapis*, &c. for three, a hundred, &c. miles; and ſometimes the ordinal number without *lapis*, as *ad duodecimum*, &c. at twelve miles diſtance.

LAPIS *Aſſius*, in the natural hiſtory of the ancients, the name of a ſtone called alſo *ſarcophagus*, from its power of conſuming fleſh. See SARCOPHAGUS.

LAPIS *Bononienſis*, the Bolognian ſtone. See CHEMISTRY, n° 339, 340.

LAPIS *Lazuli*. See LAZULI.

LAPIS *Lyncurius*. See AGARICUM and LYNCURIUM.

LAPIS *Nephriticus*. See STEATITES.

LAPIS *Specularis*. See SPECULARIS.

LAPITHÆ. See PELETHRONIUM.

LAPLAND, the moſt northerly country of Europe, extending from the north cape in 71° 30′ N. Lat. to the White Sea under the arctic circle, is inhabited by the ſame people, though the country is ſubject to different powers. Norwegian Lapland, under the dominion of Denmark, lies between the northern ſea, the river Pais, and the lake Enarak. Swediſh Lapland comprehends all the country from the Baltic to the mountains that ſeparate Norway from Sweden. It is divided into ſix diſtricts, denominated *marck* or territory; and theſe are diſtinguiſhed by the names of rivers, ſuch as Aungnermanland, Elma, Peta, Lula, Torna, and Kiemi. The eaſtern part, ſubject to the Czar of Muſcovy, ſituated between the lake Enarak and the White Sea, is divided into three diſtinct prefectures; namely, that of the ſea-coaſt towards the north, called *Mourmankoi Leporie*; the Terſkoi Leporie, upon the coaſt of the White Sea; and the third, or inland, known by the name of *Bellamoreſkoi Leporie*. In Swediſh Lapland, which is the moſt conſiderable of the three, the provinces or marcks are ſubdivided into ſmaller diſtricts called *biars*, conſiſting each of a certain number of families; among which the land is parcelled out by government, or the prefect of the diſtrict appointed by the king of Sweden.

Lapland may be termed a huge congeries of frightful rocks and ſtupendous mountains; interſperſed, however, with many pleaſant valleys, watered by an infinite number of rivulets that run into the rivers and lakes, which diſcharge themſelves into the gulf of Bothnia. The names of the principal lakes in Lapland are the Great Uma, the Great Windel, the Oreavan, the Stor-avan, the Great Lula; the lakes of Kartom, Kali, Torno, Enara, and Kimi. Some of theſe extend 60 leagues in length, and contain a great number of iſlands: Stor-avan is ſaid to contain 365; and Enara contains an archipelago of iſlands ſo large, that no Laplander has lived long enough to viſit each particular iſland. The natives believe this country to be the terreſtrial paradiſe; and indeed nothing could be more enchanting than ſuch vaſt proſpects of mountains, hills, foreſts, lakes, rivers, &c. if the country was in a moderate climate; and indeed, even here, in ſummer the roſes are ſeen blowing wild on the banks of the lakes and rivers, with all the beautiful glow of colour which appears in thoſe cultivated in our gardens. But all the intervals between the mountains are not engroſſed by theſe agreeable proſpects; great part of the flat country is covered with brown duſky foreſts of fir and pine trees; and theſe are often ſkirted by wide extended moraſſes, the ſtagnating waters of which in ſummer produce myriads of miſchievous inſects, that are more intolerable than even the cold of winter.

The cold of Lapland is very intenſe during the winter, freezing even brandy and the watery part of ſpirit of wine, if the latter is not highly rectified: the very breath freezes in exſpiration; and the limbs of people are often mortified, and periſh; all the lakes and rivers are frozen to a prodigious thickneſs; and the whole face of the country is covered with ſnow to the depth of four or five feet. While this continues looſe, it is impoſſible to travel; for a man's eyes are not only blinded with it, but if a ſtrong wind ſhould riſe he will be buried in the drifts of ſnow: yet ſhould a partial thaw take place for a few hours, the ſurface of this ſnow is formed by the ſucceeding froſt into a hard impenetrable cruſt, over which the Laplander travels in his ſledge with great celerity. While the thaw prevails, the air is ſurcharged with vapours, and the climate is rainy; but while the north wind blows, the ſky is beautifully ſerene, and the air very clear.

The heat of ſummer is almoſt as intolerable in Lapland as the cold of winter. At the northern extremity of the country the ſun never ſets for three months in ſummer, and in winter there is an uninterrupted night of the ſame duration; but this is qualified in ſuch a manner by a conſtant revolution of dawn and twilight, by a ſerene ſky, moon-light, and aurora borealis, reflected from the white ſurface of the earth covered with ſnow, that the inhabitants are enabled to hunt, fiſh, and proceed with their ordinary occupations. The country abounds with excellent ſprings; and is remarkable for ſome ſurpriſing cataracts, in which the water rumbles over frightful precipices, and daſhes among rocks with amazing impetuoſity and noiſe.

The ſoil of Lapland is generally ſo chilled and barren, that it produces little or no grain or fruit-trees of any kind. This ſterility, however, is not ſo much owing to the ſoil, which is in many places of a rich mould, as to want of induſtry; for in ſome diſtricts the Swedes have tilled and manured pieces of ground that bear plentiful crops of rye. There is alſo great plenty of berries: ſuch as black currants; what is called the Norwegian mulberry, growing upon a creeping plant, and much eſteemed as an antiſcorbutic; raſp-berries, cran-berries, juniper-berries, and bilberries. The tops of the mountains are ſo much expoſed to intenſe cold, and tempeſts of ſnow and hail, that no tree will grow near the ſummit; but in parts that are more ſheltered, we ſee fine woods of birch, pine, and fir, diſpoſed by nature as if they had been planted by art in rows at regular diſtances, without any undergrowth or incumbrance below. Beſides theſe trees, ſome parts of Lapland produce the ſervice-tree, the willow, the poplar, the elder, and the cornel. Among the plants of this country the principal is the angelica; which is greatly eſteemed by the natives, who uſe it in their food. Here is likewiſe the acetoſa or ſorrel, which grows in great plenty, and is of much ſervice on account of its antiſcorbutic properties. They have alſo other kinds of herbs peculiar to the country, different kinds of graſs, heath, and fern; which are all enumerated in a work of the celebrated Linnæus, intitled *Flora Laponica*. But the vegetable which is in greateſt plenty, and of the moſt extenſive uſe among them, is the moſs; of which there are many different ſpecies, either adhering to trees, or growing on the ſurface of the earth. The rein-deer is almoſt wholly ſuſtained by this vegetable; which indeed he prefers to all others, and without which he cannot ſubſiſt. The Laplanders not only uſe it as forage to their cattle, but boil it in broth as a cordial and reſtorative. They likewiſe uſe one ſort of it as a ſoft, eaſy, and wholeſome bed for their new-born children.

Some ſilver and lead mines have been diſcovered in the provinces of Pitha and Lula; and two of copper, together with excellent veins of iron, in the diſtrict of Torno; but they are not at preſent worked with any conſiderable advantage. In ſome places there are veins of ſilver and gold mixed; but theſe mines are worked only for a few months in the ſummer, becauſe the froſt hinders the engines from playing. Here are found beautiful cryſtals, of a ſurpriſing magnitude, ſo hard and fine, that when poliſhed they reſemble real diamonds. In ſome places amethyſts and topazes are alſo found, but pale and cloudy; alſo a great quantity of very curious ſtones, which are too hard to be worked by the tool of the maſon. Some of theſe found on the banks of rivers and lakes, when they happen to bear the leaſt reſemblance to the figures of animals, the Laplanders remove to more conſpicuous places, and adore as deities. The province of Torno affords ſome curious ſtones of an octagonal ſhape, regular, ſhining, and poliſhed by the hand of nature. In ſome rivers they fiſh for pearls, which are generally pale; but ſome of them are as bright as the oriental pearls, and much larger and rounder. Theſe pearls are found in muſcle-ſhells; and the fiſhery is not in the ſea, but in rivers.

Lapland, as well as Norway, is infeſted with a great number of grey wolves and bears, with whom the inhabitants wage perpetual war. The moſt honourable exploit among the Laplanders is that of killing a bear; and the heroes adorn their caps with a ſmall plate of lead or pewter for every bear they have ſlain. The country abounds alſo with elks, beavers, and otters, which live here unmoleſted, and find plenty of fiſh for their ſubſiſtence. The ſkins of the black foxes in Lapland are of ſuch eſtimation, that a ſingle one will ſell at Moſcow for 12 golden crowns. The foreſts of this country furniſh haunts to a great number of beautiful martens and ſquirrels; which laſt change their colour every winter from brown to grey. Theſe animals frequently migrate in vaſt multitudes. When they arrive at the ſide of a lake, they embark on pieces of timber or bark, which they find afloat, and are generally drowned on their paſſage: the bodies are caſt aſhore, and the ſkin becomes a prey to the firſt finder. What ſhould induce theſe animals to quit the country and to undertake ſuch hazardous voyages, hath not yet been diſcovered.

Lapland is alſo the native country of the zibelling, a creature reſembling the martin, whoſe ſkin, whether black or white, if gloſſy, is extremely valuable, and often given in preſents by the ambaſſadors of Muſcovy to the princes at whoſe courts they reſide. Here are likewiſe ermines, weaſels, hares which grow white in winter, large black cats which attend the Laplanders in hunting, and little prick-eared curs trained to the game. But the moſt remarkable animal of Lapland is the rein-deer, of which an account is given in the article CERVUS, nº 4.—The woods, mountains, and rivers are well ſtocked with wild-fowl; ſuch as buſtard, partridge, growſe, heathcock, pheaſants, lapwings, ſwans, wild-geeſe, wild-ducks, and all ſorts of aquatic birds that build and breed in northern climates. In the beginning of the ſpring the ſwans go thither in numerous flights from the German ocean; the lapwings follow in ſuch ſwarms that they darken the ſky as they paſs along, and ſcream ſo loud that they may be heard at a great diſtance. The rocks and mountains are likewiſe frequented by eagles, hawks, faulcons, kites, and other birds of prey.—The rivers abound with delicious ſalmon from the gulph of Bothnia, trout, bream, and perch of exquiſite flavour and amazing magnitude; and the inhabitants of Wardhus, or Daniſh Lapland, are well ſupplied with fiſh from the northern ocean.—With reſpect to inſects, the flies, hatched in the moraſſes and woods in ſummer are ſo numerous, that they often obſcure the face of day; ſo venomous, troubleſome, and intolerable, that the rein-deer fly to the tops of the higheſt mountains for ſhelter, and the Laplanders betake themſelves to the ſea-ſide, which is the leaſt infeſted by theſe peſtilent vermin. M. de Maupertuis, in his account of the voyage he made to Lapland, in company with the other French mathematicians ſent thither by the king to meaſure a degree of the meridian, gives us to underſtand, that on the tops of the mountains in Torno the flies were ſo troubleſome, that even the Finland ſoldiers, who are counted the moſt hardy troops in the ſervice of Sweden, were obliged to cover their faces with the ſkirts of their coats, from the attacks of theſe animals, which ſwarmed to ſuch a degree, that the moment a piece of fleſh appeared it was blackened all over. Some of theſe flies are very large, with green heads, and fetch blood from the ſkin wherever they ſtrike. The Laplanders ſhroud themſelves in the ſmoke of a large fire kindled for that purpoſe; yet even this diſagreeable expedient was not ſufficient to defend the French philoſophers: they were obliged, notwithſtanding the exceſſive heat, to wrap up their heads in garments made of the ſkins of rein-deer, called in that country *lapmudes*, and to cover themſelves with a thick rampart of fir-boughs; yet all theſe precautions proved ineffectual. M. de Maupertuis obſerved a lake quite covered with little yellowiſh grains, reſembling millet ſeed, which he ſuppoſed to be the chryſaliſes of ſome of theſe inſects.

Lapland is ſo far from being populous, that the whole nation is not equivalent in number to the inhabitants of one petty province of France. The Laplanders are very low in ſtature, generally about a head ſhorter than other Europeans. They are likewiſe remarkable for having large heads. M. de Maupertuis meaſured a female Laplander who ſuckled her own child, and found her ſtature did not exceed four feet two inches and five lines. They are alſo ill-ſhaped and ugly: yet ſtrong, hardy, and robuſt, inſomuch that will bear incredible fatigue; and it is remarked that the ſtouteſt Norwegian is not able to bend the bow of a Laplander. The women, however, are much leſs homely than the men, and many of them are noted for a delicate and florid complexion.

Theſe people are ſimple, honeſt, hoſpitable, and timorous: their timidity, however, reſpects war alone; for to many other ſpecies of dangers they expoſe themſelves with ſurpriſing intrepidity, whether in aſcending and deſcending mountains and precipices with their ſnow-ſhoes and in ſledges, or in venturing amidſt whirlpools and cataracts in little ſlender boats made of thin fir-boards, faſtened together with thongs of leather, ſinews of wild beaſts, or tough and flexible twigs of willow and oſier. Theſe boats are of different ſizes, from two to ſix yards in length, managed with oars, and caulked with moſs, ſo tight as to keep out the water. The Laplanders are more or leſs civilized as they communicate with ſtrangers, or live among woods and foreſts ſequeſtered from all correſpondence. The mountaineers live chiefly on the fleſh and on the milk of the rein-deer; the fleſh they dry in the cold, and from the milk they make abundance of cheeſe. Thoſe who live in the low country feed on veniſon and fiſh. They have neither bread nor ſalt; but in lieu of both uſe the inner rind of the pine-tree dried and ground, and dried fiſh reduced to powder. They make confections and decoctions of berries, angelica, and ſorrel, which they juſtly reckon to be preſervatives againſt the ſcurvy. They make broth of fiſh and fleſh boiled together; and their uſual drink is water heated in a kettle which hangs continually over the fire in winter. Their greateſt dainty, however, is bear's fleſh, which they eat on all great feſtivals. On theſe occaſions alſo they indulge themſelves with brandy, and are never ſo happy as when they can enjoy a pipe of tobacco. Theſe commodities, together with a few cows and ſheep for their winter ſtore, the better ſort of Laplanders purchaſe from Norway.

They lodge in wretched houſes compoſed of rafters joined together, and covered partly with turf, and partly with the boughs or bark of pine-trees, and a coarſe kind of cloth. Each hut is furniſhed with two doors, one ſmaller than the other: at the former the men ſally forth to their hunting and other occupations; but no woman is permitted to make uſe of this entry, leſt ſhe ſhould meet the man in his outgoing, which their ſuperſtition interprets into a very bad omen. They have neither chimney nor window; but a hole at the top, which lets in the light and lets out the ſmoke. In a word, theſe habitations are no more than miſerable hovels, without convenience or comfort; in which the people ſit or lie promiſcuouſly like beaſts around the fire, inveloped in a thick impenetrable gloom of acrid ſmoke, which corrodes their eyes and renders the atmoſphere altogether unfit for reſpiration. Yet even here the poor Laplander enjoys life with ſome degree of reliſh: he has his feaſts, his diverſions, and his amours. He is ſecured in the poſſeſſion of uninterrupted health by temperance and exerciſe, which, together with the ſeverity of the climate, brace his nerves to a very unuſual pitch of ſtrength, and fortify his conſtitution in ſuch a manner, that he often lives to the age of 100, without feeling the leaſt pang of diſtemper, or even perceiving his vigour in the leaſt impaired; for it is not uncommon to ſee a Laplander in extreme old age hunting, fowling, ſkaiting, and performing all the ſevereſt exerciſes with undiminiſhed agility.

The ſummer-garb of the men conſiſts of a long coat of coarſe cloth, reaching down the middle of the leg, and girded round the waiſt with a belt or girdle; from which hang a Norway knife, and a pouch containing flints, matches, tobacco, and other neceſſaries; the girdle itſelf being decorated with braſs rings and chains. Their caps are made of the ſkin of the northern diver, with the feathers on; and their ſhoes of the rein-deer ſkin, with the hair outwards. They wear no linen; but the garments of the better ſort are of a finer cloth, and they delight in a variety of colours, though red, as the moſt glaring, is the moſt agreeable. In winter they are totally caſed up in coats, caps, boots, and gloves, made of the rein-deer ſkins with the hair inwards. The womens apparel differs very little from that of the other ſex; only their girdles are more ornamented with rings, chains, needle-caſes, and toys that ſometimes weigh 20 pounds. In winter, both men and women lie in their furs; in ſummer, they cover themſelves entirely with coarſe blankets to defend them from the gnats which are intolerable. The Laplanders are not only well diſpoſed, but naturally ingenious. They make all their own furniture, their boats, ſledges, bows and arrows. They form neat boxes of thin birch-boards, and inlay them with the horn of the rein-deer. The Swedes are very fond of the Lapland baſkets made of the roots of trees, ſlit in long thin pieces, and twiſted together ſo nicely that they will hold water. Among the manufactures of this country we likewiſe number curious horn-ſpoons, and moulds in which they caſt the trinkets of tin which adorn their girdles. Over and above theſe domeſtic occupations, the men within doors perform the office of cooks, in dreſſing victuals for the family. The women act as taylors and embroiderers; they make clothes, ſhoes and boots, and harneſs for the rein-deer: they ſpin thread of fur, and knit it into caps and gloves, that are very ſoft and warm. They draw tin into wire through a horn; and with this they cover the thread which they uſe in embroidering the figures of beaſts, flowers, trees, and ſtars upon their caps and girdles.

The Laplanders make ſurpriſing excurſions upon the ſnow in their hunting expeditions. They provide themſelves each with a pair of ſkates, or ſnow-ſhoes, which are no other than fir-boards covered with the rough ſkin of the rein-deer turned in ſuch a manner that the hair riſes againſt the ſnow, otherwiſe they would be too ſlippery. One of theſe ſhoes is uſually as long as the perſon who wears it; the other is about a foot ſhorter. The feet ſtand in the middle, and to them the ſhoes are faſtened by thongs or withes. The Laplander thus equipped wields a long pole in his hand, near the end of which there is a round ball of wood, to prevent its piercing too deep in the ſnow; and with this he ſtops himſelf occaſionally. By means of theſe accoutrements he will travel at the rate of 60 miles a-day without being fatigued; aſcending ſteep mountains, and ſliding down again with amazing ſwiftneſs.

The Laplander not only travels a-foot, but is provided with a carriage drawn by the rein-deer, in which he journeys with ſtill greater rapidity. The ſledge, called *pulka*, is made in the form of a ſmall boat, with a convex bottom, that it may ſlide the more eaſily over the ſnow: the prow is ſharp and pointed; but the ſledge is flat behind. The traveller is ſwathed in this carriage like an infant in a cradle, with a ſtick in his hand, to ſteer the veſſel, and diſengage it from pieces of rock or ſtumps of trees that may chance to encounter it in the route. He muſt alſo balance the ſledge with his body, otherwiſe he will be in danger of being overturned. The traces, by which this carriage is faſtened to the rein-deer, are fixed to a collar about the animal's neck, and run down over the breaſt, between the fore and hind legs, to be connected with the prow of the ſledge: the reins, managed by the traveller, are tied to the horns; and the trappings are furniſhed with little bells, the ſound of which is agreeable to the animal. With this draught at his tail, the rein-deer will fly like lightning over hill and dale, ſo as to run at the rate of 200 miles a-day. Before he ſets out, the Laplander whiſpers in his ear the way he is to follow, and the place at which he is to halt; firmly perſuaded, that the beaſt underſtands his meaning: but, in ſpite of this intimation, he frequently ſtops ſhort, long before he has reached the journey's end; and ſometimes he overſhoots the mark by ſeveral leagues. The poſture of a man in one of theſe pulkhas is half-ſitting and half-lying, ſo as to be extremely confined and uneaſy. In the beginning of winter, the Laplanders mark the moſt frequented roads, by ſtrewing them with fir-boughs; and, indeed, theſe roads are no other than pathways made through the ſnow by the rein-deer and the pulkhas: their being frequently covered with new ſnow, and alternately beaten by the carriage, conſolidates them into a kind of cauſeway; which is the harder, if the ſurface has felt a partial thaw and been cruſted by a ſubſequent froſt. It requires great caution to follow theſe tracts; for, if the carriage deviates to the right or left, the traveller is plunged into an abyſs of ſnow. In leſs frequented parts, where there is no ſuch beaten road, the Laplander directs his courſe by certain marks which he has made on the trees; but, notwithſtanding all his caution, the rein-deer very often ſinks up to the horns in ſnow. Should a hurricane ariſe, the ſnow would be whirled about in ſuch a manner as to blind and overwhelm the traveller, unleſs he ſhould be provided with a tent to ſcreen him in ſome meaſure from the fury of the tempeſt.

The chief occupation of the Laplanders is hunting, and this exerciſe they perform in various ways. In ſummer, they hunt the wild beaſts with ſmall dogs, drained to the diverſion. In winter, they purſue them by their tracks upon the ſnow, ſkating with great velocity, that they very often run down the prey. They catch ermines in traps, and ſometimes with dogs. They kill ſquirrels, martens, and ſables, with blunt darts, to avoid wounding the ſkin. Foxes and beavers are ſlain with ſharp-pointed darts and arrows; in ſhooting which, they are accounted the beſt markſmen in the world. The larger beaſts, ſuch as bears, wolves, elks, and wild rein-deer, they either kill with fire-arms purchaſed in Sweden or Norway, or taken in ſnares and pits dug in the foreſts. Their particular laws, relating to the chace, are obſerved with great punctuality. The beaſt becomes the property of the man in whoſe ſnare or pit he is caught; and he who diſcovers a bear's den, has the excluſive privilege of hunting him to death. The conqueſt of a bear is the moſt honourable atchievement that a Laplander can perform; and the fleſh of this animal they account the greateſt delicacy on earth. The bear is always diſpatched with a fuſil, ſometimes laid as a ſnare, ready cocked and primed; but more frequently in the hands of the hunter, who runs the moſt imminent riſk of his life, ſhould he miſs his aim of wounding the beaſt mortally. The death of a bear is celebrated by the Laplanders as a ſignal victory. The carcaſe is drawn to the cabin or hut of the victor by a rein-deer, which is kept ſacred from any other work for a whole year after this ſervice. The bear is ſurrounded by a great number of men, women, and children, reciting a particular hymn or ſong of triumph; in which they thank the vanquiſhed enemy for having allowed himſelf to be overcome without doing any miſchief to his conqueror, and welcome his arrival: then they make an apoſtrophe to heaven, expreſſing their acknowledgment to God, that he has created beaſts for the uſe of men, and endued mankind with ſtrength and courage to overcome and attack the fierceſt of the brute creation. The hero is ſaluted by the women, who ſpit chewed elder-bark in his face. He is feaſted three days ſucceſſively, and his cap is decorated with an additional figure wrought in tin-wire.

The manner in which the young Laplander chooſes a wife is equally remarkable and ludicrous. When he has pitched upon a female, he employs ſome friends as mediators with the father; and theſe being provided with ſome bottles of brandy, the ſuitor accompanies them to the hut of his future father-in-law, who invites the mediators to enter; but the lover is left without, until the liquor be drank and the propoſal diſcuſſed: then he is called in, and entertained with ſuch fare as the hut affords; yet without ſeeing his miſtreſs, who retires and goes out on this occaſion. Having obtained leave of her parents to make his addreſſes in perſon, he puts on his beſt apparel, and is admitted to the lady, whom he ſalutes with a kiſs: then he preſents her with the tongue of a rein-deer, a piece of beaver's fleſh, or ſome other ſort of proviſion. She declines the offer, which is made in preſence of her ſiſters and relations; but makes a ſignal to the lover to follow her into the fields, where ſhe accepts the preſents. Thus encouraged, he begs her permiſſion to ſleep with her in the hut: if ſhe conſents, there is no further difficulty; if ſhe diſapproves of the propoſal, ſhe drops her preſents on the ground. When the lovers are agreed, the youth is permitted to viſit his inamorata as often as he ſhall think proper: but every time he comes, he muſt purchaſe this pleaſure with a freſh bottle of brandy; a perquiſite ſo agreeable to the father, that he often poſtpones the celebration of the nuptials for two or three years. At length the ceremony is performed at church, by the prieſt of the pariſh. Even after this event, the huſband is obliged to ſerve his father-in-law a whole year; at the expiration of which he retires to his own habitation with his wife, and her patrimony of rein-deer, and receives preſents from all his friends and relations. From this period he ſequeſters his wife from the company of all ſtrangers, eſpecially of the male ſex, and watches over her conduct with the moſt jealous vigilance.

Many Lapland women are barren, and none of them are very fruitful. A woman, immediately after delivery, ſwallows a draught of whale-fat: the child is waſhed with ſnow or cold water, and wrapped up in a hare-ſkin. The mother is ſeldom above five days in the ſtraw, and in fourteen is generally quite recovered: then ſhe carries the child to church to be baptized. Before ſhe can reach the reſidence of the prieſt, ſhe is often obliged to traverſe large foreſts, mountains, lakes, and wide-extended waſtes of ſnow. The infant is faſtened in a hollowed piece of wood, ſtretched naked on a bed of fine moſs, covered with the ſoft ſkin of a young rein-deer, and ſlung by two ſtraps to the back of the mother, who always ſuckles her own child. At home this little cradle is hung to the roof of the hut, and the child lulled aſleep by ſwinging it from one ſide to the other. The boys, from their infancy, practiſe the bow; and are not allowed to break their faſt, until they have hit the mark. The female children are as early initiated in the buſineſs peculiar to their ſex.

Theſe people, though for the moſt part vigorous and healthy, are not altogether exempted from diſtemper. They are ſubject to ſore eyes, and even to blindneſs, from the ſmoke of their huts, and the fire to which they are almoſt continually expoſed. Some waſte away in conſumptions; others are afflicted with rheumatic pains, and the ſcurvy; and a few are ſubject to vertigo and apoplexy. For the cure of all their internal diſorders, they uſe no other medicine than the decoction of a certain ſpecies of moſs; and, when this cannot be procured, they boil the ſtalk of angelica in the milk of the rein-deer. In order to remove a fixed pain, they apply a large muſhroom, burning hot, to the part affected; and this produces a bliſter, which is ſuppoſed to draw off the peccant humour. To their wounds they apply nothing but the turpentine that drops from the fir-tree. When they are froſt-bitten, they thruſt a red-hot iron into a cheeſe made of rein-deer's milk, and with the fat that drops from it anoint the frozen member, which generally recovers. When a Laplander is ſuppoſed to be on his death-bed, his friends exhort him to die in the faith of Chriſt, and bear his ſufferings with reſignation, by remembering the paſſion of our Saviour. They are not, however, very ready to attend him in his laſt moments; and as ſoon as he expires, quit the place with precipitation, apprehending ſome injury from his ſpirit or ghoſt, which they believe remains with the corpſe, and takes all opportunities of doing miſchief to the living. The deceaſed is wrapped up in woollen or linen, according to his circumſtances, and depoſited in a coffin by a perſon ſelected for that purpoſe: but this office he will not perform, unleſs he is firſt ſecured from the ill offices of the manes, by a conſecrated braſs ring fixed on his left arm. The Chriſtian religion in this country has not yet diſpelled all the rites of heatheniſh ſuperſtition: together with the body they put into the coffin an ax, a flint, and ſteel, a flaſk of brandy, ſome dried fiſh and veniſon. With the ax the deceaſed is ſuppoſed to hew down the buſhes or boughs that may obſtruct his paſſage in the other world: the ſteel and flint are deſigned for ſtriking a light, ſhould he find himſelf in the dark at the day of judgment; and on the proviſion they think he may ſubſiſt during his journey.

The Muſcovite Laplanders obſerve other ceremonies, that bear an affinity to the ſuperſtitions of the Greek church. They not only ſupply the defunct with money, but likewiſe provide him with money for the porter of paradiſe, and a certificate ſigned by the prieſt, and directed to St Peter, ſpecifying, that the bearer had lived like a good Chriſtian, and ought to be admitted into heaven. At the head of the coffin they place a little image of St Nicholas, who is greatly reverenced in all parts of Muſcovy as a friend to the dead. Before the interment, the friends of the deceaſed kindle a fire of fir-boughs near the coffin, and expreſs their ſorrow in tears and lamentations. They walk in proceſſion ſeveral times round the body, demanding, in a whining tone, the reaſon of his leaving them on earth. They aſk whether he was out of humour with his wife; whether he was in want of meat, drink, cloathing, or other neceſſaries; and whether he had not ſucceeded in hunting and fiſhing? Theſe, and other ſuch interrogations, to which the defunct makes no reply, are intermingled with groans and hideous howlings; and, between whiles, the prieſt ſprinkles the corpſe and the mourners alternately with holy water. Finally, the body is conveyed to the place of interment on a ſledge, drawn by a rein-deer; and this, together with the cloaths of the deceaſed, are left as the prieſt's perquiſite. Three days after the burial, the kinſmen and friends of the defunct are invited to an entertainment, where they eat the fleſh of the rein-deer which conveyed the corpſe to the burying-ground. This being a ſacrifice to the manes, the bones are collected into a baſket and interred. Two thirds of the effects of the deceaſed are inherited by his brothers, and the remainder divided among his ſiſters: but the lands, lakes, and rivers, are held in coparceny by all the children of both ſexes, according to the diviſion made by Charles IX. of Sweden, when he aſſigned a certain tract of land to each family.

The commerce of the Laplanders is more conſiderable than one would expect in a deſart country inhabited by a ſavage ignorant people. They export great quantities of fiſh to the northern parts of Bothnia and White Ruſſia. They likewiſe trade with the neighbouring countries of Norway, Sweden, Muſcovy, and Finland, by ſelling rein-deer, fine furs, baſkets and toys of their own manufacture, dried pikes, and cheeſe made of the rein-deer's milk. In return for theſe commodities they receive rixdollars, woollen cloaths, linen, copper, tin, flour, oil, hides, needles, knives, ſpirituous liquors, tobacco, and other neceſſaries. The Laplanders march in caravans to the fairs in Finland and Norway: theſe are compoſed of a long ſtring of 30 or 40 rein-deer and pulkhas, tied to one another, the foremoſt being led by a Laplander a-foot. When they have choſen a ſpot for an encampment, which is often in the midſt of a river, they form a large circle of their rein-deer and pulkhas ready yoked; and the animals, lying down quietly on the ſnow, are fed with moſs by their maſters. The people kindle great fires, around which, men, women, and children ſit, and ſup on dried fiſh: but the more voluptuous pitch their tents on the ice, and ſpread their bear-ſkins, on which they lie at their eaſe, and ſmoke tobacco.

The revenue ariſing from this country is of no great conſequence: it is paid partly in rix-dollars, but chiefly in furs; nay, ſome, that can procure neither, pay the tribute in dried pikes. The produce of the mines forms likewiſe a conſiderable article. Fifty ſquirrel-ſkins, or one fox-ſkin, with a pair of Lapland ſhoes, are valued at one rixdollar. Part of the taxes is allotted for the maintenance of the Lapland clergy.

The frightful aſpect of this country has been deemed a more effectual defence than artifical bulwarks and garriſons, of which here are none; or than the arms and courage of the natives, who are neither warlike in themſelves, nor in the leaſt tinctured with diſcipline.

LAPLYSIA, a genus of marine inſects, belonging to the order of vermes molluſca. The body is covered with membranes reflected. It hath a ſhield-like membrane on the back, a lateral pore on the right ſide; the vent on the extremity of the back, with four feelers reſembling ears. The figure ſhews the common ſize. Thoſe of Italy grow to the length of eight inches. Pliny calls it *oſſa informis;* and, placing it among the venomous marine animals, ſays that even the touch is infectious. The ſmell is extremely nauſeous.

LAPSANA, NIPPLEWORT; a genus of the polygamia æqualis order, belonging to the ſyngeneſia claſs of plants. There are four ſpecies, which grow commonly as weeds by the ſides of ditches. The young leaves of the common kind, called *dock-creſſes*, have the taſte of radiſhes, and are eaten raw at Conſtantinople as a ſalad. In ſome parts of England the common people boil them as greens, but they have a bitter and diſagreeable taſte.

LAPWING, in ornithology. See TRINGA.

LAQUEUS, in ſurgery, a kind of ligature, ſo contrived, that, when ſtretched by any weight or the like, it draws up cloſe. Its uſe is to extend broken or disjointed bones to keep them in their places while they are ſet, and to bind the parts cloſe together.

LAR-BOARD, among ſeamen, the left-hand ſide of the ſhip when you ſtand with your face twards the head.

LARCENY, or THEFT, by contraction for latroceny, *latrocinium*, is diſtinguiſhed by the law into two ſorts: the one called *ſimple larceny*, or plain theft unaccompanied with any other atrocious circumſtance; and *mixed* or *compound larceny*, which alſo includes in it the aggravation of a taking from one's houſe or perſon.

I. *Simple* larceny, when it is the ſtealing of goods above the value of twelvepence, is called *grand larceny;* when of goods to that value, or under, is *petit larceny:* offences, which are conſiderably diſtinguiſhed in their puniſhment, but not otherwiſe. See THEFT.

II. *Mixed*, or *compound larceny*, is ſuch as has all the properties of the former, (ſee THEFT;) but is accompanied with either one, or both, of the aggravations of a taking from one's *houſe* or *perſon*. Firſt therefore of larceny from the *houſe*, and then of larceny from the *perſon*.

1. Larceny from the *houſe*, though it might ſeem to have a higher degree of guilt than ſimple larceny, yet is not at all diſtinguiſhed from the other at common law: unleſs where it is accompanied with the circumſtance of breaking the houſe by night; and then it falls under another deſcription, viz. that of burglary, (ſee BURGLARY). But now by ſeveral acts of parliament (the hiſtory of which is very ingeniouſly deduced by a learned modern writer †, who hath ſhewn them to have gradually ariſen from our improvements in trade and opulence) the benefit of clergy is taken from larcenies committed in an houſe in almoſt every inſtance: except that larceny of the ſtock or utenſils of the plate-glaſs company from any of their houſes, &c. is made only ſingle felony, and liable to tranſportation for ſeven years. The multiplicity of the general acts is apt to create ſome confuſion; but upon comparing them diligently we may collect, that the benefit of clergy is denied upon the following domeſtic aggravations of larceny; viz. firſt, in larcenies *above the value of twelvepence*, committed, 1. In a church or chapel, with or without violence, or breaking the ſame: 2. In a booth or tent in a market or fair, in the day-time or in the night, by violence or breaking the ſame; the owner or ſome of his family being therein: 3. By robbing a dwelling-houſe in the day-time (which *robbing* implies a breaking), any perſon being therein: 4. In a dwelling-houſe by day or by night, without breaking the ſame, any perſon being therein and put in fear; which amounts in law to a robbery: and in both theſe laſt caſes the acceſſory before the fact is alſo excluded from his clergy. Secondly, in larcenies *to the value of five ſhillings*, committed, 1. By breaking any dwelling-houſe, or any out-houſe, ſhop, or warehouſe thereunto belonging, in the day-time, although no perſon be therein; which alſo now extends to aiders, abettors, and acceſſories before the fact: 2. By privately ſtealing goods, wares, or merchandiſe in any ſhop, warehouſe, coach-houſe, or ſtable, by day or by night; though the ſame be not broken open, and though no perſon be therein: which likewiſe extends to ſuch as aſſiſt, hire, or command the offence to be committed. Laſtly, in larcenies *to the value of forty ſhillings* in a dwelling-houſe, or its out-houſes, although the ſame be not broken, and whether any perſon be therein or not; unleſs committed againſt their maſters by apprentices under the age of 15. This alſo extends to thoſe who aid or aſſiſt in the commiſſion of any ſuch offence.

† *Barr.* 375.

Blackſt. Comment.

2. Larceny from the *perſon* is either by *privately* ſtealing; or by open and violent aſſault, which is uſually called *robbery*.

The offence of *privately* ſtealing from a man's *perſon*, as by picking his pocket or the like, privily, without his knowledge, was debarred of the benefit of clergy, ſo early as by the ſtatute 8 Eliz. c. 4. But then it muſt be ſuch a larceny, as ſtands in need of the benefit of clergy, viz. of above the value of 12d.; elſe the offender ſhall not have judgment of death. For the ſtatute creates no new offence; but only takes away the benefit of clergy, which was a matter of grace, and leaves the thief to the regular judgment of the ancient law. This ſeverity (for a moſt ſevere law it certainly is) ſeems to be owing to the eaſe with which ſuch offences are committed, the difficulty of guarding againſt them, and the boldneſs with which they were practiſed (even in the queen's court and preſence) at the time when this ſtatute was made: beſides that this is an infringement of property in the manual occupation or corporal poſſeſſion of the owner, which was an offence even in a ſtate of nature. And therefore the *ſacculari*i, or cutpurſes, were more ſeverely puniſhed than common thieves by the Roman and Athenian laws.

As to open and violent larceny from the perſon, ſee Robbery.

LARDNER (Nathaniel), an eminent Engliſh diſſenting divine, born in 1656, was author of ſeveral excellent works in defence of our religion; as, Teſtimonies of the ancient Jews and Pagans in favour of Chriſtianity; The hiſtory of heretics, &c. He died in 1678.

LAR, a town of Perſia, in the province of Fars, with a caſtle. It carries on a great trade in ſilk; and its territory abounds in oranges, lemons, and very large tamarinds. E. Long. 54. 15. N. Lat. 27. 30.

LARACHA, an ancient and ſtrong town of Africa, in the kingdom of Fez. It is ſeated at the mouth of a river of the ſame name, with a good harbour. It was once in the poſſeſſion of the Spaniards; but the Moors took it from them. W. Long. 5. 55. N. Lat. 35. 0.

LAREDO, a ſea-port town of Spain, in the bay of Biſcay, with a large ſafe harbour. It is 30 miles weſt of Bilboa, and 72 north by weſt of Burgos. W. Long. 3. 45. N. Lat. 43. 23.

LARES, certain inferior deities among the ancient Romans, who were the guardians of houſes; they were alſo ſometimes taken for the guardians of ſtreets and ways, and Tibullus makes them the guardians of the fields. According to Ovid, they were the ſons of Mercury and Laura, whoſe tongue was cut out by Jupiter becauſe ſhe revealed his adulteries to Juno: and not contented with this, he delivered her to Mercury, with orders to conduct her to hell; but this god falling in love with her by the way, had twins by her, who from their mother were called *lares*.

Theſe domeſtic deities were ſometimes repreſented under the figure of a dog, the ſymbol of fidelity; becauſe dogs have the ſame function as the *lares*, which is to guard the houſe. At other times their images were covered with the ſkin of a dog, and had the figure of that domeſtic animal ſtanding by them. The principal ſacrifices to the *lares* were incenſe, fruit, and a hog.

The Romans had a private place in their houſes, called *lararium*, in which, among other ſtatues of their gods, were their *lares*, and the images of their anceſtors. Tertullian tells us, that the cuſtom of worſhipping the *lares* aroſe from their anciently interring their dead in their houſes; whence the credulous people took occaſion to imagine, that their ſouls continued there likewiſe, and thence proceeded to pay them divine honours. To which may be added, that the cuſtom of burying them in the highways might occaſion their being conſidered likewiſe as gods of the highways.

LARINO, a town of Italy, in the kingdom of Naples, in the Capitanata, with a biſhop's ſee. E. Lon. 15. 51. N. Lat. 41. 48.

LARISSA, an ancient, rich, and celebrated town of Greece, in the province of Janna, or Theſſaly, with an archbiſhop's ſee of the Greek church, a palace, and ſeveral handſome moſques. According to Virgil, it is the country of Achilles, and the place where Philip the father of Alexander the Great reſided. The inhabitants carry on a conſiderable trade. The city is agreeably ſeated on the river Peneus, in E. Long. 23. 36. N. Lat. 38. 51.

LARIX, the larch-tree; a genus of plants by Linnæus claſſed along with the Pinus; but as Tournefort and all former botaniſts have ſeparated them on account of the form of their leaves, and they are pretty generally known by theſe diſtinctions, we ſhall adopt the diſtinction in order to avoid confuſion.

Species. There are two ſpecies, viz. the decidua, with deciduous leaves, and oval obtuſe cones; and the cedar of Libanus. The firſt ſort grows naturally upon the Alps and Apennines, and of late has been very much propagated in Britain. It is of quick growth, and the trunk riſes to 50 feet or more; the branches are ſlender, their ends generally hanging downward, and are garniſhed with long narrow leaves which ariſe in cluſters from one point, ſpreading open above like the hairs of a painter's bruſh: they are of a light green, and fall away in autumn. In the month of April the male flowers appear, which are diſpoſed in form of ſmall cones; the female flowers are collected into oval obtuſe cones, which in ſome ſpecies have bright purple tops, and in others they are white: theſe differences are accidental; the cones are about an inch long, obtuſe at their points; the ſcales are ſmooth, and lie over each other: under each ſcale there are generally lodged two ſeeds which have wings. There are other two varieties of this tree, one of which is a native of America and the other of Siberia. The cones of the American kind which have been brought to Britain ſeem in general to be larger than thoſe of the common ſort.

The ſecond ſort, or cedar of Libanus, is a tree of antiquity; and what is remarkable, it is not to be found as a native in any other part of the world, as far as hath yet been diſcovered. What we find mentioned in Scripture of the lofty cedars, can be noways applicable to the common growth of this tree; ſince, from the experience we have of thoſe now growing in England, as alſo from the teſtimony of ſeveral travellers who have viſited thoſe few remaining trees on mount Libanus, they are not inclined to grow very lofty, but on the contrary extend their branches very far; to which the alluſion made by the Pſalmiſt agrees very well, when he is deſcribing the flouriſhing ſtate of a people, and ſays, "They ſhall ſpread their branches like the cedar-tree."

Rauwolf, in his Travels, ſays, there were not at that time (i. e. anno 1574) upon mount Libanus more than 26 trees remaining, 24 of which ſtood in a circle: and the other two, which ſtood at a ſmall diſtance, had their branches almoſt conſumed with age; nor could he find any younger tree coming up to ſucceed them, though he looked about diligently for ſome.

Theſe trees (he ſays) were growing at the foot of a ſmall hill, on the top of the mountains, and amongſt the ſnow. Theſe having very large branches, commonly bend the tree to one ſide, but are extended to a great length, and in ſo delicate and pleaſant order, as if they were trimmed and made even with great diligence, by which they are eaſily diſtinguiſhed, at a great diſtance, from fir-trees. The leaves (continues he) are very like to thoſe of the larch-tree, growing cloſe together in little branches upon ſmall brown ſhoots.

Maundrel, in his Travels, ſays, there were but 16 large trees remaining when he viſited the mountains, ſome of which were of a prodigious bulk, but that there were many more young ones of a ſmaller ſize; he meaſured one of the largeſt, and found it to be 12 yards ſix inches in girt, and yet ſound, and 37 yards in the ſpread of its boughs. At about five or ſix yards from the ground it was divided into five limbs, each of which was equal to a great tree. What Maundrel hath related was confirmed by a gentleman who was there in the year 1720, with this difference only, viz. in the dimenſions of the branches of the largeſt tree, which he meaſured, and found to be 22 yards diameter. Now, whether Mr Maundrel meant 37 yards in circumference of the ſpreading branches, or the diameter of them, cannot be determined by his words; yet either of them well agrees with this laſt account.

Culture. Theſe plants are propagated by ſowing in March on a bed of light earth expoſed to the morning ſun. The ſeed muſt be covered half an inch thick with fine light earth, and the beds watered at times when the weather is dry. In about ſix weeks the plants will appear; they muſt at this time be carefully guarded from the birds, ſhaded from the ſun and winds, and kept very clear of weeds. In the latter end of April the following year, they may be removed into beds of freſh earth, placing them at ten inches diſtance every way. They are to be kept here two years, and ſuch of them as ſeem to bend muſt be tied up to a ſtake to keep them upright. They may afterwards be planted in the places where they are to remain. They thrive well on the ſides of barren hills, and make a very pretty figure there.

Uſes. From the larch-tree is extracted what we erroneouſly call *Venice turpentine*. This ſubſtance, or natural balſam, flows at firſt without inciſion; when it has done dropping, the poor people who wait in the fir-woods, make inciſions at about two or three feet from the ground, into the trunk of the trees, into which they fix narrow troughs about 20 inches long. The end of theſe troughs is hollowed like a ladle; and in the middle is a ſmall hole bored for the turpentine to run into the receiver which is placed below it. As the gummy ſubſtance runs from the trees, it paſſes along the ſloping gutter or trough to the ladle, and from thence runs thro' the holes into the receiver. The people who gather it viſit the trees morning and evening from the end of May to September, to collect the turpentine out of the receivers. When it flows out of the tree, Venice turpentine is clear, like water, and of a yellowiſh white; but, as it grows older, it thickens, and becomes of a citron colour. It is procured in the greateſt abundance in the neighbourhood of Lyons, and in the valley of St Martin, near St Lucern in Switzerland. For the properties and uſes of the cedar of Libanus, ſee the article Cedar.

LARK, in ornithology. See Alauda.

The lark is not only a very agreeable bird for the cage, but a very hardy one. It will live upon almoſt any food, ſo that it have once a-week a freſh tuft of three-leaved graſs. The *ſky* and *wood-lark* differ in the time of their breeding; the former not producing her young ones till May, the latter hatching them in March. In winter, it is common to ſee vaſt flocks of ſky-larks; and yet it is obſerved, that there are fewer of their neſts found in the ſeaſon than of any birds that are common among us. The ſky-lark ſometimes builds among corn, ſometimes among high-graſs, and ſeldom has more than three young ones at a brood, ſcarce ever more than four; ſo that the origin of the large flights we ſee is the more ſurpriſing. The young may be taken out of the neſt at a fortnight old, and are ſo hardy that they will be eaſily brought up. The beſt food is ſheep's heart chopped with egg; and afterwards oatmeal, bruiſed hempſeed, and bread with a little egg among it. They ſhould have clean ſand at the bottom of the cage, but they need no perches.

The common way of taking larks is in the night, with thoſe nets which are called *trammels*. Theſe are uſually made of 36 yards in length, and about ſix yards over, with ſix ribs of pack-thread, which at the ends are put upon two poles of about 16 feet long, and made leſſer at each end. Theſe are to be drawn over the ground by two men, and every five or ſix ſteps the net is made to touch the ground, otherwiſe it will paſs over the birds without touching them, and they will eſcape. When they are felt to fly up againſt the net, it is clapped down, and then all are ſafe that are under it. The darkeſt nights are propereſt for this ſport; and the net will not only take larks, but all other birds that rooſt on the ground; among which are woodcocks, ſnipes, partridge, quails, field-fares, and ſeveral others. In the depth of winter people ſometimes take great numbers of larks by nooſes of horſe-hair. The method is this: Take 100 or 200 yards of packthread; faſten at every ſix inches a nooſe made of double horſe-hair; at every 20 yards the line is to be pegged down to the ground, and ſo left ready to take them. The time to uſe this is when the ground is covered with ſnow, and the larks are to be allured to it by ſome white oats ſcattered all the way among the nooſes. They muſt be taken away as ſoon as three or four are hung, otherwiſe the reſt will be frighted; but though the others are ſcared away juſt where the ſportſman comes, they will be feeding at the other end of the line, and the ſport may be thus continued for a long time.

LARRIBUNDAR, a ſea-port town of Aſia, in Indoſtan; ſeated at the mouth of the river Sinda, or Indus, with a harbour capable of receiving ſhips of 200 tons burden. It is but a ſmall place, conſiſting of about 100 houſes built with wood; but has a ſtone fort, with five great guns, to prevent robberies; becauſe ſome of the neighbouring countries are much addicted to thieving. E. Long. 67. 0. N. Lat. 25. 0.

LARUS, the gull, in ornithology, a genus belonging to the order of anſeres, the characters of which are theſe: The bill is ſtrait, cultrated, a little crooked at the point, and without teeth; the inferior mandible is gibbous below the apex; the noſtrils are linear, a little broader before, and ſituated in the middle of the back. There are 11 ſpecies, principally diſtinguiſhed by their colour. The moſt remarkable ſpecies are, 1. The marinus, or black-backed gull. The weight of this ſpecies is near five pounds; the length 29 inches; the breadth five feet nine. The bill is very ſtrong and thick, and almoſt four inches long; the colour a pale yellow; but the lower mandible is marked with a red ſpot, with a black one in the middle. The head, neck, whole under-ſide, tail, and lower-part of the back, are white: the upper-part of the back, and wings, are black; the quill-feathers tipt with white; the legs of a pale fleſh-colour. This kind inhabits our coaſts in ſmall numbers, and breeds in the higheſt cliffs. It feeds not only on fiſh; but, like the raven, very greedily devours carrion. Its egg is very blunt at each end; of a duſky olive colour, quite black at the greater end, and the reſt of it thinly marked with duſky ſpots. On the coaſt of Angleſea is found a bird that agrees in all reſpects with this except in ſize, in wanting the black ſpot on the bill, and in the colour of the legs, which in this are of a bright yellow: the extent of wings is only four feet five; the length only 22 inches: the weight one pound and a half. This ſpecies, or perhaps variety, rambles far from the ſea, and has been ſhot at Bulſtrode, in Middleſex.

2. The cataractes, or ſkua gull. The length of this ſingular gull is two feet; the extent four feet and a half; the weight three pounds: the bill two inches one-fourth long, very much hooked at the end, and very ſharp: the upper mandible covered more than half-way with a black cere or ſkin, as in the hawk-kind: the noſtrils placed near the bend, and are pervious. The feathers on the head, neck, back, ſcapulars, and coverts of the wings, are of a deep brown, marked with ruſt-colour (brighteſt in the male). The breaſt, belly, and vent, are ferruginous, tinged with aſh-colour. The tail when ſpread is circular, of a deep brown, white at the root, and with ſhafts of the ſame colour. The legs are covered with great black ſcales: the talons black, ſtrong, and crooked; the interior remarkably ſo.

This bird inhabits Norway, the Ferroe iſles, Shetland, and the noted rock Foula, a little weſt of them. It is alſo a native of the South Sea. It is the moſt formidable gull; its prey being not only fiſh, but, what is wonderful in a web-footed bird, all the leſſer ſort of water-fowl, ſuch as teal, &c. Mr Schroter, a ſurgeon in the Ferroe iſles, relates that it likewiſe preys on ducks, poultry, and even young lambs. It has all the fierceneſs of the eagle in defending its young; when the inhabitants of thoſe iſlands viſit the neſt, it attacks them with great force, ſo that they hold a knife erect over their heads, on which the ſkua will transfix itſelf in its fall on the invaders. The Rev. Mr Low, miniſter of Birſa in Orkney, confirmed part of the above account: On approaching the quarters of theſe birds, they attacked him and his company with moſt violent blows; and intimidated a bold dog of Mr Low's in ſuch a manner, as to drive him for protection to his maſter. The natives are often very rudely treated by them, while they are attending their ſheep on the hills; and are obliged to guard their heads by holding up their ſticks, on which the birds often kill themſelves. In Foula it is a privileged bird, becauſe it defends the flocks from the eagle, which it beats and purſues with great fury; ſo that even that rapacious bird ſeldom ventures near its quarters. The natives of Foula on this account lay a fine on any perſon who deſtroys one: they deny that it ever injures their flocks or poultry; but imagine it preys on the dung of the arctic and other larger gulls, which it perſecutes till they moot for fear.

3. The paraſiticus, or dung-hunter. Theſe birds are very common in the Hebrides. Numbers of them are found in Jura, Ilay, and Rum, where they breed in the heath; if diſturbed, they fly about like the lapwing, but ſoon alight. They are alſo found in the Orkneys, where they appear in May, and retire in Auguſt. It is alſo found on the coaſt of Yorkſhire, where it is known by the name of *Feaſer*. All writers who mention it agree, that it has the property of purſuing the leſſer gulls ſo long, that they moot for fear, and that it catches up and devours their excrements before they drop into the water; from which the name. Linnæus wittily calls it the *paraſite*, alluding to its ſordid life.

The length of this ſpecies is 21 inches: the bill is duſky, about an inch and a half long, pretty much hooked at the end, but the ſtrait part is covered with a ſort of cere. In the *male*, the crown of the head is black: the back, wings, and tail, duſky; but the lower part of the inner webs of the quill-feathers white: the hind part of the neck, and whole underſide of the body, white: the tail conſiſts of 12 feathers, the two middlemoſt near four inches longer than the others; the legs black, ſmall, and ſcaly. The *female* is entirely brown, but of a much paler colour below than above; the feathers in the middle of the tail are only two inches longer than the others. Linnæus has ſeparated this from its mate, his *larus paraſiticus*, and made it a ſynonyme to his *larus cataractes*, a bird as different from this as any other of the whole genus.

4. The fuſcus, or herring-gull, weighs upwards of 30 ounces; the length 23 inches, its breadth 52; the bill yellow, and the lower mandible marked with an orange-coloured ſpot: the back, and coverts of the wings, aſh-coloured; the upper-part of the five firſt quill-feathers are black, marked with a white ſpot near their end; the legs of a pale fleſh-colour. Theſe birds breed on the ledges of rocks that hang over the ſea; they make a large neſt of dead graſs, and lay three eggs of a dirty white, ſpotted with black. The young are aſh-coloured, ſpotted with brown. They do not come to their proper colour the firſt year: this is common to other gulls; which has greatly multiplied the ſpecies among authors, who are inattentive to theſe particulars. This gull is a great devourer of fiſh, eſpecially of that from which it takes its name: it is a conſtant attendant on the nets, and ſo bold as to ſeize its prey before the fiſhermens faces.

5. The nævius, or wagel. Theſe birds vary much in their ſize: of thoſe examined by Mr Pennant, one weighed 3 lb. 7 oz. the length was two feet two inches, the breadth five feet ſix; others again did not weigh two pounds and a half. The irides are duſky; the bill black, and near three inches long. The whole

plumage of the head and body, above and below, is a mixture of white, aſh-colour, and brown: the laſt colour occupies the middle of each feather; and in ſome birds is pale, in others dark: the quill-feathers black: the lower-part of the tail is mottled with black and white: the legs are of a dirty white. Some have ſuppoſed this to be the young of the preceding ſpecies, which (as well as the reſt of the gull tribe) ſcarce ever attains its true colours till after the firſt year: but it muſt be obſerved, that the firſt colours of the irides, of the quill-feathers, and of the tail, are in all birds permanent; theſe differ in each of theſe gulls ſo greatly, as ever to preſerve unerring notes of diſtinction. This ſpecies is likewiſe called by ſome the *dung-hunter*, for the ſame reaſon as the laſt is ſtyled ſo.

6. The winter-gull weighs from 14 to 17 ounces: the length 18 oz. the breadth three feet nine. The irides are hazel: the bill two inches long, but the ſlendereſt of any gull: it is black at the tip, whitiſh towards the baſe. The crown of the head, and hind-part and ſides of the neck, are white, marked with oblong duſky ſpots; the forehead, throat, middle of the breaſt, belly, and rump, are white; the back and ſcapulars are of a pale grey, the laſt ſpotted with brown; the coverts of the wings are of a pale brown, edged with white; the firſt quill-feather is black, the ſucceeding are tipt with white: the tail is white, croſſed near the end with a black bar; the legs of a dirty blueiſh white. This kind frequents, during winter, the moiſt meadows in the inland parts of England, remote from the ſea. The gelatinous ſubſtance, known by the name of *ſtar-ſhot*, or *ſtar-gelly*, owes its origin to this bird, or ſome of the kind; being nothing but the half-digeſted remains of earth-worms, which theſe birds feed on, and often diſcharge from their ſtomachs.

7. The canus, or common gull, is the moſt numerous of the genus. It breeds on the ledges of the cliffs that impend over the ſea: in winter they are found in vaſt flocks on all our ſhores. They differ a little in ſize. One examined by Mr Pennant weighed 12 ounces and a half: its length was 17 inches, its breadth 36; the bill yellow; the head, neck, tail, and whole under-ſide of the body, a pure white; the back, and coverts of the wings, a pale grey; near the end of the greater quill-feathers was a black ſpot; the legs a dull white, tinged with green.

8. The riſſa, or kittiwake. The length of this ſpecies is 14 inches, the extent three feet two. When arrived at full age, the head, neck, belly, and tail, are of a ſnowy whiteneſs; behind each ear is ſometimes a duſky ſpot: the back and wings are grey: the exterior edge of the firſt quill-feather, and tips of the four or five next, are black; the bill yellow, tinged with green; inſide of the mouth orange; legs duſky, with only a knob inſtead of the back-toe. It inhabits the romantic cliffs of Flamborough-head (where it is called *petrel*), the Baſs iſle, the vaſt rocks near the caſtle of Slains in the county of Aberdeen, and Prieſtholm iſle. The young of theſe birds are a favourite diſh in North-Britain, being ſerved up roaſted, a little before dinner, in order to provoke the appetite; but, from their rank taſte and ſmell, ſeem much more likely to produce a contrary effect.

9. The ridibundus, pewit, or black-head gull. Theſe birds breed in vaſt numbers in the iſlands of certain pools in the county of Stafford; and, as Dr Fuller tells us, in another on the Eſſex ſhores; alſo in the fens of Lincolnſhire. They are birds of paſſage; reſort there in the ſpring, and after the breeding ſeaſon diſperſe to the ſea-coaſts: they make their neſt on the ground, with ruſhes, dead graſs, and the like; and lay three eggs of a dirty olive-colour, marked with black. The young were formerly highly eſteemed, and numbers were annually taken and fattened for the table. Plott gives a marvellous account of their attachment to the lord of the ſoil they inhabit; inſomuch, that, on his death, they never fail to ſhift their quarters for a certain time. Whitelock, in his annals, mentions a piece of ground near Portſmouth, which produced to the owner 40 l. a-year by the ſale of pewits, or this ſpecies of gull. Theſe are the *ſee-gulles* that in old times were admitted to the noblemens tables.

The notes of theſe gulls diſtinguiſh them from any others, being like a hoarſe laugh. Their weight is about 10 ounces; their length 15 inches, their breadth 37: their irides are of a bright hazel; the edges of the eye-lids of a fine ſcarlet; and on each, above and below, is a ſpot of white feathers. Their bills and legs are of a ſanguine red; the heads and throats black or duſky; the neck, and all the under-ſide of the body, and the tail, a pure white; back and wings aſh-coloured; tip and exterior edge of the firſt quill-feather black, the reſt of that feather white, the next to that tipt with black, and marked with the ſame on the inner web.

LARYNX, in anatomy, the upper-part of the wind-pipe. See ANATOMY, n° 380. *a*.

LASCARIS (Andrew John), ſurnamed *Ryndacenus*, of an ancient Greek family, went into Italy, after the taking of Conſtantinople by the Turks, in 1453. He was well received by Laurence de Medicis, a diſtinguiſhed protector of learned men; and was twice ſent to Conſtantinople to collect the beſt Greek manuſcripts, by which means numberleſs ſcarce and valuable treaſures of literature were carried into Italy. At his return Lewis XII. king of France prevailed on him to ſettle in the univerſity of Paris, and ſent him twice ambaſſador to Venice. Ten years after, cardinal John de Medicis being elected pope, under the name of *Leo X*. John Laſcaris, his old friend, went to Rome, and had the direction of a Greek college. He died at Rome in 1535, at about the 90th year of his age. He brought into the Weſt moſt of the fine Greek manuſcripts that are now extant, and compoſed ſome epigrams in Greek and Latin.

LASCARIS (Conſtantine), one of the Greeks who were principally concerned in the revival of learning in the Weſt, retired into Italy in 1454, and taught polite literature at Milan, whither he was called by Francis Sforza; he afterwards went to Rome, where he was well received by Cardinal Beſſarion. He afterwards taught rhetoric and the Greek tongue at Naples; and ended his days at Meſſina, leaving the ſenate of that city many excellent manuſcripts which he had brought from Conſtantinople. He was interred at the public expence, and the ſenate of Meſſina erected a marble tomb to his memory. He wrote ſome grammatical works.

LASERPITIUM, lazar-wort, a genus of the digynia order, belonging to the pentandria claſs of plants. There are nine ſpecies, none of which are at all remarkable for their beauty, ſo are only preſerved in botanic gardens for the ſake of variety. They are natives of Germany, Italy, and the ſouth of France. All of them abound with an acrid juice, which turns to an exceſſively acrimonious reſin. This was uſed by the ancients to take away black and blue ſpots that came by bruiſes or blows, as alſo to take away excreſcences: it was alſo by ſome of the ancients uſed internally; but produced ſuch violent effects, that the more prudent refrained from the uſe of it. It is generally ſuppoſed that the ſilphium of the ancients was procured from one of the ſpecies of this genus; but of this we are at preſent ignorant.

LASH, or lace, in the ſea-language, ſignifies to bind and make faſt; as, to laſh the bonnet to the courſe, or the drabler to the bonnets: alſo the carpenter takes care that the ſpare yards be laſhed faſt to the ſhip's ſide; and in a rolling ſea, the gunners mind that the guns be well laſhed, leſt they ſhould break looſe. Laſhers are properly thoſe ropes which bind faſt the tackles and the breechings of the ordnance, when hauled or made faſt within-board.

LASSITUDE, or weariness, in medicine, a morbid ſenſation, that comes on ſpontaneouſly, without any previous motion, exerciſe, or labour. This is a frequent ſymptom in acute diſtempers: it ariſes either from an increaſe of bulk, a diminution of proper evacuation, or too great a conſumption of the fluids neceſſary to maintain the ſpring of the ſolids, or from a vitiated ſecretion of that juice.

LAST, in general, ſignifies the burden or load of a ſhip. It ſignifies alſo a certain meaſure of fiſh, corn, wool, leather, &c. A laſt of codfiſh, white herrings, meal, and aſhes for ſoap, is twelve barrels; of corn or rapeſeed, ten quarters; of gun-powder, twenty-four barrels; of red-herrings, twenty cades; of hides, twelve dozen; of leather, twenty dickers; of pitch and tar, fourteen barrels; of wool, twelve ſacks; of ſtock-fiſh, one thouſand; of flax or feathers, 1700 lb.

LASTAGE, or lestage, a duty exacted in ſome fairs and markets, for carrying things bought whither one will. It ſignifies alſo the ballaſt or lading of a ſhip; and ſometimes is uſed for garbage, rubbiſh, or ſuch like filth.

LATERAN councils, thoſe councils held in the baſilica of the Latin church at Rome. See Council. There have been five councils held in this place, viz. in the years 1123, 1139, 1179, 1215, and 1513.

Canons regular of the Congregation of the Lateran, were introduced in the reign of Pope Leo I. and continued in the church till the reign of Boniface, who diſplaced them, and put ſecular canons in their room; but 150 years after, the regulars were re-inſtated again.

A **LATERE**, a term uſed to denote the qualifications of the cardinals whom the pope ſends as legates into foreign countries. They are called *legates a-latere*, as being his holineſs's aſſiſtants and counſellors in ordinary. Theſe are the moſt conſiderable of the other three kinds of legates, being ſuch as the pope commiſſions to take his place in councils; and ſo called, in regard that he never gives this office to any but his favourites and confidants, who are always *a-latere*, at his ſide. A legate a-latere has the power of conferring benefices without a mandate, of legitimating baſtards to hold offices, and has a croſs carried before him as the enſign of his authority.

De Latere, legates who are not cardinals, but yet are intruſted with an apoſtolical legation. See the article Legate.

LATE-wake, a ceremony uſed at funerals in the Highlands of Scotland. The evening after the death of any perſon, the relations and friends of the deceaſed meet at the houſe, attended by bagpipe or fiddle; the neareſt of kin, be it wife, ſon, or daughter, opens a melancholy ball, dancing, and *greeting* (i. e. crying violently) at the ſame time, and this continues till day-light; but with ſuch gambols and frolics among the younger part of the company, that the loſs which occaſioned them is often more than ſupplied by the conſequences of that night. If the corpſe remains unburied for two nights, the ſame rites are renewed. Thus, Scythian-like, they rejoice at the deliverance of their friends out of this life of miſery.

LATEEN-sail, a long triangular ſail extended by a lateen yard, and frequently uſed by xebecs, polacres, ſettees, and other veſſels navigated in the Mediterranean ſea.

LATH, in building, a long, thin, and narrow ſlip of wood nailed to the rafters of a roof or ceiling, in order to ſuſtain the covering.

Lath-*Bricks*, a particular ſort of bricks made in ſome parts of England, of 22 inches in length and 6 in breadth, which are uſed in the place of laths or ſpars, ſupported by pillars in caſts, for the drying of malt. This is an excellent contrivance; for beſides that they are not liable to fire, as the wooden laths are, they retain the heat vaſtly better; ſo that being once heated, a very ſmall quantity of fire will ſerve to keep them ſo.

LATHE, a very uſeful engine for the turning of wood, ivory, metals, and other materials. See Turning. The invention of the lathe is very ancient: Diodorus Siculus ſays, the firſt who uſed it was a grandſon of Dædalus, named Talus. Pliny aſcribes it to Theodore of Samos; and mentions one Thericles, who rendered himſelf very famous by his dexterity in managing the lathe. With this inſtrument the ancients turned all kinds of vaſes, many whereof they enriched with figures and ornaments in baſſo relievo. Thus Virgil:

Lenta quibus torno facili ſuperaddita vitis.

The Greek and Latin authors make frequent mention of the lathe; and Cicero calls the workmen who uſed it *vaſcularii*. It was a proverb among the ancients, to ſay a thing was formed in the lathe, to expreſs its delicacy and juſtneſs.

The lathe is compoſed of two wooden cheeks, or ſides, parallel to the horizon, having a groove or opening between; perpendicular to theſe are two other pieces, called *puppets*, made to ſlide between the cheeks, and to be fixed down at any point at pleaſure. Theſe have two points, between which the piece to be turned is ſuſtained; the piece is turned round, backwards and forwards, by means of a ſtring put round it, and faſtened above to the end of a pliable pole, and underneath to a tredle or board moved with the foot. There is alſo a reſt which bears up the tool, and keeps it ſteady.

As it is the uſe and application of this inſtrument that makes the greateſt part of the art of turning, we refer the particular deſcription thereof, as well as the manner of applying it in various works, to that head. See Turning.

LATHYRUS, chickling-vetch, a genus of the diadelphia order, belonging to the decandria claſs of plants.

Species. 1. The latifolius, or everlaſting pea, hath thick, fibrous, perennial roots; climbing, thick, branching annual ſtalks, having membranaceous wings between the joints, riſing upon ſupport by their cirri ſix or eight feet high; diphyllous leaves, of two ſpear-ſhaped lobes, terminated by claſpers; and numerous large red or purple flowers on long foot-ſtalks, appearing plentifully from June till October, ſucceeded by abundance of ſeed. 2. The odorata, or ſweet-ſcented pea, hath a fibrous annual root; a climbing ſtalk, riſing upon ſupport by its claſpers three or four feet high; diphyllous leaves of two oval lobes, terminated by climbing tendrils; and flowers by two's on long flower-ſtalks, of different colours in the varieties. 3. The tangitanus, or Tangier-pea, hath a fibrous annual root, a climbing ſtalk riſing upon ſupport for four or five feet high; diphyllous leaves, of two ſpear-ſhaped alternate lobes, terminated by tendrils; and from the joints of the ſtalk large reddiſh flowers by two's on long footſtalks.

Culture. All theſe ſpecies are of hardy growth; and may be propagated by ſeed in the common ground, in patches where it is deſigned the plants ſhould flower, for they do not ſucceed ſo well by tranſplantation. They may be ſowed in ſpring; though, if ſowed in autumn, the plants will flower earlier the following year.

LATIMER (Hugh), biſhop of Worceſter, was born about the year 1480, at Thurcaſton in Leiceſterſhire, the only ſon of a yeoman of that village. At the age of fourteen he was ſent to Chriſt's college, Cambridge; where he applied himſelf to the ſtudy of divinity, and in proper time took the degree of bachelor in that ſcience. At this time he was a zealous Papiſt, and was honoured with the office of keeper of the croſs to the univerſity: but when he was about thirty years of age, he became a convert to the Proteſtant religion; and being now one of the twelve licenſed preachers from Cambridge, he promulgated his opinions with great freedom. It was not long before he was accuſed of hereſy; and being ſummoned before cardinal Wolſey, was obliged to ſubſcribe certain articles of faith, which he certainly did not believe. About the year 1529, he was preſented by the king to the rectory of Weſtkinton in Wiltſhire; to which place, after reſiding ſome time at court with his friend and patron Dr Butts, he retired; but, reſuming his former invectives againſt the Popiſh doctrines, he was again ſummoned to anſwer certain interrogatories, and again obliged to ſubſcribe. In 1535 he was promoted to the biſhoprick of Worceſter; in the poſſeſſion of which dignity he continued till the year 1539, when, rather than aſſent to the act of the ſix articles, he reſigned his mitre, and retired into the country; but was in a ſhort time accuſed of ſpeaking againſt the ſix articles, and committed to the tower, where he continued priſoner till the death of Henry VIII. which happened in January 1547.

On the acceſſion of Edward VI. Latimer was releaſed, but not reſtored to his biſhoprick, though he preached ſeveral times before the king, and continued to exerciſe his miniſterial function with unremitting zeal and reſolution. Young Edward, alas! finiſhed his ſhort reign in 1553; and Mary, of infamous memory, aſcending the throne, poor Latimer was immediately doomed to deſtruction, and, together with Cranmer and Ridley, confined in the tower. In April 1554, they were removed to Oxford, that they might diſpute with the learned doctors of both univerſities. Latimer declining the diſputation on account of his great age and infirmities, delivered his opinion in writing; and refuſing to ſubſcribe the Popiſh creed, was condemned for hereſy; and in October following was, together with biſhop Ridley, burnt alive. He behaved with uncommon fortitude on the occaſion, and died a real martyr to the Reformation. His general character is that of a learned, virtuous, and brave man.

His works are, 1. Sermons, 1635, fol. 2. Letters; in Fox's Acts and Monum. vol. ii. fol. 1580. 3. An injunction to the prior and convent of St Mary's in Worceſterſhire. See record at the end of Burnet's Hiſtory of the Reformation, part. ii. p. 293.

LATIN, a dead language, firſt ſpoken in Latium, and afterwards at Rome; and ſtill uſed in the Romiſh church, and among many of the learned.

This language is principally derived from the Greek, and particularly from the Eolic dialect of that tongue, though it has a great number of words which it borrowed from the languages of the Etruſci, Oſci, and other ancient people of Italy; and foreign commerce and wars, in courſe of time, added a great many more.

The Latin is a ſtrong nervous language, perfectly ſuitable to the character of the people who ſpoke it: we have ſtill works of every kind admirably well written in the Latin, though there are vaſt numbers loſt.

The Latin tongue was for a while confined almoſt wholly within the walls of Rome; nor would the Romans allow the common uſe of it to their neighbours, or to the nations they ſubdued: but by degrees they in time became ſenſible of the neceſſity of its being generally underſtood for the conveniency of commerce; and accordingly uſed their endeavours, that all the nations ſubject to their empire ſhould be united by one common language; ſo that at length they impoſed the uſe of it by a particular law for that purpoſe. After the tranſlation of the ſeat of the empire from Rome to Conſtantinople, the emperors of the eaſt, being always deſirous of retaining the title of Roman emperors, appointed the Latin to be ſtill uſed; but at length neglecting the empire of the weſt, they abandoned all care of the Latin tongue, and uſed the Greek. Charlemagne coming to the empire of the weſt, revived this language; but at length it gave way, and the French took place of the Latin: it was, however, prodigiouſly degenerated before it came to be laid aſide, in which condition it was found at the time of the Reformation, when Vives, Eraſmus, &c. began to open the way for its recovery: ſince which time the monkiſh latinity has been declining, and all endeavours have been uſed to retrieve the pure language of the Auguſtan age. See Language.

Latin *Church*. See Church.

LATINS, an ancient nation of Italy. See Latium.

LATINUS, king of the Latins in Italy, was the ſon of Faunus; and, it is ſaid, began to reign about the 1216th year before the Chriſtian æra. Lavinia, his only daughter, married Æneas, after that Trojan prince had killed Turnus king of the Rutuli. See Rome.

LATIUM, (anc. geogr.), the country of the Latins, at firſt contained within very narrow bounds, but afterwards increaſed by the acceſſion of various people. The appellation, according to Virgil, is *a latendo*, from Saturn's lying hid there from the hoſtile purſuits of his ſon Jupiter; and from *Latium* comes the name *Latini*, the people, (Virgil): though Dionyſius Halicarnaſſæus derives it from king Latinus, who reigned about the time of the Trojan war. But whatever be in this, it is certain, that *Latium*, when under Æneas and his deſcendents, or the Alban kings, contained only the Latins, excluſive of the Æqui, Volſci, Hernici, and other people; only that Æneas reckoned the Rutuli, after their conqueſt, among the Latins. And this conſtituted the ancient *Latium*, confined to the Latins: but afterwards, under the kings, and after their time, it reached from the Tiber to Circeii. Under the conſuls, the country of the Æqui, Volſci, Hernici, &c. after long and bloody wars, was added to *Latium*, under the appellation *adjectitious*, or *ſuper-added Latium*, as far as the river Liris, the eaſtern boundary, and to the north as far as the Marſi and Sabines. The various people, which in ſucceſſion occupied Latium, were the Aborigines, the Pelaſgi, the Arcades, the Siculi, the Arunci, the Rutuli; and beyond Circeii, the Volſci, the Oſci, the Auſones: but who firſt, who next, occupied the country, is difficult to ſay.

LATISSIMUS, in anatomy. See Anatomy, *Table of the muſcles*.

LATITUDE, in aſtronomy, is the diſtance of a ſtar north or ſouth from the ecliptic. In geography, it ſignifies the diſtance of any place north or ſouth from the equator. See Astronomy, n° 209, 214. and Geography, n° 11.

LATITUDINARIAN, a perſon of moderation with regard to religious opinions, who believes there is a latitude in the road to heaven, which may admit people of different perſuaſions,

LATOMIA, properly ſignifies a *quarry*, or place whence ſtones are dug. The word comes from the Greek λας, *ſtone*, and τεμνω, *I cut*. Theſe were anciently uſed as gaols for criminals.—Dionyſius had a place of this kind dug in a rock near Syracuſe, where an infinite number of people were ſhut up. Cicero reproaches Verres with impriſoning Roman Citizens in *Latomiæ*; ſo that *latomia* became a general name for a priſon, and the priſoners incloſed in them were called *latomarii*.

LATRIA, in theology, a religious worſhip due only to God. See Adoration.

The Romaniſts ſay, 'They honour God with the worſhip of *latria*; and the ſaints with the worſhip of *dulia*.' But the terms, however diſtinct, are uſually confounded.

The worſhip of *latria*, beſides its inner characters, has its external marks to diſtinguiſh it; the principal whereof is ſacrifice, which cannot be offered to any other but God himſelf, as being a ſolemn acknowledgement or recognition of the ſovereignty of God, and our dependence on him.

Mr Daille ſeems to own, that ſome of the fathers of the fourth century allowed the diſtinction between *latria* and *dulia*.

LATTEN denotes iron-plates tinned over, of which tea-caniſters are made.

Plates of iron being prepared of a proper thinneſs, are ſmoothed by ruſting them in an acid liquor, as common water made eager with rye. With this liquor they fill certain troughs, and then put in the plates, which they turn once or twice a-day, that they may be equally ruſted over. After this they are taken out, and well ſcoured with ſand; and, to prevent their ruſting again, are immediately plunged into pure water, in which they are to be left till the inſtant they are to be tinned or blanched; the manner of doing which is this: They flux the tin in a large iron-crucible, which has the figure of an oblong pyramid with four faces, of which two oppoſite ones are leſs than the two others. The crucible is heated only from below, its upper part being luted with the furnace all round. The crucible is always deeper than the plates, which are to be tinned, are long; they always put them in downright, and the tin ought to ſwim over them; to this purpoſe artificers of different trades prepare plates of different ſhapes, though Mr Reaumur thinks them all exceptionable. But the Germans uſe no ſort of preparation of the iron to make it receive the tin, more than the keeping it always ſteeped in water till the time; only, when the tin is melted in the crucible, they cover it with a layer of a ſort of ſuet, which is uſually two inches thick, and the plate muſt paſs through this before it can come to the melted tin. The firſt uſe of this covering is to keep the tin from burning; for if any part ſhould take fire, the ſuet would ſoon moiſten it, and reduce it to its primitive ſtate again. The blanchers ſay, this ſuet is a compounded matter. It is indeed of a black colour; but Mr Reaumur ſuppoſed that to be only an artifice to make it a ſecret, and that it is only coloured with ſoot or the ſmoke of a chimney: but he found it true ſo far, that the common unprepared ſuet was not ſufficient; for after ſeveral attempts, there was always ſomething wanting to render the ſucceſs of the operation certain. The whole ſecret of blanching, therefore, was found to lie in the preparation of this ſuet; and this at length he diſcovered to conſiſt only in the firſt frying and burning it. This ſimple operation not only gives it the colour, but puts it into a condition to give the iron a diſpoſition to be tinned, which it does ſurpriſingly.

The melted tin muſt alſo have a certain degree of heat: for if it is not hot enough, it will not ſtick to the iron; and if it is too hot, it will cover it with too thin a coat, and the plates will have ſeveral colours, as red, blue, and purple, and upon the whole will have a caſt of yellow. To prevent this, by knowing when the fire has a proper degree of heat, they might try with ſmall pieces of iron; but in general, uſe teaches them to know the degree, and they put in the iron when the tin is at a different ſtandard of heat, according as they would give it a thicker or thinner coat. Sometimes alſo they give the plates a double layer, as they would have them very thickly covered. This they do by dipping them into the tin when very hot the firſt time, and when leſs hot the ſecond. The tin which is to give the ſecond coat, muſt be freſh covered with ſuet; and that with the common ſuet, not the prepared.

Latten-*Braſs*, plates of milled braſs, reduced to different thickneſs, according to the uſes it is intended for.

LAVA, a ſtream of melted minerals which runs out of the mouths, or burſts out through the ſides, of burning mountains during the time of an eruption. See Iceland, n° 2, &c. Ætna, Vesuvius, Volcano, &c.

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The lava, at its firſt diſcharge, is in a ſtate of prodigious ignition, greatly ſuperior to any thing we can have an idea of from the ſmall artificial furnaces made by us. Sir William Hamilton informs us, that the lava of Veſuvius, at the place from whence it iſſued (in the year 1767), "had the appearance of a river of red-hot and liquid metal, ſuch as we ſee in the glaſs-houſes, on which were large floating cinders half lighted, and rolling over one another, with great precipitation, down the ſide of the mountain, forming on the whole a moſt beautiful and uncommon caſcade." Now, if we conſider the materials of which the lava conſiſts, which undoubtedly are the common matters to be found every where in the earth, namely, ſtones, metallic ores, clay, ſand, &c. we ſhall find that our hotteſt furnaces would by no means be able to bring them into any degree of fuſion; ſince the materials for glaſs cannot be melted without a great quantity of very fuſible ſalts, ſuch as alkalies, nitre, &c. mixed along with them. The heat of a volcano muſt therefore be immenſe: and beſides its heat, it is ſometimes attended with a very uncommon circumſtance; for Sir William Hamilton informs us, that "the red-hot ſtones thrown up by Veſuvius on the 31ſt of March 1766, were perfectly *tranſparent*." This we cannot look upon to be the mere effect of heat: for mere heat with us will not make a ſolid body tranſparent; and theſe ſtones we are ſure were not in a ſtate of fuſion, or the reſiſtance of the air would have broke them all to pieces, even ſuppoſing them, which is very improbable, to have been in that ſtate detached from the reſt of the lava. For the tranſparency, therefore, we muſt have recourſe to electricity, which in ſome of our experiments hath the property of rendering opaque bodies tranſparent *. Indeed it is ſcarce poſſible but the lava and every other matter thrown out of a volcano muſt be in the higheſt degree electrical; ſeeing the fire itſelf moſt probably takes its riſe from electricity, as is ſhown under the article Volcano.

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The lava, after having once broke out, does not conſtantly continue running from the ſame vent, but often hath intermiſſions, after which it will burſt out ſometimes at the ſame place, and ſometimes at another. No real flame ever appears to come from the lava. In the day-time its progreſs is marked by a thick white ſmoke, from which the light of the red-hot matter being reflected in the night-time, makes it appear like flame. But if, during its progreſs, the lava meets with trees or other combuſtible ſubſtances, which it frequently does, a bright flame immediately iſſues from its ſurface, as hath alſo been remarked by Sir William Hamilton.—This liquid ſubſtance, after having run pure for about 100 yards, (more or leſs, no doubt, according to different circumſtances), begins to collect cinders, ſtones, and a ſcum is formed on the ſurface. Our author informs us, that the lava which he obſerved, with its ſcum, had the appearance of the river Thames, as he had ſeen it, after a hard froſt and a great fall of ſnow, when beginning to thaw, carrying down vaſt maſſes of ſnow and ice. In ſome places it totally diſappeared, and ran in a ſubterraneous paſſage formed by the ſcum for ſeveral paces; after which it came out pure, having left the ſcum behind, though a new one was quickly formed. This lava at the fartheſt extremity from its ſource did not appear liquid, but like a heap of red-hot coals, forming a wall in ſome places 10 or 12 feet high, which rolling from the top ſoon formed another wall, and ſo on.—While a lava is in this ſtate, Sir William is of opinion, that it is very practicable to divert it into another channel, in a manner ſomewhat ſimilar to what is practiſed with rivers. This he was afterwards told had been done with ſucceſs during the great eruption of Ætna in 1669: that the lava was directing its courſe towards the walls of Catania, and advancing very ſlowly, when they prepared a channel for it round the walls of the town, and turned it into the ſea. A ſucceſſion of men, covered with ſheep-ſkins wetted, were employed to cut through the tough flanks of lava, till they made a paſſage for that in the centre, which was in perfect fuſion, to diſgorge itſelf into the channel prepared for it.

4
Do not always deſcend to the loweſt places.

It hath been alſo obſerved of the lavas of Ætna, that they do not conſtantly fall down to the loweſt places, but will ſometimes aſcend in ſuch a manner as to make the valleys riſe into hills. On this Sir William Hamilton has the following note: "Having heard the ſame remark with regard to the lavas of Veſuvius, I determined, during an eruption of that volcano, to watch the progreſs of a current of lava, and I was ſoon enabled to comprehend this ſeeming phenomenon; though it is, I fear, very difficult to explain. Certain it is, that the lavas, while in their moſt fluid ſtate, follow always the laws of other fluids; but, when at a great diſtance from their ſource, and conſequently encumbered with ſcoriæ and cinders, the air likewiſe having rendered their outward coat tough, they will ſometimes (as I have ſeen) be forced up a ſmall aſcent, the freſh matter puſhing forward that which went before it, and the exterior parts of the lava acting always as conductors (or pipes, if I may be allowed the expreſſion) for the interior parts, that have retained their fluidity from not being expoſed to the air."

5
Obſervations on the different compoſitions of lavas by Sir W. Hamilton.

The compoſition of the lavas of different volcanoes, and even of different parts of thoſe of the ſame volcano, is extremely different. Sir William Hamilton is of opinion that this difference in compoſition contributes not a little to the facility or difficulty with which they afterwards receive earth capable of vegetation. "Some (ſays he) have been in a more perfect ſtate of vitrification than others, and are conſequently leſs liable to the impreſſions of time. I have often obſerved on mount

* e Elec-
, n° 4.

mount Veſuvius, when I have been cloſe to a mouth from whence the lava was diſgorging itſelf, that the quality of it varied greatly from time to time. I have ſeen it as fluid and coherent as glaſs when in fuſion; and I have ſeen it farinaceous, the particles ſeparating as they forced their way out, juſt like meal coming from under the grindſtones. A ſtream of lava of this ſort being leſs compact, and containing more earthy particles, would certainly be much ſooner fit for vegetation, than one compoſed of the more perfect vitrified matter."—No perſon, however, hath yet accurately analyſed any lava; neither is it an eaſy taſk to do ſo. 6 By Mr Bergman. Mr Bergman hath indeed made ſome obſervations upon the Icelandic lavas, which throw a good deal of light upon this ſubject. One kind of this lava, he tells us, is very coarſe, heavy, and hard, full of bladders, almoſt black, intermixed with white grains reſembling quartz, which in ſome places have a figure not very unlike a ſquare. This black matter is not attracted by the magnet; but if a piece of it is held againſt a compaſs, the needle viſibly moves. When tried in the crucible, it yields from 10 to 12 pounds of iron in every hundred weight. It does not diſſolve in the leaſt with ſal ſodæ, and very difficultly with borax, and hardly viſible with urinous ſalt. It ſeems to contain a great deal of clay in its compoſition, which may be extracted by all acid ſolvents. This laſt he is likewiſe, from experiments, aſſured is the caſe with the lava of Solfaterra in Italy.

The white lava, which poſſeſſes more or leſs of thoſe tranſparent grains or rays with which lavas are generally chequered, does not ſeem to be of the nature of quartz, as it cannot be attacked by ſal ſodæ; it is, however, ſoluble with ſome difficulty by borax and fuſible urinous ſalt, or microcoſmic acid. Theſe effects are perfectly ſimilar to thoſe produced upon the diamond, ruby, ſapphire, topaz, and hyacinth. The chryſolite, garnet, tourmalin, and ſhirl, can neither be diſſolved by ſal ſodæ, though they are ſomewhat attacked by it when reduced to a fine powder; and upon the two laſt-mentioned ones it produces a ſlight efferveſcence; on which account, ſays Mr Bergman, it is poſſible that the precious ſtones found upon mount Veſuvius, which are ſold at Naples, are nearer related to the real precious ſtones than is generally imagined. He found no ſuch grains in a finer kind of lava, quite porous within, and entirely burnt out, and conſiderably lighter than the former ones.

The Iceland agate is of a black or blackiſh-brown colour, a little tranſparent at the thin edges like glaſs, and gives fire with ſteel. It cannot eaſily be melted by itſelf; but becomes white, and flies in pieces. It can hardly be diſſolved in the fire by fuſible urinous ſalt; but it ſucceeds a little better with borax, though with ſome difficulty. With ſal ſodæ it diſſolves very little; though in the firſt moments ſome ebullition is perceived, and the whole maſs is afterwards reduced to powder. Hence Mr Bergman concludes, that this agate hath been produced by an exceſſive fire out of the black lava formerly mentioned.

In the Iceland pumice-ſtone, quartz and cryſtals are often found, particularly in the black and reddiſh-brown kind. The ſtones thrown out of the volcano, whether grey, or burnt brown, ſeemed to conſiſt of a hardened clay, mixed with a ſiliceous earth. They were ſprinkled with rays and grains reſembling quartz, and ſome few flakes of mica. They fuſed with great difficulty in the fire; with ſal ſodæ they ſhewed ſome efferveſcence at firſt, but which ceaſed in a ſhort time. The parts reſembling quartz produced no motion at all; from whence Mr Bergman concludes, that the black lava already mentioned proceeds principally from this maſs. Several other ſtones which were ſent him from Iceland, Mr Bergman ſuppoſed to have no connection with the eruptions, but to have been produced in ſome other way.

7 By Mr Ferber. In Mr Ferber's travels through Italy, we are informed, that he has ſeen a ſpecies of lava ſo exactly reſembling blue iron ſlags, that it was not to be diſtinguiſhed from them but with great difficulty. The ſame author tells us likewiſe, that "the Vicentine and Veroneſe lavas and volcanic aſhes contain incloſed ſeveral ſorts of fire-ſtriking and flint-horn ſtones, of a red, black, white, green, and variegated colour, ſuch as jaſpers and agates; that hyacinths, cryſolites, and *pietre obſidiane*, deſcribed by Mr Arduini in his *Giornale d'Italia*, are found at Leonedo; and that chalcedony, or opal, pebbles, and noduli with incloſed water-drops, (*chalcedonii opali enhydri*), are dug out of the volcanic cineritious hills near Vicenza. One might conſider theſe flints as being torn and dragged from the ſcaglia, and thence to have been by floods heaped together with aſhes and lavas; becauſe it is a fact, that innumerable quantities of flints, jaſpers, and agates, are found in the china and potters clay-hills near *S. Ulderico nel Tretto*, (exactly as ſimilar flints are found in the Saxonian and other china clays.) But how did they come into theſe volcanic hills, which like thoſe of St Rocco near *S. Ulderico*, never contain any clay whatever? Suppoſing their having been by ſubterraneous fire ſeparated from veins pre-exiſting in or near the very bottom of the ancient volcanoes; this explains pretty well how they came into their lava and the china clay, when in an aqueous diſſolution or mixture it was vomited, ſince fragments of quartz-cryſtallization, marble, and other pre-exiſting ſtones, are likewiſe found in theſe argillaceous beds, &c.—All theſe circumſtances agree in ſupport of Mr Arduini's aſſertion, that the beforementioned flint-horn ſtones found among volcanic materials are owing to ſubterraneous fire and its meltings. Knowing that by vitreſcent compoſitions and chemical fire even the hardeſt precious ſtones can be nearly imitated, why ſhould we deny the ſame power to nature and its greater ſubterraneous furnaces?"

8 Mr Ra criticiſ Mr Fe On this paſſage Mr Raſpe has the following note. "To prevent miſtakes, and the charge of inconſequent writing or reaſoning, the author ſhould have explained himſelf with more propriety, and with more juſtice to nature, and perhaps to Mr Arduini. Therefore the tranſlator, who has examined ſeveral volcanoes, and ſtudied nature in her own manufactories or officines, endeavours to ſet him right. His obſervations are ſo far agreeing with Meſſrs Ferber's and Arduini's, that he conſiders the chalcedonies as volcanic productions, but in a quite different ſenſe from that in which the aſhes and lavas, with their various incloſed ſherl-cryſtallizations, chryſolite or hyacinth-like vitrifications, and pietre obſidiane, are called ſo. Theſe are undoubtedly immediate productions of the fire, and

violent melting; the former being but *paraſitical ſtones of volcanic matrices;* that is to ſay, but *mediate productions* of the fire, as being viſibly produced by water, either ſoaking through and into the holes of volcanic ſtones, and depoſiting therein the flint-like fire-ſtriking ſediment of chalcedony; or, if properly qualified and heated by natural fire or fermentation, precipitating the ſame under other circumſtances. The former appears to conviction by the Vicentine and Iceland chalcedonies; the latter by a ſingular phenomenon, which I ſhall take notice of. The Vicentine chalcedonies found in volcanic tufo, contain now and then, incloſed in their middle, drops of the water which produced them; and the Iceland-chalcedonies bear likewiſe undoubted marks of an aqueous origin. The tranſlator knows, by good authority, that they have been diſcovered but of late; and ocular inſpection has convinced him, not only that theſe Iceland-chalcedonies are equal in grain and colour to the Oriental ones, but remarkably ſuperior to them on account of their bigneſs. He had large pieces ſent him from Copenhagen above a foot ſquare; and, what is more to the ſubject, incloſed in a browniſh tufo, in which they appeared to have been ſtratified, or ſucceſſively depoſited by water; conſiſting more or leſs of white tranſparent beds, about an inch thick, and ſticking as cloſe together as the ſimilar ſtrata of the coloured agates or onyx. Mr Banks's late voyage to Iceland brings us ſtill a ſtep further. He examined there the marvellous intermittent ſpouting hot wells, called the *Geyſers*, at Laugafell, which in the middle of a ſolfatara, or ancient volcano, by their accumulated ſediments have produced or raiſed a wide ſloping hill of white lebes or pot-ſtone. I forbear to draw from this ſingular phenomenon the many conſequences which it offers for natural hiſtory; obſerving only what is more to the purpoſe, that in ſome harder pieces of white lebes, kept in Mr Banks's Iceland collection, there appears a ſtratified white chalcedony which cannot be conſidered as adventitious; and undoubtedly is produced either by a finer ſediment, or by its greater ſaturation; proving, that the ſubſtantial earth of chalcedony and lebes are the ſame, and that both are nearly related to the lapis nephriticus, the ſerpentine, the bacon-ſtone, the amianth, and the talc, which are found in many volcanic places; and, according to Mr Marggraaff's experiments, have been by many mineralogiſts wrongly placed among the argillaceous ſtones. Similar operations of properly qualified hot wells, ſo common and various in volcanic countries, might very well anſwer for the jaſpers, agates, and other flints in the china clays and boles. But whether they have in fact produced them, muſt be left to future proper inquiries in the volcanic countries where they are ſo very common."

The ſame author is alſo of opinion, that the baſaltes itſelf, or thoſe pillars of which the Giants Cauſeway in Ireland and the iſland of Staffa in the Hebrides conſiſt, is no other than a ſpecies of lava, which has taken upon itſelf theſe regular figures during the time of its cooling, as Glauber ſalts and ſome others likewiſe take upon them a kind of columnar figure during the time of their cryſtallization. Of this cryſtallization of lavas Mr Ferber tells us he had an inſtance in the black kind formerly mentioned. At the time he went from Rome to Oſtia, they were paving the road with this ſort of lava. In ſome of the broken pieces he obſerved little empty holes of the bigneſs of a walnut, incruſtated all around their inner ſides by white or amethyſtine ſemi-pellucid, pointed, or truncated pyramidal cryſtallizations, entirely reſembling the agate nodules or geodes, which commonly are filled with quartz-cryſtallizations. There was no crack or fiſſure in the ambient compact lava; the cryſtal ſherls were pretty hard, and might rather be called *quartz*. In the reſt of the holes was ſome fine browniſh duſt, impalpable and light as aſhes. In another place alſo, he tells us, that in the greateſt part of the Vicentine, Veroneſe, and Paduan lavas, is to be found an infinite quantity of white polygonal ſherl-cryſtallizations, whoſe figure is as regular, and ſtill more polygonal than the baſaltes; and can only be ſuppoſed to have been formed in the lava while in a fluid ſtate. It is indeed very improbable that ſuch ſubſtances ſhould be thrown up along with the lava unchanged, ſeeing the intenſe heat muſt have been ſufficient to melt the moſt refractory ſubſtance we can imagine, and we have no evidence of ſuch numbers of theſe ſubſtances exiſting at the bottoms of the burning mountains. Still, however, neither Mr Ferber, nor Mr Raſpe, nor any other advocate for the volcanic origin of baſaltes, hath been able to find a baſaltic column either in the lavas of Veſuvius, Ætna, or the Iceland volcanoes; ſo that this fact muſt be in ſome meaſure dubious, though the analogical reaſoning ſhould be ever ſo ſtrong. Mr Raſpe indeed attempts to ſolve this difficulty by another. "The queſtion, (ſays he), Why do not all lavas cryſtallize into priſmatical baſalts, or why do not the Veſuvian lavas ſhew that form? is the ſame as aſking, Why does not every quartz appear in cryſtallizations?" But the inſufficiency of ſuch anſwers is evident.—On the production of baſaltes, &c. from the lava of volcanoes, Mr Bergman gives his opinion in the following words.

10
Mr Bergman's opinion.

"As it is not uncommon, even in the profeſſors of morality, to paſs from one wrong ſtep to another, ſo are we not without examples of this kind in thoſe who make nature their ſtudy. Ten years ago it was a general opinion that the ſurface of the earth, together with the mountains upon it, had been produced by moiſture. It is true, ſome declared the fire to be the firſt original cauſe; but the greater number paid little attention to this opinion. Now, on the contrary, that a ſubterraneous fire had been the principal agent, gains ground daily: every thing is ſuppoſed to have been melted, even to the granite. My own opinion with regard to it is this, That both the fire and water have contributed their ſhare in this operation, though in ſuch a proportion, that the force of the former extends much further than the latter; and, on the contrary, that the fire has only worked in ſome parts of the ſurface of the earth.

"Of all the mountains hitherto known, there are without doubt none more remarkable than thoſe that are compoſed of angular pillars. A few years ago only one or two of this kind were known; but new ones are daily diſcovered; which is a plain proof how much our attention requires being rouzed, to prevent it from ſlumbering, even on the moſt important occaſions.

"It cannot much be doubted, that there has been ſome connection between theſe pillars and the effects of ſubterraneous fire, as they are found in places where the ſigns of fire are yet viſible, and as they are even found mixed with lava, tophus, and other ſubſtances produced by fire.

“ The cauſe of the regular form of theſe pillars is a problem which we have hitherto been unable to ſolve ſatisfactorily. This difficulty has appeared ſo inſurmountable to ſome, that they have thought it impoſſible for them to be the effects of nature, and have conſidered them as works made by human hands: this idea betrays the utmoſt ignorance in regard to the true nature of theſe mountains of pillars, and does not even deſerve a refutation.

“ As far as we know, nature makes uſe of three methods to produce regular forms in the mineral kingdom: 1. That of cryſtallization, or precipitation; 2. The cruſting or ſettling of the external ſurface of a liquid maſs whilſt it is cooling; and, 3. The burſting of a moiſt ſubſtance while it is drying.

“ The firſt method is the moſt common; but, to all appearance, nature has not made uſe of this in the preſent caſe. Cryſtals are ſeldom or never found in any conſiderable quantity running in the ſame direction, but either inclining from one another, or, what is ſtill more common, placed towards one another, in ſloping directions. They are alſo generally ſeparated a little from one another when they are regular; the nature of the thing requires this, becauſe the ſeveral particles of which the cryſtals are compoſed muſt have the liberty of following that power which affects their regular diſpoſition.

“ The baſaltic columns, on the contrary, whoſe height is frequently from 30 to 40 feet, are placed parallel to one another in conſiderable numbers, and ſo cloſe together, that the point of a knife can hardly be introduced between them. Beſides, in moſt places, each pillar is divided into ſeveral parts or joints, which ſeem to be placed upon one another: and indeed, it is not uncommon for cryſtals to be formed above one another in different layers, when the ſolvent has been viſibly diminiſhed at different times; but then the upper cryſtals never fit ſo exactly upon the lower ones as to produce connected priſms of the ſame length and depth as all the ſtrata taken together; but each ſtratum ſeparately taken, forms its own cryſtals.

“ How then can the Giant's Cauſeway in the county of Antrim, Fingal's Cave at Staffa, and all other aſſemblages of pillars of the ſame kind, be conſidered as cryſtallizations! Precipitation, both in the wet and dry manner, requires that the particles ſhould be free enough to fix themſelves in a certain order; and as this is not practicable in a large melted maſs, no cryſtallizations appear in it, except on its ſurface or in its cavities.

“ Add to this, that the baſalts in a freſh fracture do not ſhew a plain ſmooth ſurface under the microſcope; but appear ſometimes like grains of different magnitude, and at other times reſemble fine rays running in different directions, which does not correſpond with the internal ſtructure of the cryſtals.

“ From what I have hitherto mentioned, the opinion that the baſalts have been produced by cryſtallization becomes at leaſt leſs probable, whether we admit the wet or the dry method. But I muſt not omit, that the ſpars exhibit a kind of cryſtallization, which at firſt ſight reſembles a heap of baſalts; but, upon a cloſer examination, a very great difference is obſerved. The form of the ſpar is every-where alike, but the baſalts differ from one another in point of ſize and number of ſides: the former when broken conſiſts of many ſmall unequal cubes, but the baſalt does not ſeparate in regular parts, &c. &c.

“ Nature's ſecond method to produce regular forms is that of cruſting the outer-ſurface of a melted maſs. By a ſudden refrigeration, nature, to effect this purpoſe, makes uſe of polyhedrous and irregular forms. If we ſuppoſe a conſiderable bed which is become fluid by fire, and ſpread over a plain, it evidently appears that the ſurface muſt firſt of all loſe the degree of heat requiſite for melting, and begin to congeal; but the cold requiſite for this purpoſe, likewiſe contracts the uppermoſt congealed ſtratum into a narrower ſpace, and conſequently cauſes it to ſeparate from the remaining liquid maſs, as the ſide expoſed to the air is already too ſtiff to give way. In this manner a ſtratum is produced running in a parallel direction with the whole maſs; others ſtill are produced by the ſame cauſe, in proportion as the refrigeration penetrates deeper.

“ Hence we may, in my opinion, very plainly ſee how a bed may be divided into ſtrata. In the ſame manner the refrigeration advances on the ſides, which conſequently divides the ſtrata into polyhedrous pillars, which can hardly ever be exactly ſquare, as the ſtrongeſt refrigeration into the inner-parts of the maſs advances almoſt in a diagonal line from the corners. If we add to this, that a large maſs cannot be equal through its compoſition, nor every-where liquid in the ſame degree; it will be eaſy to diſcover the cauſe of ſeveral irregularities. If the depth of the bed is very conſiderable in proportion to its breadth, priſmatic pillars, without croſs diviſions, are produced, at leaſt lengthways, from the uppermoſt ſurface downwards.

“ The third way is perfectly ſimilar to the preceding in reſpect to the effect; but is different from it by the maſs being ſoaked with water, and by the burſting of it aſunder, being the effect of the contraction whilſt it is drying. If we ſuppoſe ſuch a bed to be ſpread over a level ſpace, the drying advances in the ſame manner as the refrigeration in the former caſe.

“ This ſeparation into ſtrata properly happens when a conſiderable quantity of clay enters into the whole compoſition, becauſe the clay decreaſes more than any other kind of earth in drying.”

Our author now proceeds to conſider the manner in which he thinks the baſaltes moſt probably may be produced; and having rejected the hypotheſis of thoſe who derive them from a cryſtallization of melted lava, he gives his own opinion as follows. “ It ſeems more credible to me, that they have been produced out of their ſubſtance whilſt it was yet ſoft, or at leaſt not too hard to be ſoftened by exhalations. If we therefore ſuppoſe that a bed is ſpread over a place where a volcano begins to work, it is evident that a great quantity of the water, always preſent on theſe occaſions, is driven upwards in exhalations or vapours: theſe it is well known poſſeſs a penetrating ſoftening power, by means of which they alſo produce their firſt effect; but when they are increaſed to a ſufficient quantity, they force this tough moiſt ſubſtance upwards, which then gradually falls, and during this time burſts in the manner deſcribed above.

"My reaſons for this opinion are theſe: Firſt, we do not find the internal grain of the baſalts melted or vitrified, which however ſoon happens by fuſion, and for which purpoſe only a very ſmall degree of fire is requiſite. It conſequently is very hard to explain, how this ſubſtance could have been ſo fluid, that no traces of bubbles appear in it (at leaſt I have not been able to diſcover any, after the niceſt examination into the Scotch and Icelandic baſalts), and yet when broken appear dull and uneven. I know very well, that lava is ſeldom vitrified within; but the great number of bubbles and pores which are found in the whole maſs, are more than ſufficient proofs that it has not been perfectly melted to its ſmalleſt parts, but has only been brought to be near fluid. Secondly, the baſalts ſo much reſemble the finer trapp, both in reſpect to their grain and original compoſition, that they can hardly be diſtinguiſhed in ſmall fragments."

Theſe are the principal arguments on both ſides of the queſtion with regard to baſaltes, which yet ſeem far from being deciſive on either.

The quantity of matter thrown out from volcanoes under the name of *lava* is prodigious. After the great eruption of Ætna in 1669, Borelli went from Piſa to Sicily to obſerve the effects of it. The matter thrown out at that time amounted to 93,830,750 cubical paces; ſo that, had it been extended in length upon the ſurface of the earth, it would have reached more than four times round the whole earth. All this matter, however, was not lava, but conſiſted alſo of ſand, ſtone, gravel, &c. The lava he computed at 6,300,000 paces, which formed a river, according to our author, ſometimes two miles broad, but according to others it was ſix or ſeven miles broad, and ſometimes 20 or 30 yards in depth. Sir William Hamilton informs us, that the lavas of Ætna are very commonly 15 or 20 miles in length, ſix or ſeven in breadth, and 50 feet deep. The moſt conſiderable is ſcarce leſs than 30 miles long and 15 broad. The moſt conſiderable lavas of Veſuvius do not exceed ſeven miles in length. The ſame author, however, tells us, that the lava which iſſued from Veſuvius in 1767, was ſix miles long, two in breadth, and in moſt places 60 or 70 feet deep. In one place it had run along a hollow-way made by currents of rain not leſs than 200 feet deep and 100 wide; and this vaſt hollow it had in one place filled up. He ſays, he could not have believed that ſo great a quantity of matter could have been thrown out in ſuch a ſhort time, if he had not examined the whole courſe of it himſelf.

As the lavas are thrown out from the volcanoes in the higheſt degree of ignition, it may eaſily be ſuppoſed that ſuch vaſt bodies will retain their heat for a long time. It would indeed be well worth obſerving, what length of time is required to cool a lava perfectly; as from thence we might in ſome meaſure judge how far thoſe philoſophers are in the right, who argue concerning the length of time required to cool an ignited globe of the ſize of our earth or larger. Sir William Hamilton tells us, that in the month of April 1771, he thruſt ſticks into ſome of the crevices of the lava which had iſſued from Veſuvius in October 1767, and they immediately took fire. On mount Ætna, in 1769, he obſerved the lava that had been diſgorged three years before to ſmoke in many parts. No particular obſervation, however, hath been made in what proportion the heat of lavas is gradually loſt.

13 Cold and noxious vapours produced by old lavas.

Sir William Hamilton informs us of a curious fact relating to a lava in the iſland called *Lacco*. Here is a cavern ſhut up with a door; and this cavern is made uſe of to cool liquors and fruit, which it does in a ſhort time as effectually as ice. Before the door was opened, he felt the cold on his legs very ſenſibly; but when it was opened, the cold ruſhed out ſo as to give him pain; and within the grotto it was intolerable. He was not ſenſible of wind attending this cold; tho' upon Mount Ætna and Veſuvius, where there are caverns of this kind, the cold is evidently occaſioned by a ſubterraneous wind: the natives call ſuch places *ventaroli*. From old lavas there alſo frequently happens an eruption of noxious vapours called *mofetes*. Theſe likewiſe break out from wells and ſubterraneous places in the neighbourhood of a volcano before an eruption. Our author tells us, that the vapour affects the noſtrils, throat, and ſtomach, juſt as the ſpirit of hartſhorn or any ſtrong volatile ſalt; and would ſoon prove fatal if you did not immediately withdraw from it. Theſe mofetes, he ſays, are at all times to be met with under the ancient lavas of Veſuvius, particularly the great eruption of 1631.

14 Uſes of lava.

As to the nature and quality of lavas, Sir William Hamilton informs us, that thoſe of Ætna and Veſuvius are much the ſame, but thoſe of Ætna rather blacker and more porous than thoſe of Veſuvius. Some kinds of lava take a fine poliſh, and are frequently manufactured into boxes, tables, &c. In Naples, the inhabitants commonly make uſe of it for paving the ſtreets, and even the ſubterraneous cities of Pompeii and Herculaneum have been paved with the ſame ſubſtance. A fine large cubic piece of lava is preſerved in the hall of the Britiſh Muſeum.

LAVANDULA, LAVENDER, a genus of the gymnoſpermia order, belonging to the didynamia claſs of plants.

Species. 1. The ſpica, or lavender ſpike, hath a ſhort ſhrubby ſtalk, riſing two or three feet high; ſmall ſpear-ſhaped entire leaves; and from the ends of the branches, numerous, long, erect, naked ſpikes of ſmall ringent flowers, of different colours in the varieties. The varieties of this are common narrow-leaved lavender, with blue flowers, and with white flowers—broad-leaved lavender—dwarf lavender: all of them flowering in July. This ſpecies is the common lavender; but the narrow-leaved variety, with blue flowers, is the ſort commonly cultivated for its flowers for medicine, &c. The ſtœchas, or French lavender, hath a ſhrubby very branchy ſtalk, riſing two or three feet high; very narrow ſpear-ſhaped, pointed, hoary leaves, oppoſite; and all the branches terminated by ſhort buſhy ſpikes of purple flowers in June and July; ſucceeded by ſeeds in Auguſt. There is a variety with white flowers. 3. The dentata, or dentate-leaved ſtœchas, hath a woody ſtalk, branching on every ſide three or four feet high; leaves deeply indented in a pinnated manner; and the branches terminated by ſcaly four-cornered ſpikes of flowers, appearing moſt part of ſummer.

Culture. All the ſorts are propagated plentifully by ſlips or cuttings of their young ſhoots in ſpring. In March or April, take off a quantity of ſlips or cuttings, from three or four to ſix inches long; ſtrip off the under leaves; then plant them in a ſhady border, four inches aſunder; give a good watering, repeat it occaſionally in dry weather, and the plants will be well-rooted in ſummer, and each become a good plant fit to be tranſplanted into any place early in autumn, that is September or October; removing them, if poſſible, with balls of earth; and if intended to plant them for uſe, ſet them in rows two or three feet aſunder, and two feet diſtance in each row: if any are deſigned for the ſhrubbery, they ſhould be ſtationed ſingly at good diſtances near the front. Thoſe of the third ſort being tender, ſhould be potted to move to ſhelter in winter. The lavendula ſtœchas is alſo often raiſed from ſeed, ſown in March or April, in a bed of light earth.

Uſes. The two firſt ſpecies are proper both for the kitchen-garden, for medicinal and other family-uſes; and to plant in the pleaſure-ground to adorn the front of ſmall ſhrubbery compartments, where they will increaſe the variety very agreeably; and are finely-ſcented aromatics, both when growing, and their flowers when gathered, eſpecially thoſe of the firſt ſpecies, which are in great eſteem for putting among cloaths, and for diſtilling and other œconomical uſes. The flowers of the firſt ſort are gathered for uſe in July; which being the time of their perfection, cut off the ſpikes cloſe in a dry day, and tie them in ſmall bunches for uſe. Theſe and the ſummits are in a very eminent degree cephalic and nervine. They are given in palſies, vertigos, lethargies, tremors, and ſuppreſſion of the menſtrual evacuation. The compound ſpirit diſtilled from them is famous in theſe and many other like caſes. The diſtilled oil is particularly celebrated for deſtroying the *pediculi inguinales*, and other cutaneous inſects. If ſoft ſpongy paper, dipt in this oil, either alone, or mixed with oil of almonds, be applied at night to the parts infected, the inſects will certainly, ſays Geoffroy, be all found dead in the morning.

LAVATERA, in botany, a genus of the polyandria order, belonging to the monodelphia claſs of plants. There are ſeveral ſpecies, moſt of them herbaceous flowery annuals, or ſhrubby perennials, growing erect from two or three to eight or ten feet high, garniſhed with large roundiſh, heart-ſhaped, and angular leaves, and quinquepetalous flowers of the mallow kind. They are eaſily propagated by ſeed in the open ground in the ſpring; and thrive beſt when ſown where they are deſigned to remain.

LAVATORY, or Lavadero, a name given to certain places in Chili and Peru, where gold is got out of earth by waſhing.

M. Frezier gives us the following deſcription of the *lavatories* of Chili: "They dig deep into the earth, in ſuch places as they have reaſon to expect gold in; and, in order to facilitate this digging, turn a ſtream of water upon the ſpot, looſening the earth as much as poſſible all the time, that the current may have the greater effect, and tear up the earth more ſtrongly. When they are got to the earth they want, they turn off the ſtream, and dig dry.

"The earth that they now get, is carried on mules, and diſcharged into a baſon, made ſomewhat in the manner of a ſmith's bellows; into which a little rivulet of water runs with a great deal of rapidity, diſſolving the parts of the earth, and carrying every thing away with it, excepting the particles of gold, which, by their great weight, precipitate to the bottom of the baſon, and mix with a fine black ſand, where they are almoſt as much hidden as they were before in the earth.

"Sometimes they find very conſiderable pieces in *lavatories*, particularly pieces of 24 ounces each.—There are ſeveral *lavatories*, where they find pepitas, or pieces of virgin gold, of a prodigious ſize. Among others, they tell of one that weighed 512 ounces, bought by the count de la Moncloa, viceroy of Peru.

"Nine or ten leagues to the eaſt of Coquimbo, are the *lavatories* of Andacoll, the gold whereof is 23 carats fine.—Their work, here, always turn to great profit, excepting when the water fails them.—The natives maintain that the earth is creative, that is, it produces gold continually; becauſe, after having been waſhed 60 or 80 years, they find it impregnated afreſh, and draw almoſt as much out of it as at firſt.

LAUBACH, a handſome and ſtrong town of Germany, in the circle of Auſtria, and in Carniola, with a biſhop's ſee, a caſtle, and very handſome houſes. It is ſeated on a river of the ſame name, wherein are the largeſt craw-fiſh in Europe. E. Long. 14. 45. N. Lat. 46. 20.

LAUD (William), archbiſhop of Canterbury in the 17th century, was born at Reading in 1573, and educated in St John's college, Oxford, of which he was afterwards a fellow and grammar-reader. In 1610, he went into orders. In 1611, he was elected preſident of St John's college; but his election being diſputed, it was confirmed by his majeſty. The ſame year he was ſworn the king's chaplain. In 1621, he was nominated biſhop of St David's. In 1628, he was tranſlated to the biſhopric of London. In 1630, he was elected chancellor of the univerſity of Oxford. In 1633, he attended the king into Scotland, and was ſworn a privy-counſellor for that kingdom. During his ſtay in Scotland, he formed the reſolution of bringing that church to an exact conformity with the church of England. In the ſame year, he ſucceeded archbiſhop Abbot in the ſee of Canterbury; and ſoon after came out his majeſty's declaration about lawful ſports on Sundays, which the archbiſhop was charged with having revived and enlarged, and that with the vexatious proſecutions of ſuch clergymen as refuſed to read it in their churches.

In 1634-5, the archbiſhop was put into the great committee of trade and the king's revenue; on the fourth of March following, he was appointed one of the commiſſioners of the treaſury; and on the ſixth of March 1635-6, he received the ſtaff of lord high-treaſurer

ſurer of England.

In order to prevent the printing and publiſhing what he thought improper books, he procured a decree to be paſſed in the ſtar-chamber, on the 11th of July 1637, whereby it was enjoined that the maſter-printers ſhould be reduced to a certain number, and that none of them ſhould print any books till they were licenſed either by the archbiſhop, or the biſhop of London, or ſome of their chaplains, or by the chancellors or vice-chancellors of the two univerſities.

A new parliament being ſummoned, met on the 13th of April 1640; and the convocation the day following: but the commons lanching out into complaints againſt the archbiſhop, and inſiſting upon a redreſs of grievances before they granted any ſupply, the parliament was diſſolved on the 7th of May. The convocation, however, continued ſitting; and made 17 canons, which were ſuppoſed to be formed under the immediate direction of the archbiſhop. In the beginning of the long parliament he was attacked on account of thoſe canons: and they being condemned by the houſe of commons on the 16th of December 1640, "as containing many things contrary to the king's prerogative, to the fundamental laws and ſtatutes of this realm, to the rights of parliament, to the property and liberty of the ſubject, and tending to ſedition, and of dangerous conſequence;" he was, on the 18th of December, accuſed by the commons of high treaſon, and ſent to the Tower. Being tried before the houſe of lords, for endeavouring to ſubvert the laws, and to overthrow the Proteſtant religion, he was found guilty, and beheaded on Tower-hill on January 10th following, in the 72d year of his age.

This learned prelate, notwithſtanding his being charged with a deſign to bring in Popery, wrote an anſwer to Dr Fiſher, which is eſteemed one of the beſt pieces that has been printed againſt that religion. He was temperate in his diet, and regular in his private life: but his fondneſs for introducing new ceremonies, in which he ſhewed a hot and indiſcreet zeal, his encouraging of ſports on Sundays, his illegal and cruel ſeverity in the ſtar-chamber and high-commiſſion courts, and the fury with which he perſecuted the diſſenters, and all who preſumed to contradict his ſentiments, expoſed him to popular hatred. Beſides his Anſwer to Fiſher, he publiſhed ſeveral Sermons, and other works.

LAUDANUM. See Opium.

LAVENDER. See Lavandula.

LAUGHTER, an affection peculiar to mankind, occaſioned by ſomething that tickles the fancy.

In laughter, the eye-brows are raiſed about the middle, and drawn down next the noſe; the eyes are almoſt ſhut; the mouth opens and ſhows the teeth, the corners of the mouth being drawn back and raiſed up; the cheeks ſeem puffed up, and almoſt hide the eyes; the face is uſually red, the noſtrils are open; and the eyes wet. See Plate XCV.

Authors attribute laughter to the fifth pair of nerves, which ſending branches to the eye, ear, lips, tongue, palate, and muſcles of the cheek, parts of the mouth, præcordia, &c. there hence ariſes a ſympathy, or conſent, between all theſe parts; ſo that when one of them is acted upon, the others are proportionably affected. Hence a ſavoury thing ſeen, or ſmelt, affects the glands, and parts of the mouth; a thing ſeen, or heard, that is ſhameful, affects the cheeks with bluſhes: on the contrary, if it pleaſe and tickle the fancy, it affects the præcordia, and muſcles of the mouth and face with laughter; if it cauſe ſadneſs and melancholy, it likewiſe affects the præcordia, and demonſtrates itſelf by cauſing the glands of the eyes to emit tears. Dr Willis accounts for the pleaſure of kiſſing from the ſame cauſe; the branches of this fifth pair being ſpread to the lips, the præcordia, and the genital parts; whence ariſes a ſympathy between thoſe parts.

The affection of the mind by which laughter is produced, is ſeemingly ſo very different from the other paſſions with which we are endowed, that it hath engaged the attention of very eminent perſons to find it out.—1. Ariſtotle, in the fifth chapter of his Poetics, obſerves of comedy, that "it imitates thoſe vices or meanneſſes only which partake of the ridiculous:—now the ridiculous (ſays he) conſiſts of ſome fault or turpitude not attended with great pain, and not deſtructive." 2. "The paſſion of laughter, (ſays Mr Hobbes) is nothing elſe, but ſudden glory ariſing from ſome ſudden conception of ſome eminency in ourſelves, by compariſon with the infirmity of others, or with our own formerly. For men (continues he) laugh at the follies of themſelves paſt, when they come ſuddenly to remembrance, except when we bring with them any ſudden diſhonour." 3. Akenſide, in the third book of his excellent poem, treats of ridicule at conſiderable length. He gives a detail of ridiculous characters; ignorant pretenders to learning, boaſtful ſoldiers, and lying travellers, hypocritical churchmen, conceited politicians, old women that talk of their charms and virtue, ragged philoſophers who rail at riches, virtuoſi intent upon trifles, romantic lovers, wits wantonly ſatirical, fops that out of vanity appear to be diſeaſed and profligate, daſtards who are aſhamed or afraid without reaſon, and fools who are ignorant of what they ought to know. Having finiſhed the detail of characters he makes ſome general remarks on the cauſe of ridicule; and explains himſelf more fully in a proſe definition illuſtrated by examples. The definition, or rather deſcription, is in theſe words. "That which makes objects ridiculous, is ſome ground of admiration or eſteem connected with other more general circumſtances comparatively worthleſs or deformed: or it is ſome circumſtance of turpitude or deformity connected with what is in general excellent or beautiful; the inconſiſtent properties exiſting either in the objects themſelves, or in the apprehenſion of the perſon to whom they relate; belonging always to the ſame order or claſs of being; implying ſentiment and deſign, and exciting no acute or vehement commotion of the heart."—4. Hutcheſon has given another account of the ludicrous quality, and ſeems to think that it is the contraſt or oppoſition of dignity nad meanneſs which occaſions laughter.

All theſe opinions are refuted by Dr Beattie in his Eſſay on Laughter and Ludicrous Compoſition, where he has treated the ſubject in a maſterly manner. "To provoke laughter, (ſays he), is not eſſential either to wit or humour. For though that unexpected diſcovery of reſemblance between ideas ſuppoſed diſſimilar, which is called *Wit*—and that comic exhibition of ſingular characters, ſentiments, and imagery, which is denominated *Humour*,—do frequently raiſe laughter, they do not raiſe it always. Addiſon's poem to Sir Godfrey Kneller, in which the Britiſh kings are likened to heathen gods, is exquiſitely witty, and yet not laughable. Pope's Eſſay on Man abounds in ſerious wit; and examples of ſerious humour are not uncommon in Fielding's Hiſtory of Parſon Adams, and in Addiſon's account of Sir Roger de Coverley. Wit, when the ſubject is grave, and the alluſions ſublime, raiſes admiration inſtead of laughter: and if the comic ſingularities of a good man appear in circumſtances of real diſtreſs, the imitation of theſe ſingularities in the epic or dramatic comedy will form a ſpecies of humour, which, if it ſhould force a ſmile, will draw forth a tear at the ſame time. An inquiry, therefore, into the diſtinguiſhing characters of wit and humour has no neceſſary conection with the preſent ſubject.

"Some authors have treated of ridicule, without marking the diſtinction between *ridiculous* and *ludicrous* ideas. But I preſume the natural order of proceeding in this inquiry, is to begin with aſcertaining the nature of what is *purely ludicrous*. Things *ludicrous* and things *ridiculous* have this in common, that both excite laughter; but the former excite pure laughter, the latter excite laughter mixed with diſapprobation and contempt. My deſign is to analyſe and explain that quality in things or ideas, which makes them provoke *pure laughter*, and entitles them to the name of *ludicrous* or *laughable*.

"When certain objects, qualities, or ideas, occur to our ſenſes, memory, or imagination, we ſmile or laugh at them, and expect that other men ſhould do the ſame. To ſmile on certain occaſions is not leſs natural, than to weep at the ſight of diſtreſs, or cry out when we feel pain.

"There are different kinds of laughter. As a boy, paſſing by night through a church-yard, ſings or whiſtles in order to conceal his fear even from himſelf; ſo there are men, who, by forcing a ſmile, endeavour ſometimes to hide from others, and from themſelves too perhaps, their malevolence or envy. Such laughter is unnatural. The ſound of it offends the ear; the features diſtorted by it ſeem horrible to the eye. A mixture of hypocriſy, malice, and cruel joy, thus diſplayed on the countenance, is one of the moſt hateful ſights in nature, and transforms the "human face divine" into the viſage of a fiend.—Similar to this is the ſmile of a wicked perſon pleaſing himſelf with the hope of accompliſhing his evil purpoſes. Milton gives a ſtriking picture of it in that well-known paſſage:

> He ceas'd; for both ſeemed highly pleas'd; and Death
> Grinn'd horrible a ghaſtly ſmile, to hear
> His famine ſhould be fill'd, and bleſt his maw
> Deſtin'd to that good hour.——

But enough of this. Laughter that makes man a fiend or a monſter, I have no inclination to analyſe. My inquiries are confined to that ſpecies of laughter which is at once natural and innocent.

"Of this there are two ſorts. The laughter occaſioned by tickling or gladneſs is different from that which ariſes on reading the Tale of a Tub. The former may be called *animal* laughter: the latter, (if it were lawful to adopt a new word which has become very common of late) I ſhould term *ſentimental*.—Smiles admit of ſimilar diviſions. Not to mention the ſcornful, the envious, the malevolent ſmile, I would only remark, that of the innocent and agreeable ſmile there are two ſorts. The one proceeds from the riſible emotion, and has a tendency to break out into laughter. The other is the effect of good-humour, complacency, and tender affection. This laſt ſort of ſmile renders a countenance amiable in the higheſt degree. Homer aſcribes it to Venus in an epithet (φιλομμειδης), which Dryden and Pope, after Waller, improperly tranſlate *laughter-loving*; an idea that accords better with the character of a romp or hoyden, than with the goddeſs of love and beauty.

"Animal-laughter admits of various degrees; from the gentle impulſe excited in a child by moderate joy, to that terrifying and even mortal convulſion which has been known to accompany a change of fortune. This paſſion may, as well as joy and ſorrow, be communicated by ſympathy; and I know not whether the entertainment we receive from the playful tricks of kittens and other young animals, may not in part be reſolved into ſomething like a fellow-feeling of their vivacity.—Animal and ſentimental laughter are frequently blended; but it is eaſy to diſtinguiſh them. The former is often exceſſive; the latter never, unleſs heightened by the other. The latter is always pleaſing, both in itſelf and in its cauſe; the former may be painful in both. But their principal difference is this:—The one always proceeds from a ſentiment or emotion excited in the mind, in conſequence of certain ideas or objects being preſented to it, of which emotion we may be conſcious even when we ſuppreſs laughter;—the other ariſes not from any ſentiment, or perception of ludicrous ideas, but from ſome bodily feeling, or ſudden impulſe on what is called the *animal ſpirits*, proceeding, or ſeeming to proceed, from the operation of cauſes purely material. The preſent inquiry regards that ſpecies that is here diſtinguiſhed by the name of *ſentimental laughter*.

"The pleaſing emotion, ariſing from the view of ludicrous ideas, is known to every one by experience; but, being a ſimple feeling, admits not of definition, It is to be diſtinguiſhed from the laughter that generally attends it, as ſorrow is to be diſtinguiſhed from tears; for it is often felt in a high degree by thoſe who are remarkable for gravity of countenance. Swift ſeldom laughed; notwithſtanding his uncommon talents in wit and humour, and the extraordinary delight he ſeems to have had in ſurveying the ridiculous ſide of things. Why this agreeable emotion ſhould be accompanied with laughter as its outward ſign, or ſorrow expreſs itſelf by tears, or fear by trembling or paleneſs, I cannot ultimately explain, otherwiſe than by ſaying, that ſuch is the appointment of the Author of nature.—All I mean by this inquiry is, to determine, "What is peculiar to thoſe things which produce laughter;—or rather, which raiſe in the mind that pleaſing ſentiment or emotion whereof laughter is the external ſign."

"Philoſophers have differed in their opinions concerning this matter. In Ariſtotle's definition quoted above, it is clear that he means to characteriſe, not laughable qualities in general (as ſome have thought), but the objects of comic ridicule only; and in this view the definition is juſt, however it may have been overlooked or deſpiſed by comic writers. Crimes and misfortunes are often in modern plays, and were ſometimes in the ancient, held up as objects of public merriment; but if poets had that reverence for nature which they ought to have, they would not ſhock the common ſenſe of mankind by ſo abſurd a repreſentation.—The definition from Ariſtotle does not, however, ſuit the general nature of ludicrous ideas; for it will appear by and by, that men laugh at that in which there is neither fault or turpitude of any kind.

“ The theory of Mr Hobbes would hardly have deſerved notice, if Addiſon had not ſpoken of it with approbation in the 47th paper of the *Spectator*. He juſtly obſerves, after quoting the words of Mr Hobbes formerly mentioned, that, “ according to this account, when we hear a man laugh exceſſively, inſtead of ſaying that he is very merry, we ought to tell him that he is very proud.” It is ſtrange, that the elegant author ſhould be aware of this conſequence, and yet admit the theory: for ſo good a judge of human nature could not be ignorant, that laughter is not conſidered as a ſign of pride; perſons of ſingular gravity being often ſuſpected of that vice, but great laughers ſeldom or never. When we ſee a man attentive to the innocent humours of a merry company, and yet maintain a fixed ſolemnity of countenance, is it natural for us to think that he is the humbleſt, and the only humble perſon in the circle?

“Another writer in the Spectator, n° 249, remarks, in confirmation of this theory, that the *vaineſt* part of mankind are moſt addicted to the paſſion of laughter. Now, how can this be, if the *proudeſt* part of mankind are alſo moſt addicted to it, unleſs we ſuppoſe vanity and pride to be the ſame thing? But they certainly are different paſſions. The proud man deſpiſes other men, and derives his chief pleaſure from the contemplation of his own importance: the vain man ſtands in need of the applauſe of others, and cannot be happy without it. Pride is apt to be reſerved and ſullen; vanity is often affable, and officiouſly obliging. The proud man is ſo confident of his merit, and thinks it ſo obvious to all the world, that he will ſcarce give himſelf the trouble to inform you of it: the vain man, to raiſe your admiration, ſcruples not to tell you, not only the whole truth, but even a great deal more. In the ſame perſon theſe two paſſions may, no doubt, be united; but ſome men are too proud to be vain, and ſome vain men are too conſcious of their own weakneſs to be proud. Be all this, however, as it will, we have not as yet made any diſcovery of the cauſe of laughter: in regard to which, I apprehend, that the vain are not more intemperate than other people; and I am ſure that the proud are much leſs ſo.

“ Hutcheſon's account of the origin of laughter is equally unſatisfactory. Granting what he ſays to be true, I would obſerve, in the firſt place, what the ingenious author ſeems to have been aware of, that there may be a mixture of meanneſs and dignity where there is nothing ludicrous. A city, conſidered as a collection of low and lofty houſes, is no laughable object. Nor was that perſon either ludicrous or ridiculous, whom Pope ſo juſtly characteriſes,

> “ The greateſt, wiſeſt, meaneſt, of mankind.”

—But, ſecondly, caſes might be mentioned, of laughter ariſing from a group of ideas or objects, wherein there is no diſcernible oppoſition of meanneſs or dignity. We are told of the dagger of Hudibras, that

> “ It could ſcrape trenchers, or chip bread,
> “ Toaſt cheeſe or bacon, though it were
> “ To bait a mouſe-trap, 'twould not care;
> “ 'Twou'd make clean ſhoes, or in the earth
> “ Set leeks and onions, and ſo forth.”

The humour of the paſſage cannot ariſe from the meanneſs of theſe offices compared with the dignity of the dagger, nor from any oppoſition of meanneſs and dignity in the offices themſelves, they being all equally mean; and muſt therefore be owing to ſome peculiarity in the deſcription. We laugh, when a droll mimics the ſolemnity of a grave perſon; here dignity and meanneſs are indeed united: but we laugh alſo, (tho' not ſo heartily perhaps), when he mimics the peculiarities of a fellow as inſignificant as himſelf, and diſplays no oppoſition of dignity and meanneſs. The levities of Sancho Panca oppoſed to the ſolemnity of his maſter, and compared with his own ſchemes of preferment, form an entertaining contraſt: but ſome of the vagaries of that renowned ſquire are truly laughable even when his preferment and his maſter are out of the queſtion. Men laugh at puns; the wiſeſt and wittieſt of our ſpecies have laughed at them; queen Eliſabeth, Cicero, and Shakeſpear, laughed at them; clowns and children laugh at them; and moſt men, at one time or other, are inclined to do the ſame: but in this ſort of low wit, is it an oppoſition of meanneſs and dignity that entertains us? Is it not rather a mixture of ſameneſs and diverſity,—ſameneſs in the ſound, and diverſity in the ſignification?

“ In the characters mentioned by Akenſide, the author does not diſtinguiſh between what is *laughable* and what is *contemptible*; ſo that we have no reaſon to think, that he meant to ſpecify the qualities peculiar to thoſe things which provoke *pure laughter*; and whatever account we may make of his definition, which to thoſe who acquieſce in the foregoing reaſonings may perhaps appear not quite ſatisfactory, there is in the poem a paſſage that deſerves particular notice, as it ſeems to contain a more exact account of the ludicrous quality, than is to be found in any of the theories abovementioned. This paſſage we ſhall ſoon have occaſion to quote.”

Our author now goes on to lay down his own theory concerning the origin of laughter, which he ſuppoſes to ariſe from the view of things incongruous united in the ſame aſſemblage. “ However imperfect (ſays he) the abovementioned theories may appear, there is none of them deſtitute of merit; and indeed the moſt fanciful philoſopher ſeldom frames a theory without conſulting nature in ſome of her more obvious appearances. Laughter very frequently ariſes from the view of dignity and meanneſs united in the ſame object; ſometimes, no doubt, from the appearance of aſſumed inferiority, as well as of ſmall faults and unimportant turpitudes; and ſometimes, perhaps, though rarely, from that ſort of pride which is deſcribed in the paſſage already quoted from Hobbes.

“ All theſe accounts agree in this, that the cauſe of laughter is ſomething compounded; or ſomething that diſpoſes the mind to form a compariſon, by paſſing from one object or idea to another. That this is in fact the caſe, cannot be proved *a priori;* but this holds in all the examples hitherto given, and will be found to hold in all that are given hereafter. May it not then be laid down as a principle, That laughter ariſes from the view of two or more objects or ideas diſpoſing the mind to form a compariſon? According to the theory of Hobbes, this compariſon would be between the ludicrous object and ourſelves; according to thoſe writers who miſapply Ariſtotle's definition, it would ſeem to be formed between the ludicrous object and things or perſons in general; and if we incline to Hutcheſon's theory, which is the beſt of the three, we ſhall think that there is a compariſon of the parts of the ludicrous object, firſt with one another, and ſecondly with ideas or things extraneous.

“ Further: every appearance that is made up of parts, or that leads the mind of the beholder to form a compariſon, is not ludicrous. The body of a man or woman, of a horſe, a fiſh, or a bird, is not ludicrous, though it conſiſts of many parts; and it may be compared to many other things without raiſing laughter: but the picture deſcribed in the beginning of the epiſtle to the *Piſo's*, with a man's head, a horſe's neck, feathers of different birds, limbs of different beaſts, and the tail of a fiſh, would have been thought ludicrous 1800 years ago, if we believe Horace, and in certain circumſtances would no doubt be ſo at this day. It would ſeem then, that ‘ the parts of a laughable aſſemblage muſt be in ſome degree unſuitable and heterogeneous.’

“ Moreover: any one of the parts of the Horatian monſter, a human head, a horſe's neck, the tail of a fiſh, or the plumage of a fowl, is not ludicrous in itſelf; nor would thoſe ſeveral parts be ludicrous, if attended to in ſucceſſion, without any view to their union. For to ſee them diſpoſed on the different ſhelves of a muſeum, or even on the ſame ſhelf, nobody would laugh, except, perhaps, the thought of uniting them were to occur to his fancy, or the paſſage of Horace to his memory. It ſeems to follow, that “ the incongruous parts of a laughable idea or object muſt either be combined ſo as to form an aſſemblage, or muſt be ſuppoſed to be ſo combined.”

“ May we not then conclude, that “ laughter ariſes from the view of two or more inconſiſtent, unſuitable, or incongruous parts or circumſtances, conſidered as united in one complex object or aſſemblage, or as acquiring a ſort of mutual relation from the peculiar manner in which the mind takes notice of them.” The lines from Akenſide formerly referred to, ſeem to point at the ſame doctrine:

Where-e'er the pow'r of ridicule diſplays
Her quaint-eye'd viſage, *ſome incongruous form,*
Some ſtubborn diſſonance of things combined,
Strikes on the quick obſerver.

And to the ſame purpoſe, the learned and ingenious Dr Gerard, in his *Eſſay on Taſte:* ‘ The ſenſe of ridicule is gratified by an inconſiſtence and diſſonance of circumſtances in the ſame object, or in objects nearly related in the main; or by a ſimilitude or a relation unexpected between things on the whole oppoſite and unlike.’

“ And therefore, inſtead of ſaying, with Hutcheſon, that the cauſe or object of laughter is an ‘ oppoſition of dignity and meanneſs;’ I would ſay, in more general terms, that it is ‘ an oppoſition of ſuitableneſs or unſuitableneſs, or of relation and the want of relation, united, or ſuppoſed to be united, in the ſame aſſemblage.’ Thus the offices aſcribed to the dagger of Hudibras ſeem quite heterogeneous; but we diſcover a bond of connection among them, when we are told that the ſame weapon could occaſionally perform them all. Thus, even in that mimicry which diſplays no oppoſition of dignity and meanneſs, we perceive the actions of one man joined to the features and body of another; that is, a mixture of unſuitableneſs, or want of relation, ariſing from the difference of perſons, with congruity and ſimilitude, ariſing from the ſameneſs of the actions. And here let it be obſerved in general, that the greater number of incongruities that are blended in the ſame aſſemblage, the more ludicrous it will probably be. If, as in Butler's reſemblance of the morning to a boiled lobſter, there is a mixture of dignity and meanneſs, as well as of likeneſs and diſſimilitude, the effect of the contraſt will be more powerful, than if only one of theſe oppoſitions had occurred in the ludicrous idea. The ſublimity of Don Quixote's mind, contraſted and connected with his miſerable equipage, forms a very comical exhibition; but when all this is ſtill further connected and contraſted with Sancho Panca, the ridicule is heightened exceedingly. Had the knight of the lions been better mounted and accoutred, he would not have made us ſmile ſo often; becauſe, the hero's mind and circumſtances being more adequately matched, the whole group would have united fewer inconſiſtencies, and reconciled fewer incongruities. Butler has combined a ſtill greater variety of uncouth and jarring circumſtances in Ralpho and Hudibras: but the picture, though more elaborate, is leſs natural. Yet this argues no defect of judgment. His deſign was, to make his hero not only ludicrous but contemptible; and therefore he jumbles together, in his equipage and perſon, a number of mean and diſguſting qualities, pedantry, ignorance, naſtineſs, and extreme deformity. But the knight of La Mancha, though a ludicrous, was never intended for a contemptible, perſonage. He often moves our pity, he never forfeits our eſteem; and his adventures and ſentiments are generally intereſting: which could not have been the caſe if his ſtory had not been natural, and himſelf been endowed with great as well as good qualities. To have given him ſuch a ſhape, and ſuch weapons, arguments, boots, and breeches, as Butler has beſtowed on his champion, would have deſtroyed that ſolemnity which is ſo ſtriking a feature in Don Quixote; and Hudibras, with the manners and perſon of the Spaniſh hero, would not have been that paltry figure which the Engliſh poet meant to hold up to the laughter and contempt of his countrymen. Sir Launcelot Greaves is of Don Quixote's kindred, but a different character. Smollet's deſign was, not to expoſe him to ridicule; but rather to recommend him to our pity and admiration. He has therefore given him youth, ſtrength, and beauty, as well as courage and dinity of mind; has mounted him on a generous ſteed, and arrayed him in an elegant ſuit of armour. Yet, that the hiſtory might have a comic air, he has been careful to contraſt and connect Sir Launcelot with a ſquire and other aſſociates of very diſſimilar tempers and circumſtances.

“ What has been ſaid of the cauſe of laughter does not amount to an exact deſcription, far leſs to a logical definition: there being innumerable combinations of congruity and inconſiſtency, of relation and contrariety, of likeneſs and diſſimilitude, which are not ludicrous at all. If we could aſcertain the peculiarities of theſe, we ſhould be able to characteriſe with more accuracy the general nature of ludicrous combination. But before we proceed to this, it would be proper to evince, that of the preſent theory thus much at leaſt is true, that though every incongruous combination is not ludicrous, every ludicrous combination is incongruous.

“ It is only by a detail of facts or examples that any theory of this ſort can be either eſtabliſhed or overthrown. By ſuch a detail, the foregoing theories have been, or may be, ſhewn to be ill-founded, or not ſufficiently comprehenſive. A ſingle inſtance of a laughable object, which neither unites, nor is ſuppoſed to unite, incongruous ideas, would likewiſe ſhow the inſufficiency of the preſent; nor will I undertake to prove, (for indeed I cannot), that no ſuch inſtance can be given. A complete enumeration of ludicrous objects it would be vain to attempt: and therefore we can never hope to aſcertain, beyond the poſſibility of doubt, that common quality which belongs to all ludicrous ideas that are, or have been, or may be imagined. All that can be done in a caſe of this kind is to prove by a variety of examples, that the theory now propoſed is more comprehenſive, and better founded, than any of the foregoing.” This our author afterwards ſhews at full length; but as the variety of examples adduced by him would take up too much room to be inſerted here, and as every reader muſt be capable of adducing numberleſs inſtances of ludicrous caſes to himſelf, we ſhall content ourſelves with the above explanation of the different theories of laughter, referring thoſe who deſire further ſatisfaction to the treatiſe already quoted.

Involuntary LAUGHTER. See (the *Index*) ſubjoined to MEDICINE.

Sardonic LAUGHTER. *Ibid.*

LAVINIUM, (anc. geog.) a town of Latium, ſix miles to the eaſt of Laurentum, according to an ancient map; ſo named from *Lavinia*, conſort of Æneas, and daughter of king Latinus; and built by the Trojans. The firſt town of Roman original in Latium, and the ſeat of the Dii Penates, (Livy:) ſituated near the river Numicus, or Numicius; between which and the Tiber Æneas landed, according to Virgil. Holſtenius ſuppoſes the town to have ſtood on an eminence, now called *il Monte di Levano*.

LAUNCESTON, a town of Cornwall in England, ſeated on the river Tamar on the top of a ſmall hill, and is a large corporation ſending two members to parliament. It was formerly defended by a caſtle, which is now in ruins. W. Long. 4. 55. N. Lat. 50. 40.

LAUNCH, in the ſea-language, ſignifies to put out: as, *Launch the ſhip*, that is, Put her out of dock; *launch aſt*, or *forward*, ſpeaking of things that are ſtowed in the hold, is, put them more forward; *launch ho!* is a term uſed when a yard is hoiſted high enough, and ſignifies, *hoiſt no more*.

LAURA, in church-hiſtory, a name given to a collection of little cells at ſome diſtance from each other, in which the hermits in ancient times lived together in a wilderneſs.

Theſe hermits did not live in community, but each monk provided for himſelf in his diſtinct cell. The moſt celebrated lauras mentioned in eccleſiaſtical hiſtory were in Paleſtine; as the laura of St Euthymus, at four or five leagues diſtance from Jeruſalem; the laura of St Saba, near the brook Cedron; the laura of the Towers, near the river Jordan, &c.

POET-LAUREATE, an officer of the houſehold of the kings of Britain, whoſe buſineſs conſiſts only in compoſing an ode annually on his majeſty's birth-day, and on the new-year; ſometimes alſo, though rarely, on occaſion of any remarkable victory.—Of the firſt inſtitution of poets laureate, Mr Wharton has given the following account in his hiſtory of Engliſh poetry. “ Great confuſion has entered into this ſubject, on account of the degrees in grammar, which included rhetoric and verſification, anciently taken in our univerſities, particularly at Oxford: on which occaſion, a wreath of laurel was preſented to the new graduate, who was afterwards uſually ſtyled *Poeta Laureatus*. Theſe ſcholaſtic laureations, however, ſeem to have given riſe to the appellation in queſtion. I will give ſome inſtances at Oxford, which at the ſame time will explain the nature of the ſtudies for which our academical philologiſts received their rewards. About the year 1470, one John Watſon, a ſtudent in grammar, obtained a conceſſion to be graduated and laureated in that ſcience; on condition that he compoſed one hundred Latin verſes in praiſe of the univerſity, and a Latin comedy. Another grammarian was diſtinguiſhed with the ſame badge, after having ſtipulated, that, at the next public act, he would affix the ſame number of hexameters on the great gates of St Mary's church, that they might be ſeen by the whole univerſity. This was at that period the moſt convenient mode of publication. About the ſame time, one Maurice Byrchenſaw, a ſcholar in rhetoric, ſupplicated to be admitted to read lectures, that is, to take a degree, in that faculty; and his petition was granted, with a proviſion, that he ſhould write one hundred verſes on the glory of the univerſity, and not ſuffer Ovid's Art of Love, and the Elegies of Pamphilus, to be ſtudied in auditory. Not long afterwards, one John Bulman, another rhetorician, having complied with the terms impoſed, of explaining the firſt book of Tully's Offices, and likewiſe the firſt of his Epiſtles, without any pecuniary emolument, was graduated in rhetoric; and a crown of laurel was publicly placed on his head by the hands of the chancellor of the univerſity. About the year 1489, Skelton was laureated at Oxford, and in the year 1493 was permitted to wear his laurel at Cambridge. Robert Whittington affords the laſt inſtance of a rhetorical degree at Oxford. He was a ſecular prieſt, and eminent for his various treatiſes in grammar, and for his facility in Latin poetry: having exerciſed his art many years, and ſubmitting to the cuſtomary demand of an hundred verſes, he was honoured with the laurel in the year 1512.

"With regard to the poet-laureate of the kings of England, he is undoubtedly the ſame that is ſtyled the *king's verſifier*, and to whom 100 ſhillings were paid as his annual ſtipend, in the year 1251. But when or how that title commenced, and whether this officer was ever ſolemnly crowned with laurel at his firſt inveſtiture, I will not pretend to determine, after the ſearches of the learned Selden on this queſtion have proved unſucceſsful. It ſeems moſt probable, that the barbarous and inglorious name of *verſifier* gradually gave way to an appellation of more elegance and dignity: or rather, that at length thoſe only were in general invited to this appointment, who had received academical ſanction, and had merited a crown of laurel in the univerſities for their abilities in Latin compoſition, particularly Latin verſification. Thus the *king's laureate* was nothing more than "a *graduated* rhetorician employed in the ſervice of the king." That he originally wrote in Latin, appears from the ancient title *verſificator:* and may be moreover collected from the two Latin poems, which Baſton and Gulielmus, who appear to have reſpectively acted in the capacity of royal poets to Richard I. and Edward II. officially compoſed on Richard's cruſade, and Edward's ſiege of Striveling caſtle.

"Andrew Bernard, ſucceſſively poet-laureate of Henry VII. and VIII. affords a ſtill ſtronger proof that this officer was a Latin ſcholar. He was a native of Tholouſe, and an Auguſtine monk. He was not only the king's poet-laureate, as it is ſuppoſed, but his hiſtoriographer, and preceptor in grammar to Prince Arthur. He obtained many eccleſiaſtical preferments in England. All the pieces now to be found, which he wrote in the character of poet laureate, are in Latin. Theſe are, "An *Addreſs* to Henry VIII. for the moſt auſpicious beginning of the 10th year of his reign, with an *Epithalamium* on the marriage of Francis the dauphin of France with the king's daughter;" *A New Year's Gift* for the 1515; and, Verſes wiſhing proſperity to his majeſty's 13th year. He has left ſome Latin hymns; and many of his Latin proſe pieces, which he wrote in the quality of hiſtoriographer to both monarchs, are remaining.

"I am of opinion, that it was not cuſtomary for the royal laureate to write in Engliſh, till the reformation of religion had begun to diminiſh the veneration for the Latin language; or rather, till the love of novelty, and a better ſenſe of things, had baniſhed the narrow pedantries of monaſtic erudition, and taught us to cultivate our native tongue."

LAURENTALIA, or LARENTALIA, called alſo *Larentinalia*, *Laurentales*, and *Larentales*, feaſts celebrated among the Romans on the tenth of the kalends of January, or 23d of December, in memory of Acca Laurentia, wife of the ſhepherd Fauſtulus, and nurſe of Romulus and Remus.

LAURENTIUS, one of the firſt printers, and, according to ſome, the inventor of the art, was born at Harleim about the year 1370, and executed ſeveral departments of magiſtracy of that city. Thoſe writers are miſtaken, who aſſign to him the ſurname of *Coſter*, or aſſert that the office of æedituus was hereditary in his family. In a diploma of Albert of Bavaria in 1380, in which, among other citizens of Harleim, our Laurentius's *father* is mentioned by the name of *Joannes Laurentii filius*," Beroldus is called *æditυus*, who was ſurely of another family; and in 1396 and 1398, Henricus à Lunen enjoyed that office; after whoſe reſignation, Count Albert conferring on the citizens the privilege of electing their æditυus, they, probably ſoon after, fixed on Laurentius; who was afterwards called *Coſter*, from his office, and not from his family-name, as he was deſcended from an illegitimate branch of the Gens Brederodia. His office was very lucrative; and that he was a man of great property, the elegance of his houſe may teſtify. That he was the *inventor* of printing, is aſſerted in the narrative of Junius. His firſt work was an *Horarium*, containing the Letters of the alphabet, the Lord's prayer, the apoſtles creed, and two or three ſhort prayers; the next was the *Speculum ſalutis*, in which he introduced *pictures* on *wooden blocks;* then *Donatus*, the larger ſize; and afterwards the ſame work in a leſs ſize. All theſe were printed on *ſeparate moveable wooden types* faſtened together by threads. If it be thought improbable, that ſo ingenious a man ſhould have proceeded no farther than the invention of *wooden types;* it may be anſwered, that he printed for profit, not for fame; and *wooden* types were not only *at that time* made ſooner and cheaper than *metal* could be, but were ſufficiently durable for the ſmall impreſſions of each book he muſt neceſſarily have printed.—His preſs was nearly ſhaped like the common wine-preſſes.—He printed ſome copies of *all* his books both on paper and vellum.—It has been very erroneouſly ſuppoſed, that he quitted the profeſſion, and died broken-hearted: but it is certain, that he did not live to ſee the art brought to perfection.—He died in 1440, aged 70; and was ſucceeded either by his ſon-in-law Thomas Peter, who married his only daughter Lucia; or by their immediate deſcendents, Peter, Andrew, and Thomas; who were old enough (even if their father was dead, as it is likely he was) to conduct the buſineſs, the eldeſt being at leaſt 22 or 23. What books they printed, it is not eaſy to determine; they having, after the example of Laurentius (more anxious for profit than for fame), neither added to their books their names, the place where they were printed, or the date of the year. Their firſt eſſays were new editions of *Donatus* and the *Speculum*. They afterwards re-printed the latter, with a Latin tranſlation; in which they uſed their grandfather's wooden pictures; and printed the book partly on *wooden blocks*, partly on *wooden ſeparate types*, according to Mr Meerman, who has given an exact engraving of *each ſort*, taken from different parts of the ſame book, which was publiſhed between the years 1442 and 1450. Nor did they ſtop here: they continued to print ſeveral editions of the *Speculum*, both in Latin and in Dutch; and many other works, particularly "Hiſtoria Alexandri Magni;" "Flavii *Vedatii* [for *Vegetii*] Renati Epitome de Re Militari;" and "Opera varia à Thomas Kempis." Of each of theſe Mr Meerman has given an engraved ſpecimen. They were all printed with *ſeparate wooden types;* and, by their great neatneſs, are a proof that the deſcendants of Laurentius were induſtrious in improving his invention. Kempis was printed at Harleim in 1472, and was the laſt known work of Laurentius's deſcendants, who ſoon after diſpoſed of all their materials, and probably quitted the employment; as the uſe of *fuſile types* was about that time univerſally diffuſed through Holland, by the ſettling of Martens at Aloſt, where he purſued the art with reputation for upwards of 60 years. See (*Hiſtory* of) PRINTING.

LAURENTIUM, (anc. geog.), a town of Latium, ſuppoſed to be the royal reſidence of thoſe moſt ancient kings Latinus, Picus, and Faunus, (Virgil). Hither the emperor Commodus retired, during a peſtilence. Its name was from an adjoining grove of bay-trees, midway between Oſtia and Antium. Suppoſed to have ſtood in the place now called *San Lorenzo;* which ſeems to be confirmed from the Via Laurentina leading to Rome.

LAURO (Philippo), a celebrated painter, born at Rome in 1623. He learned the firſt rudiments of the art from his father Balthaſar, who was himſelf a good painter. He afterward ſtudied under Angelo Caroſello, his brother-in-law; and proved ſo great a proficient, that in a ſhort time he far ſurpaſſed his tutor in deſign, colouring, and elegance of taſte. He applied himſelf to painting hiſtorical ſubjects in a ſmall ſize, enriching the backgrounds with lively landſcapes, that afforded the eye and the judgment equal entertainment; but though his ſmall paintings are beſt approved, he finiſhed ſeveral grand compoſitions for altar-pieces that were highly eſteemed. He died in 1694; and his works are eagerly bought up at high prices all over Europe.

LAURUS, the BAY-TREE; a genus of the monogynia order, belonging to the enneandria claſs of plants.

Species. 1. The nobilis, or common bay-tree, is a native of Italy, and hath an upright trunk branching on every ſide from the bottom upward, riſing 20 or 30 feet high; ſpear-ſhaped, nervous, ſtiff, evergreen leaves, three inches long and two broad; with ſmall, yellowiſh, quadrifid, diœcious flowers, ſucceeded by red berries in autumn and winter. Of this ſpecies there are varieties, with broad, narrow, ſtriped, or waved leaves. 2. The æſtivalis grows naturally in North America. It riſes with an upright ſtem, branching eight or ten feet high, covered with a purpliſh bark; oblong, oval, acuminated, veined, deciduous leaves, two or three inches long, and half as broad, growing oppoſite; with ſmall white flowers ſucceeded by red berries in thoſe places where it is native, but not in this country. 3. The benzoin, or benjamin tree, is alſo a native of North America; grows 15 or 20 feet high, divided into a very branchy head; with oval, acute, unveined, deciduous leaves, three or four inches long, and half as broad; and ſmall yellowiſh flowers, not ſucceeded by berries in this country. 4. The ſaſſafras is a native of the ſame country. It hath a ſhrub-like ſtraight ſtem, branching 10 or 15 feet high; garniſhed with both oval and three-lobed, ſhining, deciduous leaves, of different ſizes, from three to ſix inches long, and near as broad, with ſmall yellowiſh flowers ſucceeded by blackiſh berries, but not in this country. 5. The indica, or indian bay-tree, riſes with an upright ſtraight trunk, branching regularly 20 or 30 feet high; adorned with very large, ſpear-ſhaped, plane, nervous, evergreen leaves on reddiſh footſtalks; and bunches of ſmall whitiſh-green flowers, ſucceeded by large oval black berries which do not ripen in this country. 6. The borbonia, or Carolina red bay-tree, riſes with an upright ſtraight ſtem, branching 15 or 20 feet high; with large, ſpear-ſhaped, evergreen leaves, tranſverſely veined; and long bunches of flowers on red footſtalks, ſucceeded by large blue-berries ſitting in red cups. 7. The camphora, or camphor-tree, grows naturally in the woods of the weſtern parts of Japan, and in the adjacent iſlands. The root ſmells ſtronger of camphor than any of the other parts, and yields it in greater plenty. The bark of the ſtalk is outwardly ſomewhat rough; but in the inner ſurface ſmooth and mucous, and therefore eaſily ſeparated from the wood, which is dry and of a white colour. The leaves ſtand upon ſlender footſtalks, have an entire undulated margin, running out into a point; have the upper ſurof a lively and ſhining green, the lower herbaceous and ſilky; and are furniſhed with a few lateral nerves, which ſtretch archwiſe to the circumference, and frequently terminate in ſmall warts; a circumſtance peculiar to this ſpecies of laurel. The flowers are produduced on the tops of footſtalks, which proceed from the arm-pits of the leaves; but not till the tree has attained conſiderable age and ſize. The flower-ſtalks are ſlender, branched at the top, and divided into very ſhort pedicles, each ſupporting a ſingle flower. Theſe flowers are white, and conſiſt of ſix petals, which are ſucceeded by a purple and ſhining berry of the ſize of a pea, and in figure ſomewhat top-ſhaped. It is compoſed of a ſoft pulpy ſubſtance that is purple, and has the taſte of cloves and camphor; and of a nucleus or kernel of the ſize of a pepper, that is covered with a black, ſhining, oily corticle, of an inſipid taſte. 8. The cinnamomum, or cinnamon-tree, is a native of Ceylon. It hath a large root, and divides into ſeveral branches, covered with a bark, which on the outer ſide is of a greyiſh brown, and on the inſide has a reddiſh caſt. The wood of the root is hard, white, and has no ſmell. The body of the tree, which grows to the height of 40 or 50 feet, is covered, as well as its numerous branches, with a bark which at firſt is green and afterwards red. The leaf is longer and narrower than the common bay-tree. When firſt unfolded, it is of a flame colour: but after it has been for ſome time expoſed to the air and grows dry, it changes to a deep green on the upper ſurface, and to a lighter on the lower. The flowers are ſmall and white, and grow in large bunches at the extremity of the branches: they have an agreeable ſmell, ſomething like that of the lily of the valley. The fruit is ſhaped like an acorn, but is not ſo large.

Culture. The common ſort is propagated either by ſeed, layers, or ſuckers. The ſeed ſhould be ſowed after the berries are ripe, or early in the ſpring, covering them with earth near an inch deep, or in drills half a foot aſunder, the ſame depth. The plants will come up late in the ſpring. They muſt be frequently watered during ſummer, and in winter ſcreened from the ſevere froſt by means of mats or ſome other covering; and after having two ſummers growth in the ſeed-bed, tranſplant the ſtrongeſt of them in the following ſpring two feet aſunder, and a foot apart in each row; giving water in dry weather till they have taken good root, and hoeing down the weeds in ſummer. Here they may remain till half a yard or two

Laurus.

or three feet high; and then planted out into the ſhrubbery in autumn or ſpring. If the berries are ſowed in pots and plunged in a hot-bed in ſpring, it will bring the plants better forward. The deciduous bay, Benjamin, and ſaſſafras-tree, are propagated in the ſame manner. The Indian bay, the camphor, and the cinnamon-tree, require the treatment common to green-houſe plants.

Uſes. The leaves and berries of the common bay-tree have a moderately ſtrong aromatic ſmell, and a warm, bitteriſh, pungent taſte: the berries are ſtronger in both reſpects than the leaves, and afford in diſtillation a larger quantity of eſſential aromatic oil; they yield alſo an almoſt inſipid oil to the preſs, in conſequence of which they prove unctuous in the mouth. They are warm carminatives, and ſometimes exhibited in this intention againſt flatulent colics, and likewiſe in hyſterical diſorders. Their principal uſe in the preſent practice is in glyſters, and ſome external applications. The uſes of BENZOIN and CAMPHOR have been explained under theſe articles and the places referred to. The root of the ſaſſafras has a fragrant ſmell, and a ſweetiſh, aromatic, ſubacrid taſte; the bark taſtes much ſtronger than any other part; and the ſmall twigs ſtronger than the large pieces. It is a warm aperient and corroborant, and frequently employed with good ſucceſs for purifying and ſweetening the blood and juices. For theſe purpoſes, infuſions made from the raſped root or bark may be drank as tea. In ſome conſtitutions indeed, ſuch liquors are, by their fragrance, apt, on firſt taking them, to affect the head; but in ſuch caſes they may be advantageouſly freed from their flavour by boiling. A decoction of ſaſſafras, boiled down to the conſiſtence of an extract, proves ſimply bitteriſh and ſubaſtringent. Hoffman aſſures us, that he has frequently given this extract to the quantity of a ſcruple at a time, with remarkable ſucceſs, for ſtrengthening the tone of the viſcera in cachexies; as alſo in the decline of intermittent fevers, and in hypochondriacal ſpaſms. Saſſafras yields in diſtillation an extremely fragrant oil of a penetrating pungent taſte, ſo ponderous (notwithſtanding the lightneſs of the drug itſelf) as to ſink in water. Rectified ſpirit extracts the whole taſte and ſmell of ſaſſafras; and elevates nothing in evaporation: hence the ſpirituous extract proves the moſt elegant and efficacious preparation, as containing the virtue of the root entire.

The cinnamon is the under-bark of the *laurus cinnamomum* above-deſcribed. The beſt ſeaſon for ſeparating it from the outer-bark, which is grey and rugged, is the ſpring, when the ſap flows in the greateſt abundance. It is cut into thin ſlices, and expoſed to the ſun, and curls up in drying.—The old trees produce a coarſe kind of cinnamon; the ſpice is in perfection only when the trees are not older than three or four years. When the trunk has been ſtripped of its bark, it receives no further nouriſhment; but the root is ſtill alive, and continues to throw out freſh ſhoots. The fruit of the tree is ſhaped like an acorn, but is not ſo large. It contains a ſeed from whence the tree may be raiſed, and is commonly ripe in September. When boiled in water, it yields an oil which ſwims at top, and takes fire. If left to cool, it hardens into a white ſubſtance, of which candles are made which have an agreeable ſmell, and are reſerved for the uſe of the king of Ceylon. The cinnamon is not reckoned excellent unleſs it be fine, ſmooth, brittle, thin, of a yellow colour inclining to red; fragrant, aromatic, and of a poignant, yet agreeable taſte. The connoiſſeurs give the preference to that the pieces of which are long, but ſlender. That which comes to us is generally mixed with the Caſſia bark; but this laſt is eaſily diſtinguiſhed. Cinnamon ſplinters in breaking, and has a roughneſs along with its aromatic flavour; while the Caſſia breaks over ſmooth, and has a mucilaginous taſte. Cinnamon is a very elegant and uſeful aromatic, more grateful both to the palate and ſtomach than moſt other ſubſtances of this claſs. By its aſtringent quality it likewiſe corroborates the viſcera, and proves of great ſervice in ſeveral kinds of alvine fluxes, and immoderate diſcharges from the uterus.

Lauſanne
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Law.

LAUSANNE, a large, ancient, and handſome town of Switzerland, capital of the country of Vaud, and in the canton of Bern, with a famous college, and biſhop's ſee. The town-houſe and the other public buildings are magnificent. It is ſeated between three hills, near the lake of Geneva, in E. Long. 6. 35. N. Lat. 46. 30.

LAVORI (TERRA DI), a province of Italy, in the kingdom of Naples, bounded on the weſt by the Campagna of Rome, and by Farther Abruzzo; on the north, by the Citerior Abruzzo, and by the county of Moliſſa; on the eaſt, by the Ultra Principato; and on the ſouth, by the Principata Citra. It is about 63 miles in length, and 35 in breadth; and is fertile in corn, excellent vines, and other fruits. There are alſo ſeveral mineral ſprings, and mines of ſulphur; Naples is the capital town.

LAW (John), of Edinburgh, the famous projector, who raiſed himſelf to the dignity of comptroller-general of the finances of France, upon the ſtrength of a ſcheme for eſtabliſhing a bank, an Eaſt-India and a Miſſiſſippi company, with the profits of which, the national debt of France was to be paid off. He firſt offered his plan to Victor Amadeus, king of Sardinia; who told him, "he was not powerful enough to ruin himſelf." The French miniſtry accepted it in 1710. In 1716 he opened a bank in his own name, under the protection of the duke of Orleans, regent of France: moſt of the people of property of every rank in France, ſeduced by the proſpect of immenſe gains, ſubſcribed for ſhares in the bank and the companies. In 1718, Law's was declared a royal bank, and the ſhares roſe to more than 20 times the original value; ſo that, in 1719, they were worth more than 80 times the amount of all the current ſpecie in the kingdom. But the following year, this great fabric of falſe credit fell to the ground, and almoſt overthrew the French government, ruining ſome thouſands of families; and it is remarkable, that the ſame deſperate game was played by the South-ſea directors in England, in the ſame fatal year, 1720. Law being exiled as ſoon as the credit of his projects began to fail, retired to Venice, where he died in 1729.

L A W.

Part I. Of the NATURE of LAWS in general.

1 efinition ; eneral, d

LAW, in its moſt general and comprehenſive ſenſe, ſignifies a rule of action; and is applied indiſcriminately to all kinds of action, whether animate or inanimate, rational or irrational. Thus we ſay, the laws of motion, of gravitation, of optics, or mechanics, as well as the laws of nature and of nations. And it is that rule of action, which is preſcribed by ſome ſuperior, and which the inferior is bound to obey.

Thus when the Supreme Being formed the univerſe, and created matter out of nothing, he impreſſed certain principles upon that matter, from which it can never depart, and without which it would ceaſe to be. When he put that matter into motion, he eſtabliſhed certain laws of motion, to which all moveable bodies muſt conform. And, to deſcend from the greateſt operations to the ſmalleſt, when a workman forms a clock, or other piece of mechaniſm, he eſtabliſhes at his own pleaſure certain arbitrary laws for its direction; as, that the hand ſhall deſcribe a given ſpace in a given time; to which law as long as the work conforms, ſo long it continues in perfection, and anſwers the end of its formation.

If we farther advance, from mere inactive matter to vegetable and animal life, we ſhall find them ſtill governed by laws; more numerous indeed, but equally fixed and invariable. The whole progreſs of plants, from the ſeed to the root, and from thence to the ſeed again; the method of animal nutrition, digeſtion, ſecretion, and all other branches of vital œconomy;—are not left to chance, or the will of the creature itſelf, but are performed in a wondrous involuntary manner, and guided by unerring rules laid down by the great Creator.

This then is the general ſignification of law, a rule of action dictated by ſome ſuperior being; and, in thoſe creatures that have neither the power to think, nor to will, ſuch laws muſt be invariably obeyed, ſo long as the creature itſelf ſubſiſts, for its exiſtence depends on that obedience. But laws, in their more confined ſenſe, and in which it is our preſent buſineſs to conſider them, denote the rules, not of action in general, but of *human* action or conduct: that is, the precepts by which man, the nobleſt of all ſublunary beings, a creature endowed with both reaſon and freewill, is commanded to make uſe of thoſe faculties in the general regulation of his behaviour. 2 cular.

Man, conſidered as a creature, muſt neceſſarily be ſubject to the laws of his Creator, for he is entirely a dependent being. A being, independent of any other, has no rule to purſue, but ſuch as he preſcribes to himſelf: but a ſtate of dependence will inevitably oblige the inferior to take the will of him on whom he depends, as the rule of his conduct; not indeed in every particular, but in all thoſe points wherein his dependance conſiſts. This principle therefore has more or leſs extent and effect, in proportion as the ſuperiority of the one and the dependance of the other is greater or leſs, abſolute or limited. And conſequently, as man depends abſolutely upon his Maker for every thing, it is neceſſary that he ſhould in all points conform to his Maker's will.

3 Law of nature.

This will of his Maker is called the *law of nature*. For as God, when he created matter, and endued it with a principle of mobility, eſtabliſhed certain rules for the perpetual direction of that motion; ſo, when he created man, and endued him with freewill to conduct himſelf in all parts of life, he laid down certain immutable laws of human nature, whereby that freewill is in ſome degree regulated and reſtrained, and gave him alſo the faculty of reaſon to diſcover the purport of thoſe laws.

Conſidering the Creator only as a being of infinite power, he was able unqueſtionably to have preſcribed whatever laws he pleaſed to his creature, man, however unjuſt or ſevere. But as he is alſo a Being of infinite wiſdom, he has laid down only ſuch laws as were founded in thoſe relations of juſtice that exiſted in the nature of things antecedent to any poſitive precept. Theſe are the eternal, immutable laws of good and evil, to which the Creator himſelf in all his diſpenſations conforms; and which he has enabled human reaſon to diſcover, ſo far as they are neceſſary for the conduct of human actions. Such, among others, are theſe principles: That we ſhould live honeſtly, ſhould hurt nobody, and ſhould render to every one his due; to which three general precepts Juſtinian has reduced the whole doctrine of law.

But if the diſcovery of theſe firſt principles of the law of nature depended only upon the due exertion of right reaſon, and could not otherwiſe be obtained than by a chain of metaphyſical diſquiſitions, mankind would have wanted ſome inducement to have quickened their inquiries, and the greater part of the world would have reſted content in mental idolence, and ignorance its inſeparable companion. As therefore the Creator is a being, not only of infinite power and wiſdom, but alſo of infinite goodneſs, he has been pleaſed ſo to contrive the conſtitution and frame of humanity, that we ſhould want no other prompter to inquire after and purſue the rule of right, but only our own ſelf-love, that univerſal principle of action. For he has ſo intimately connected, ſo inſeparably interwoven, the laws of eternal juſtice with the happineſs of each individual, that the latter cannot be attained but by obſerving the former; and, if the former be punctually obeyed, it cannot but induce the latter. In conſequence of which mutual connection of juſtice and human felicity, he has not perplexed the law of nature with a multitude of abſtracted rules and precepts, referring merely to the fitneſs or unfitneſs of things, as ſome have vainly ſurmiſed; but has graciouſly reduced the rule of obedience to this one paternal precept, "that man ſhould purſue his own happineſs." This is the foundation of what we call *ethics*, or *natural law* *. For the ſeveral articles, into which it is branched in our ſyſtems, amount to no more than demonſtrating, that this or that action tends to man's real happineſs; and therefore very juſtly concluding, that the performance of it is a part of the law of nature; or, on the other hand, that this or that action is deſtructive of man's real happineſs, and therefore that the law of nature forbids it.

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* See *Morality*.

This law of nature, being coëval with mankind, and dictated by God himſelf, is of courſe ſuperior in obligation to any other. It is binding over all the globe, in all countries, and at all times: no human laws are of any validity, if contrary to this; and ſuch of them as are valid derive all their force, and all their authority, mediately or immediately, from this original.

But in order to apply this to the particular exigencies of each individual, it is ſtill neceſſary to have recourſe to reaſon: whoſe office it is to diſcover, as was before obſerved, what the law of nature directs in every circumſtance of life; by conſidering, what method will tend the moſt effectually to our own ſubſtantial happineſs. And if our reaſon were always, as in our firſt anceſtor before his tranſgreſſion, clear and perfect, unruffled by paſſions, unclouded by prejudice, unimpaired by diſeaſe or intemperance, the taſk would be pleaſant and eaſy; we ſhould need no other guide but this. But every man now finds the contrary in his own experience; that his reaſon is corrupt, and his underſtanding full of ignorance and error.

4 Law of revelation.

This has given manifold occaſion for the benign interpoſition of Divine Providence; which, in compaſſion to the frailty, the imperfection, and the blindneſs of human reaſon, hath been pleaſed, at ſundry times and in divers manners, to diſcover and enforce its laws by an immediate and direct revelation. The doctrines thus delivered, we call the *revealed* or *divine law*, and they are to be found only in the Holy Scriptures. Theſe precepts, when revealed, are found upon compariſon to be really a part of the original law of nature, as they tend in all their conſequences to man's felicity. But we are not from thence to conclude, that the knowledge of theſe truths was attainable by reaſon, in its preſent corrupted ſtate; ſince we find, that, until they were revealed, they were hid from the wiſdom of ages. As then the moral precepts of this law are indeed of the ſame original with thoſe of the law of nature, ſo their intrinſic obligation is of equal ſtrength and perpetuity. Yet undoubtedly the revealed law is of infinitely more authenticity than that moral ſyſtem which is framed by ethical writers, and denominated the *natural law:* becauſe one is the law of nature, expreſsly declared ſo to be by God himſelf; the other is only what, by the aſſiſtance of human reaſon, we imagine to be that law. If we could be as certain of the latter as we are of the former, both would have an equal authority: but, till then, they can never be put in any competition together.

Upon theſe two foundations, the law of nature and the law of revelation, depend all human laws; that is to ſay, no human laws ſhould be ſuffered to contradict theſe. There are, it is true, a great number of indifferent points, in which both the divine law and the natural leave a man at his own liberty; but which are found neceſſary, for the benefit of ſociety, to be reſtrained within certain limits. And herein it is that human laws have their greateſt force and efficacy: for, with regard to ſuch points as are not indifferent, human laws are only declaratory of, and act in ſubordination to, the former. To inſtance in the caſe of murder: this is expreſsly forbidden by the divine, and demonſtrably by the natural law; and from theſe prohibitions ariſes the true unlawfulneſs of this crime. Thoſe human laws, that annex a puniſhment to it, do not at all increaſe its moral guilt, or ſuperadd any freſh obligation in *foro conſcientiæ* to abſtain from its perpetration. Nay, if any human law ſhould allow or enjoin us to commit it, we are bound to tranſgreſs that human law, or elſe we muſt offend both the natural and the divine. But with regard to matters that are in themſelves indifferent, and are not commanded or forbidden by thoſe ſuperior laws; ſuch, for inſtance, as exporting of wool into foreign countries; here the inferior legiſlature has ſcope and opportunity to interpoſe, and to make that action unlawful which before was not ſo.

If man were to live in a ſtate of nature, unconnected with other dividuals, there would be no occaſion for any other laws than the law of nature and the law of God. Neither could any other law poſſibly exiſt: for a law always ſuppoſes ſome ſuperior who is to make it; and in a ſtate of nature we are all equal, without any other ſuperior but him who is the Author of our being. But man was formed for ſociety; and, as is demonſtrated by the writers on this ſubject, is neither capable of living alone, nor indeed has the courage to do it. However, as it is impoſſible for the whole race of mankind to be united in one great ſociety, they muſt neceſſarily divide into many; and form ſeparate ſtates, commonwealths, and nations, entirely independant of each other, and yet liable to a mutual intercourſe.

5 Law of nations.

Hence ariſes a third kind of law to regulate this mutual intercourſe, called *the law of nations:* which, as none of theſe ſtates will acknowledge a ſuperiority in the other, cannot be dictated by either; but depends entirely upon the rules of natural law, or upon mutual compacts, treaties, leagues, and agreements, between theſe ſeveral communities: in the conſtruction alſo of which compacts we have no other rule to reſort to, but the law of nature; being the only one to which both communities are equally ſubject: and therefore the civil law very juſtly obſerves, that *quod naturalis ratio inter omnes homines conſtituit, vocatur jus gentium.*

6 Municip or civil

To the conſideration, then, of the law of nature, the revealed law, and the law of nations, ſucceeds that of the municipal or civil law; that is, the rule by which particular diſtricts, communities, or nations are governed; being thus defined by Juſtinian, "*jus civile eſt quod quiſque ſibi populus conſtituit.*" We call it *municipal* law, in compliance with common ſpeech; for though, ſtrictly, that expreſſion denotes the particular cuſtoms of one ſingle *municipium* or free town, yet it may with ſufficient propriety be applied to any one ſtate or nation which is governed by the ſame laws and cuſtoms.

7 Defined.

Municipal law, thus underſtood, is properly defined to be "a rule of civil conduct preſcribed by the ſupreme power in a ſtate, commanding what is right and prohibiting what is wrong." Let us endeavour to explain its ſeveral properties, as they ariſe out of this definition.

8 Its firſ proper

And, firſt, it is a *rule:* not a tranſient ſudden order from a ſuperior to or concerning a particular perſon; but ſomething permanent, uniform, and univerſal. Therefore a particular act of the legiſlature to confiſcate the goods of Titius, or to attaint him of high treaſon, does not enter into the idea of a municipal law:

for the operation of this act is ſpent upon Titius only, and has no relation to the community in general; it is rather a ſentence, than a law. But an act to declare that the crime of which Titius is accuſed ſhall be deemed high treaſon; this has permanency, uniformity, and univerſality, and therefore is properly a *rule*. It is alſo called a *rule*, to diſtinguiſh it from *advice* or *counſel*, which we are at liberty to follow or not as we ſee proper, and to judge upon the reaſonableneſs or unreaſonableneſs of the thing adviſed: whereas our obedience to the law depends not upon *our approbation*, but upon the *Maker's will*. Counſel is only matter of perſuaſion, law is matter of injunction; counſel acts only upon the willing, law upon the unwilling alſo.

It is alſo called a *rule*, to diſtinguiſh it from a *compact* or *agreement*; for a compact is a promiſe proceeding from us, law is a command directed to us. The language of a compact is, "I will, or will not, do this;" that of a law is, "Thou ſhalt, or ſhalt not, do it." It is true there is an obligation which a compact carries with it, equal in point of conſcience to that of a law; but then the original of the obligation is different. In compacts, we ourſelves determine and promiſe what ſhall be done, before we are obliged to do it; in laws, we are obliged to act without ourſelves determining or promiſing any thing at all. Upon theſe accounts law is defined to be "a rule."

9 ond perty.

Municipal law is alſo "a rule of *civil conduct*." This diſtinguiſhes municipal law from the natural, or revealed: the former of which is the rule of moral conduct; and the latter not only the rule of moral conduct, but alſo of faith. Theſe regard man as a creature; and point out his duty to God, to himſelf, and to his neighbour, conſidered in the light of an individual. But municipal or civil law regards him alſo as a citizen, and bound to other duties towards his neighbour, than thoſe of mere nature and religion: duties, which he has engaged in by enjoying the benefits of the common union; and which amount to no more, than that he do contribute, on his part, to the ſubſiſtence and peace of the ſociety.

10 rd perty.

It is likewiſe "a rule *preſcribed*." Becauſe a bare reſolution, confined in the breaſt of the legiſlator, without manifeſting itſelf by ſome external ſign, can never be properly a law. It is requiſite that this reſolution be notified to the people who are to obey it. But the manner in which this notification is to be made, is matter of very great indifference. It may be notified by univerſal tradition and long practice, which ſuppoſes a previous publication, and is the caſe of the common law of England and of Scotland. It may be notified *viva voce*, by officers appointed for that purpoſe; as is done with regard to proclamations, and ſuch acts of parliament as are appointed to be publicly read in churches and other aſſemblies. It may, laſtly, be notified by writing, printing, or the like; which is the general courſe taken with all our acts of parliament. Yet, whatever way is made uſe of, it is incumbent on the promulgators to do it in the moſt public and perſpicuous manner; not like Caligula, who (acording to Dio Caſſius) wrote his laws in a very ſmall character, and hung them up upon high pillars, the more effectually to enſnare the people. There is ſtill a more unreaſonable method than this, which is called making of laws *ex poſt facto*; when after an action (indifferent in itſelf) is committed, the legiſlator then for the firſt time declares it to have been a crime, and inflicts a puniſhment upon the perſon who has committed it. Here it is impoſſible that the party could foreſee, that an action, innocent when it was done, ſhould be afterwards converted to guilt by a ſubſequent law: he had therefore no cauſe to abſtain from it; and all puniſhment for not abſtaining muſt of conſequence be cruel and unjuſt. All laws ſhould be therefore made to commence *in futuro*, and be notified before their commencement; which is implied in the term "preſcribed." But when this rule is in the uſual manner notified, or preſcribed, it is then the ſubject's buſineſs to be thoroughly acquainted therewith; for if ignorance, of what he might know, were admitted as a legitimate excuſe, the laws would be of no effect, but might always be eluded with impunity.

11 Fourth property.

But further: Municipal law is "a rule of civil conduct preſcribed *by the ſupreme power in a ſtate*." For legiſlature, as was before obſerved, is the greateſt act of ſuperiority that can be exerciſed by one being over another. Wherefore it is requiſite to the very eſſence of a law, that it be made by the ſupreme power. Sovereignty and legiſlature are indeed convertible terms; one cannot ſubſiſt without the other.

This will naturally lead us into a ſhort inquiry concerning the nature of ſociety and civil government; and the natural inherent right that belongs to the ſovereignty of a ſtate, wherever that ſovereignty be lodged, of making and enforcing laws.

12 Civil ſociety.

The only true and natural foundations of ſociety are the wants and fears of individuals. Not that we can believe, with ſome theoretical writers, that there ever was a time when there was no ſuch thing as ſociety; and that, from the impulſe of reaſon, and through a ſenſe of their wants and weakneſſes, individuals met together in a large plain, entered into an original contract, and choſe the talleſt man preſent to be their governor. This notion, of an actually exiſting unconnected ſtate of nature, is too wild to be ſeriouſly admitted: and beſides, it is plainly contradictory to the revealed accounts of the primitive origin of mankind, and their preſervation 2000 years afterwards; both which were effected by the means of ſingle families. Theſe formed the firſt ſociety, among themſelves; which every day extended its limits; and when it grew too large to ſubſiſt with convenience in that paſtoral ſtate wherein the patriarchs appear to have lived, it neceſſarily ſubdivided itſelf by various migrations into more. Afterwards, as agriculture increaſed, which employs and can maintain a much greater number of hands, migrations became leſs frequent: and various tribes, which had formerly ſeparated, reunited again; ſometimes by compulſion and conqueſt, ſometimes by accident, and ſometimes perhaps by compact. But though ſociety had not its formal beginning from any convention of individuals, actuated by their wants and their fears; yet it is the ſenſe of their weakneſs and imperfection that keeps mankind together; that demonſtrates the neceſſity of this union; and that therefore is the ſolid and natural foundation, as well as the cement, of ſociety. And this is what we mean by the original contract of ſociety; which, though perhaps in no inſtance it has ever been formally expreſſed at the firſt inſtitution of a ſtate, yet in nature and reaſon muſt always be underſtood and implied in the very act of aſſociating together: namely, that the whole ſhould protect all its parts, and that every part ſhould pay obedience to the will of the whole; or, in other words, that the community ſhould guard the rights of each individual member, and that (in return for this protection) each individual ſhould ſubmit to the laws of the community; without which ſubmiſſion of all, it was impoſſible that protection could be certainly extended to any.

13
Government.

For when ſociety is once formed, government reſults of courſe, as neceſſary to preſerve and to keep that ſociety in order. Unleſs ſome ſuperior be conſtituted, whoſe commands and deciſions all the members are bound to obey, they would ſtill remain as in a ſtate of nature, without any judge upon earth to define their ſeveral rights, and redreſs their ſeveral wrongs. But, as all the members of ſociety are naturally equal, it may be aſked, In whoſe hands are the reins of government to be entruſted? To this the general anſwer is eaſy; but the application of it to particular caſes has occaſioned one half of thoſe miſchiefs which are apt to proceed from miſguided political zeal. In general, all mankind will agree, that government ſhould be repoſed in ſuch perſons, in whom thoſe qualities are moſt likely to be found, the perfection of which is among the attributes of him who is emphatically ſtyled the *Supreme Being*; the three grand requiſites, namely, of wiſdom, of goodneſs, and of power: wiſdom, to diſcern the real intereſt of the community; goodneſs, to endeavour always to purſue that real intereſt; and ſtrength, or power, to carry this knowledge and intention into action. Theſe are the natural foundations of ſoveregnity, and theſe are the requiſites that ought to be found in every well conſtituted frame of government.

How the ſeveral forms of government we now ſee in the world at firſt actually began, is matter of great uncertainty, and has occaſioned infinite diſputes. It is not our buſineſs or intention to enter into any of them. However they began, or by what right ſoever they ſubſiſt, there is and muſt be in all of them a ſupreme, irreſiſtible, abſolute, uncontrolled authority, in which the *jura ſummi imperii*, or the rights of ſovereignty, reſide. And this authority is placed in thoſe hands, wherein (according to the opinion of the founders of ſuch reſpective ſtates, either expreſsly given, or collected from their tacit approbation) the qualities requiſite for ſupremacy, wiſdom, goodneſs and power, are the moſt likely to be found.

14
Different forms thereof.

The political writers of antiquity will not allow more than three regular forms of government: the firſt, when the ſovereign power is lodged in an aggregate aſſembly conſiſting of all the members of a community, which is called a *democracy*; the ſecond, when it is lodged in a council compoſed of ſelect members, and then it is ſtyled an *ariſtocracy*; the laſt, when it is entruſted in the hands of a ſingle perſon, and then it takes the name of a *monarchy*. All other ſpecies of government, they ſay, are either corruptions of, or reducible to, theſe three.

By the ſovereign power, as was before obſerved, is meant the making of laws; for wherever that power reſides, all others muſt conform to and be directed by it, whatever appearance the outward form and adminiſtration of the government may put on. For it is at any time in the option of the legiſlature to alter that form and adminiſtration by a new edict or rule, and to put the execution of the laws into whatever hands it pleaſes: and all the other powers of the ſtate muſt obey the legiſlative power in the execution of their ſeveral functions, or elſe the conſtitution is at an end.

In a democracy, where the right of making laws reſides in the people at large, public virtue, or goodneſs of intention, is more likely to be found, than either of the other qualities of government. Popular aſſemblies are frequently fooliſh in their contrivance, and weak in their execution; but generally mean to do the thing that is right and and juſt, and have always a degree of patriotiſm or public ſpirit. In ariſtocracies there is more wiſdom to be found than in the other forms of government; being compoſed, or intended to be compoſed, of the moſt experienced citizens: but there is leſs honeſty than in a republic, and leſs ſtrength than in a monarchy. A monarchy is indeed the moſt powerful of any, all the ſinews of government being knit and united together in the hand of the prince; but then there is imminent danger of his employing that ſtrength to improvident or oppreſſive purpoſes.

Thus theſe three ſpecies of government have, all of them, their ſeveral perfections and imperfections. Democracies are uſually the beſt calculated to direct the end of a law; ariſtocracies, to invent the means by which that end ſhall be obtained; and monarchies, to carry thoſe means into execution. And the ancients, as was obſerved, had in general no idea of any other permanent form of government but theſe three: for though Cicero declares himſelf of opinion, "*eſſe optime conſtitutam rempublicam, quæ ex tribus generibus illis, regali, optimo, et populari, ſit modice confuſa*;" yet Tacitus treats this notion of a mixed government, formed out of them all, and partaking of the advantages of each, as a viſionary whim, and one that, if effected, could never be laſting or ſecure.

15
Britiſh Co
ſtitution.

But, happily for us of this iſland, the Britiſh conſtitution has long remained, and we truſt will long continue, a ſtanding exception to the truth of this obſervation. For, as with us the executive power of the laws is lodged in a ſingle perſon, they have all the advantages of ſtrength and diſpatch that are to be found in the moſt abſolute monarchy: and, as the legiſlature of the kingdom is entruſted to three diſtinct powers, entirely independant of each other; firſt, the king; ſecondly, the lords ſpiritual and temporal, which is an ariſtocratical aſſembly of perſons ſelected for their piety, their birth, their wiſdom, their valour, or their property; and, thirdly, the houſe of commons, freely choſen by the people from among themſelves, which makes it a kind of democracy; as this aggregate body, actuated by different ſprings and attentive to different intereſts, compoſes the Britiſh parliament, and has the ſupreme diſpoſal of every thing, there can no inconvenience be attempted by either of the three branches, but will be withſtood by one of the other two, each branch being armed with a negative power ſufficient to repel any innovation which it ſhall think inexpedient or dangerous.

Here, then, is lodged the ſovereignty of the Britiſh conſtitution; and lodged as beneficially as is poſſible for ſociety. For in no other ſhape could we be ſo certain of finding the three great qualities of government ſo well and ſo happily united. If the ſupreme power were lodged in any one of the three branches ſeparately,

rately, we muſt be expoſed to the inconveniences of either abſolute monarchy, ariſtocracy, or democracy; and ſo want two of the three principal ingredients of good polity, either virtue, wiſdom, or power. If it were lodged in any two of the branches; for inſtance, in the king and houſe of lords; our laws might be providently made and well executed, but they might not always have the good of the people in view: if lodged in the king and commons, we ſhould want that circumſpection and mediatory caution, which the wiſdom of the peers is to afford: if the ſupreme rights of legiſlature were lodged in the two houſes only, and the king had no negative upon their proceedings, they might be tempted to encroach upon the royal perogative, or perhaps to aboliſh the kingly office, and thereby weaken (if not totally deſtroy) the ſtrength of the executive power. But the conſtitutional government of this iſland is ſo admirably tempered and compounded, that nothing can endanger or hurt it, but deſtroying the equilibrium of power between one branch of the legſlature and the reſt. For if ever it ſhould happen, that the independence of any one of the three ſhould be loſt, or that it ſhould become ſubſervient to the views of either of the other two, there would ſoon be an end of our conſtitution. The legiſlature would be changed from that which was originally ſet up by the general conſent and fundamental act of the ſociety: and ſuch a change, however effected, is, according to Mr Locke, (who perhaps carries his theory too far), at once an entire diſſolution of the bands of government; and the people are thereby reduced to a ſtate of anarchy, with liberty to conſtitute to themſelves a new legiſlative power.

Having thus curſorily conſidered the three uſual ſpecies of government, and our own ſingular conſtitution ſelected and compounded from them all, we proceed to obſerve, that, as the power of making laws conſtitutes the ſupreme authority, ſo wherever the ſupreme authority in any ſtate reſides, it is the right of that authority to make laws; that is, in the words of our definition, *to preſcribe the rule of civil action*. And this may be diſcovered from the very end and inſtitution of civil ſtates. For a ſtate is a collective body, compoſed of a multitude of individuals, united for their ſafety and convenience, and intending to act together as one man. If it therefore is to act as one man, it ought to act by one uniform will. But, inaſmuch as political communities are made up of many natural perſons, each of whom has his particular will and inclination, theſe ſeveral wills cannot by any natural union be joined together, or tempered and diſpoſed into a laſting harmony, ſo as to conſtitute and produce that one uniform will of the whole. It can therefore be no otherwiſe produced than by a political union; by the conſent of all perſons to ſubmit their own private wills to the will of one man, or of one or more aſſemblies of men, to whom the ſupreme authority is entruſted; and this will of that one man, or aſſemblage of men, is in different ſtates, according to their different conſtitutions, underſtood to be law.

Thus far as to the *right* of the ſupreme power to make laws: but farther, it is its *duty* likewiſe. For ſince the reſpective members are bound to conform themſelves to the will of the ſtate, it is expedient that they receive directions from the ſtate declaratory of that its will. But as it is impoſſible, in ſo great a multitude, to give injunctions to every particular man, relative to each particular action, therefore the ſtate eſtabliſhes general rules, for the perpetual information and direction of all perſons in all points, whether of poſitive or negative duty. And this, in order that every man may know what to look upon as his own, what as another's; what abſolute and what relative duties are required at his hands; what is to be eſteemed honeſt, diſhoneſt, or indifferent; what degree every man retains of his natural liberty, and what he has given up as the price of the benefits of ſociety; and after what manner each perſon is to moderate the uſe and exerciſe of thoſe rights which the ſtate aſſigns him, in order to promote and ſecure the public tranquillity.

17 Second branch of the definition, illuſtrated.

From what has been advanced, the truth of the former branch of our definition is (we truſt) ſufficiently evident; that "municipal law is a rule of civil conduct, preſcribed *by the ſupreme power in a ſtate*." We proceed now to the latter branch of it; that it is a rule ſo preſcribed, "commanding what is right, and prohibiting what is wrong."

Now, in order to do this completely, it is firſt of all neceſſary that the boundaries of right and wrong be eſtabliſhed and aſcertained by law. And when this is once done, it will follow of courſe, that it is likewiſe the buſineſs of the law, conſidered as a rule of civil conduct, to enforce theſe rights, and to reſtrain or redreſs theſe wrongs. It remains therefore only to conſider, in what manner the law is ſaid to aſcertain the boundaries of right and wrong; and the methods which it takes to command the one and prohibit the other.

For this purpoſe, every law may be ſaid to conſiſt of ſeveral parts: one, declaratory; whereby the rights to be obſerved, and the wrongs to be eſchewed, are clearly defined and laid down: another, directory; whereby the ſubject is inſtructed and enjoined to obſerve thoſe rights, and to abſtain from the commiſſion of thoſe wrongs: a third, remedial; whereby a method is pointed out to recover a man's private rights, or redreſs his private wrongs: to which may be added a fourth, uſually termed the *ſanction*, or *vindicatory* branch, of the law; whereby it is ſignified what evil or penalty ſhall be incurred by ſuch as commit any public wrongs, and tranſgreſs or neglect their duty.

18 Declaratory part of the law.

With regard to the firſt of theſe, the *declaratory* part of the municipal law; this depends not ſo much upon the law of revelation or of nature, as upon the wiſdom and will of the legiſlator. This doctrine, which before was ſlightly touched, deſerves a more particular explication. Thoſe rights, then, which God and nature have eſtabliſhed, and are therefore called *natural rights*, ſuch as are life and liberty, need not the aid of human laws to be more effectually inveſted in every man than they are; neither do they receive any additional ſtrength when declared by the municipal laws to be inviolable. On the contrary, no human legiſlature has power to abridge or deſtroy them, unleſs the owner ſhall himſelf commit ſome act that amounts to a forfeiture. Neither do divine or natural *duties* (ſuch as, for inſtance, the worſhip of God, the maintenance of children, and the like) receive any ſtronger ſanction from being alſo declared to be duties by the law of the land. The caſe is the ſame as to crimes and miſdemeanors, that are forbidden by the ſuperior laws, and therefore ſtyled *mala in ſe*, ſuch as murder, theft, and perjury;

which contract no additional turpitude from being declared unlawful by the inferior legiſlature. For that legiſlature in all theſe caſes acts only, as was before obſerved, in ſubordination to the Great Lawgiver, tranſcribing and publiſhing his precepts. So that, upon upon the whole, the declaratory part of the municipal law has no force or operation at all, with regard to actions that are naturally and intrinſically right or wrong.

But with regard to things in themſelves indifferent, the caſe is entirely altered. Theſe become either right or wrong, juſt or unjuſt, duties or miſdemeanors, according as the municipal legiſlator ſees proper, for promoting the welfare of the ſociety, and more effectually carrying on the purpoſes of civil life. Thus our own common law has declared, that the goods of the wife do inſtantly upon marriage become the property and right of the huſband; and our ſtatute law has declared all monopolies a public offence: yet that right, and this offence, have no foundation in nature; but are merely created by the law, for the purpoſes of civil ſociety. And ſometimes, where the thing itſelf has its riſe from the law of nature, the particular circumſtances and mode of doing it become right or wrong, as the laws of the land ſhall direct. Thus, for inſtance, in civil duties; obedience to ſuperiors is the doctrine of revealed as well as natural religion: but who thoſe ſuperiors ſhall be, and in what circumſtances, or to what degrees they ſhall be obeyed, is the province of human laws to determine. And ſo, as to injuries or crimes, it muſt be left to our own legiſlature to decide, in what caſes the ſeizing another's cattle ſhall amount to the crime of robbery; and where it ſhall be a juſtifiable action, as when a landlord takes them by way of diſtreſs for rent.

19 Directory part.

Thus much for the declaratory part of the municipal law: and the *directory* ſtands much upon the ſame footing; for this virtually includes the former, the declaration being uſually collected from the direction. The law that ſays, "Thou ſhalt not ſteal," implies a declaration that ſtealing is a crime. And we have ſeen, that, in things naturally indifferent, the very eſſence of right and wrong depends upon the direction of the laws to do or to omit them.

20 Remedial part.

The *remedial* part of a law is ſo neceſſary a conſequence of the former two, that laws muſt be very vague and imperfect without it. For in vain would rights be declared, in vain directed to be obſerved, if there were no method of recovering and aſſerting thoſe rights when wrongfully withheld or invaded. This is what we mean properly, when we ſpeak of the protection of the law. When, for inſtance, the declaratory part of the law has ſaid, "that the field or inheritance, which belonged to Titius's father, is veſted by his death in Titius;" and the directory part has "forbidden any one to enter on another's property, without the leave of the owner:" if Gaius after this will preſume to take poſſeſſion of the land, the remedial part of the law will then interpoſe its office; will make Gaius reſtore the poſſeſſion to Titius, and alſo pay him damages for the invaſion.

With regard to the ſanction of laws, or the evil that may attend the breach of public duties; it is obſerved, that human legiſlators have for the moſt part choſen to make the ſanction of their laws rather vindicatory than remuneratory, or to conſiſt rather in puniſhments than in actual particular rewards: Becauſe, in the firſt place, the quiet enjoyment and protection of all our civil rights and liberties, which are the ſure and general conſequence of obedience to the municipal law, are in themſelves the beſt and moſt valuable of all rewards: becauſe alſo, were the exerciſe of every virtue to be enforced by the propoſal of particular rewards, it were impoſſible for any ſtate to furniſh ſtock enough for ſo profuſe a bounty: and farther, becauſe the dread of evil is a much more forcible principle of human actions than the proſpect of good. For which reaſons, though a prudent beſtowing of rewards is ſometimes of exquiſite uſe, yet we find that thoſe civil laws, which enforce and enjoin our duty, do ſeldom, if ever, propoſe any privilege or gift to ſuch as obey the law; but do conſtantly come armed with a penalty denounced againſt tranſgreſſors, either expreſſly defining the nature and quantity of the puniſhment, or elſe leaving it to the diſcretion of the judges, and thoſe who are entruſted with the care of putting the laws in execution.

21 Vindicat part.

Of all the parts of a law the moſt effectual is the *vindicatory*. For it is but loſt labour to ſay, "do this, or avoid that," unleſs we alſo declare, "this ſhall be the conſequence of your non-compliance." We muſt therefore obſerve, that the main ſtrength and force of a law conſiſts in the penalty annexed to it. Herein is to be found the principal obligation of human laws.

Legiſlators and their laws are ſaid to *compel* and *oblige*; not that, by any natural violence, they ſo conſtrain a man as to render it impoſſible for him to act otherwiſe than as they direct, which is the ſtrict ſenſe of obligation: but becauſe, by declaring and exhibiting a penalty againſt offenders, they bring it to paſs that no man can eaſily chooſe to tranſgreſs the law; ſince, by reaſon of the impending correction, compliance is in a high degree preferable to diſobedience. And, even where rewards are propoſed as well as puniſhments threatened, the obligation of the law ſeems chiefly to conſiſt in the penalty: for rewards, in their nature, can only perſuade and allure; nothing is compulſory but puniſhment.

It is true, it hath been holden, and very juſtly, by the principal of our ethical writers, that human laws are binding upon mens conſciences. But if that were the only or moſt forcible obligation, the good only would regard the laws, and the bad would ſet them at defiance. And, true as this principle is, it muſt ſtill be underſtood with ſome reſtriction. It holds, we apprehend, as to *rights*; and that, when the law has determined the field to belong to Titius, it is matter of conſcience no longer to withhold or to invade it. So alſo in regard to *natural duties*, and ſuch offences as are *mala in ſe*: here we are bound in conſcience, becauſe we are bound by ſuperior laws, before thoſe human laws were in being, to perform the one and abſtain from the other. But in relation to thoſe laws which enjoin only poſitive duties, and forbid only ſuch things as are not *mala in ſe*, but *mala prohibita* merely, without any intermixture of moral guilt, annexing a penalty to non-compliance; here ſeems to be conſcience no farther concerned, than by directing a ſubmiſſion to the penalty, in caſe of our breach of thoſe laws: for otherwiſe the multitude of penal laws in a ſtate would not only be looked upon as an impolitic, but would alſo be a very wicked, thing; if every ſuch law were a ſnare for the conſcience of the ſubject. But in theſe caſes the alternative is offered to every man; "either abſtain from this, or ſubmit to ſuch a penalty:" and his conſcience will be clear, whichever ſide of the alternative he thinks proper to embrace. Thus, by the ſtatutes for preſerving the game, a penalty is denounced againſt every unqualified perſon that kills a hare, and againſt every perſon who poſſeſſes a partridge in Auguſt. And ſo too, by other ſtatutes, pecuniary penalties are inflicted for exerciſing trades without ſerving an apprentice ſhip thereto, for erecting cottages without annexing four acres of land to each, for not burying the dead in woollen, for not performing ſtatute-work on the public roads, and for innumerable other poſitive miſdemeanors. Now theſe prohibitory laws do not make the tranſgreſſion a moral offence, or ſin; the only obligation in conſcience is to ſubmit to the penalty if levied. It muſt, however, be obſerved, that we are here ſpeaking of laws that are ſimply and purely penal, where the thing forbidden or enjoined is wholly a matter of indifference, and where the penalty inflicted is an adequate compenſation for the civil inconvenience ſuppoſed to ariſe from the offence. But where diſobedience to the law involves in it alſo any degree of public miſchief or private injury, there it falls within our former diſtinction, and is alſo an offence againſt conſcience.

We have now gone through the definition laid down of a municipal law; and have ſhewn that it is "a rule---of civil conduct---preſcribed---by the ſupreme power in a ſtate---commanding what is right, and prohibiting what is wrong:" in the explication of which we have endeavoured to interweave a few uſeful principles, concerning the nature of civil government, and the obligation of human laws. Before we conclude this part, it may not be amiſs to add a few obſervations concerning the intepretation of laws.

When any doubt aroſe upon the conſtruction of the Roman laws, the uſage was to ſtate the caſe to the emperor in writing, and take his opinion upon it. This was certainly a bad method of interpretation. To interrogate the legiſlature to decide particular diſputes, is not only endleſs, but affords great room for partiality and oppreſſion. The anſwers of the emperor were called his reſcripts, and theſe had in ſucceeding caſes the force of perpetual laws; though they ought to be carefully diſtinguiſhed, by every rational civilian, from thoſe general conſtitutions which had only the nature of things for their guide. The emperor Macrinus, as his hiſtorian Capitolinus informs us, had once reſolved to aboliſh theſe reſcripts, and retain only the general edicts: he could not bear that the haſty and crude anſwers of ſuch princes as Commodus and Caracalla ſhould be reverenced as laws. But Juſtinian thought otherwiſe, and he has preſerved them all. In like manner the canon laws, or decretal epiſtles of the popes, are all of them reſcripts in the ſtricteſt ſenſe. Contrary to all true forms of reaſoning, they argue from particulars to generals.

The faireſt and moſt rational method to interpret the will of the legiſlator, is by exploring his intentions at the time when the law was made, by ſigns the moſt natural and probable. And theſe ſigns are either the words, the context, the ſubject-matter, the effects and conſequence, or the ſpirit and reaſon of the law. Let us take a ſhort view of them all.

23 1. *Words* are generally to be underſtood in their uſual and moſt known ſignification; not ſo much regarding the propriety of grammar, as their general and popular uſe. Thus the law mentioned by Puffendorf, which forbad a layman to lay hands on a prieſt, was adjudged to extend to him who had hurt a prieſt with a weapon. Again: Terms of art, or technical terms, muſt be taken according to the acceptation of the learned in each art, trade, and ſcience. So in the act of ſettlement, where the crown of England is limited "to the princeſs Sophia, and the heirs of her body being Proteſtants," it becomes neceſſary to call in the aſſiſtance of lawyers, to aſcertain the preciſe idea of the words "heirs of her body;" which in a legal ſenſe compriſe only certain of her lineal deſcendants. Laſtly, where words are clearly repugnant in two laws, the later law takes place of the elder; *leges poſteriores priores contrarias abrogant*, is a maxim of univerſal law, as well as of our own conſtitutions. And accordingly it was laid down by a law of the twelve tables at Rome, *quod populus poſtremum juſſit, id jus ratum eſto.*

24 2. If words happen to be ſtill dubious, we may eſtabliſh their meaning from the *context*; with which it may be of ſingular uſe to compare a word or a ſentence, whenever they are ambiguous, equivocal, or intricate. Thus the proëme, or preamble, is often called in to help the conſtruction of an act of parliament. Of the ſame nature and uſe is the compariſon of a law with other laws, that are made by the ſame legiſlator, that have ſome affinity with the ſubject, or that expreſly relate to the ſame point. Thus, when the law of England declares murder to be felony without benefit of clergy, we muſt reſort to the ſame law of England to learn what the benefit of clergy is: and, when the common law cenſures ſimoniacal contracts, it affords great light to the ſubject to conſider what the canon law has adjudged to be ſimony.

25 3. As to the *ſubject-matter*, words are always to be underſtood as having a regard thereto; for that is always ſuppoſed to be in the eye of the legiſlator, and all his expreſſions directed to that end. Thus, when a law of Edward III. forbids all eccleſiaſtical perſons to purchaſe proviſions at Rome, it might ſeem to prohibit the buying of grain and other victual; but when we conſider that the ſtatute was made to repreſs the uſurpations of the papal ſee, and that the nominations to benefices by the Pope were called *proviſions*, we ſhall ſee that the reſtraint is intended to be laid upon ſuch proviſions only.

26 4. As to the effects and *conſequence*, the rule is, That where words bear either none, or a very abſurd ſignification, if literally underſtood, we muſt a little deviate from the received ſenſe of them. Therefore the Bolognian law, mentioned by Puffendorf, which enacted "that whoever drew blood in the ſtreets ſhould be puniſhed with the utmoſt ſeverity," was held after long debate not to extend to the ſurgeon who opened the vein of a perſon that fell down in the ſtreet with a fit.

27 5. But, laſtly, the moſt univerſal and effectual way of diſcovering the true meaning of a law, when the

words are dubious, is by conſidering the *reaſon* and *ſpirit* of it, or the cauſe which moved the legiſlator to enact it. For when this reaſon ceaſes, the law itſelf ought likewiſe to ceaſe with it. An inſtance of this is given in a caſe put by Cicero, or whoever was the au- of the rhetorical treatiſe inſcribed to Herennius. There was a law, That thoſe who in a ſtorm forſook the ſhip ſhould forfeit all property therein, and the ſhip and lading ſhould belong entirely to thoſe who ſtaid in it. In a dangerous tempeſt, all the mariners forſook the ſhip, except only one ſick paſſenger, who by reaſon of his diſeaſe was unable to get out and eſcape. By chance the ſhip came ſafe to port. The ſick man kept poſſeſſion, and claimed the benefit of the law. Now here all the learned agree, that the ſick man is not within the reaſon of the law; for the reaſon of making it was, to give encouragement to ſuch as ſhould venture their lives to ſave the veſſel: but this is a merit which he could never pretend to, who neither ſtaid in the ſhip upon that account, nor contributed any thing to its preſervation.

[28] 34 Equity.

From this method of interpreting laws by the reaſon of them, ariſes what we call *equity:* which is thus defined by Grotius, "the correction of that, wherein the law (by reaſon of its univerſality) is deficient." For ſince in laws all caſes cannot be foreſeen or expreſſed, it is neceſſary, that, when the general decrees of the law come to be applied to particular caſes, there ſhould be ſomewhere a power veſted of defining thoſe circumſtances, which (had they been forſeen) the legiſlator himſelf would have expreſſed. And theſe are the caſes which, according to Grotius, "*lex non exacte definit, ſed arbitrio boni viri permittit.*"

Equity thus depending, eſſentially, upon the particular circumſtances of each individual caſe, there can be no eſtabliſhed rules and fixed precepts of equity laid down, without deſtroying its very eſſence, and reducing it to a poſitive law. And, on the other hand, the liberty of conſidering all caſes in an equitable light, muſt not be indulged too far; leſt thereby we deſtroy all law, and leave the deciſion of every queſtion entirely in the breaſt of the judge. And law, without equity, tho' hard and diſagreeable, is much more deſirable for the public good, than equity without law; which would make every judge a legiſlator, and introduce moſt infinite confuſion; as there would then be almoſt as many different rules of action laid down in our courts, as there are differences of capacity and ſentiment in the human mind.

35 Plan of two foll ing parts

Having thus conſidered the nature of laws in general, we ſhall proceed to give a view of the particular laws of our own country; 1. Of England, 2. Of Scotland. The Engliſh law, however, being too extenſive to admit of detail in a body, we can only here give ſuch a ſketch of it as may be ſufficient to ſhow the connection of its parts; but the principal of theſe parts themſelves are explained at large, under their proper names, in the general alphabet.—A contrary method is followed with regard to the law of Scotland. This being leſs extenſive, is given in a body, with all its parts not only in regular connection, but ſufficiently explained; theſe parts, again, not being explained in the order of the alphabet, but marked with numerical references to their explanations in the ſyſtem.

PART II. THE LAW OF ENGLAND.

INTRODUCTION.

THE municipal law of England, or the rule of civil conduct preſcribed to the inhabitants of that kingdom, may with ſufficient propriety be divided into two kinds: the *lex non ſcripta*, the unwritten or common law; and the *lex ſcripta*, the written or ſtatute law.

36 Common law.

The *lex non ſcripta*, or unwritten law, includes not only general cuſtoms, or the common law properly ſo called; but alſo the particular cuſtoms of certain parts of the kingdom, and likewiſe thoſe particular laws that are by cuſtom obſerved only in certain courts and juriſdictions.

In calling theſe parts of the law *leges non ſcriptæ*, we would not be underſtood as if all thoſe laws were at preſent merely oral, or communicated from the former ages to the preſent ſolely by word of mouth. It is true indeed, that, in the profound ignorance of letters which formerly overſpread the whole weſtern world, all laws were entirely traditional; for this plain reaſon, that the nations among which they prevailed had but little idea of writing. Thus the Britiſh as well as the Gallic druids committed all their laws as well as learning to memory; and it is ſaid of the primitive Saxons here, as well as their brethren on the continent, that *leges ſola memoria et uſu retinebant*. But, with us at preſent, the monuments and evidences of our legal cuſtoms are contained in the records of the ſeveral courts of juſtice, in books of reports and judicial deciſions, and in the treatiſes of learned ſages of the profeſſion, preſerved and handed down to us from the times of higheſt antiquity. However, we therefore ſtyle theſe parts of our law *leges non ſcriptæ*, becauſe their original inſtitution and authority are not ſet down in writing, as acts of parliament are; but they receive their binding power, and the force of laws, by long and immemorial uſage, and by their univerſal reception throughout the kingdom: in like manner as Aulus Gellius defines the *jus non ſcriptum* to be that, which is *tacito et illiterato hominum conſenſu et moribus expreſſum*.

Our ancient lawyers, and particularly Forteſcue, inſiſt with abundance of warmth, that theſe cuſtoms are as old as the primitive Britons, and continued down through the ſeveral mutations of government and inhabitants, to the preſent time, unchanged and unadulterated. This may be the caſe as to ſome. But in general, as Mr Selden in his notes obſerves, this aſſertion muſt be underſtood with many grains of allowance; and ought only to ſignify, as the truth ſeems to be, that there never was any formal exchange of one ſyſtem of laws for another: though doubtleſs, by the intermixture of adventitious nations, the Romans, the Picts, the Saxons, the Danes, and the Normans, they muſt have inſenſibly introduced and incorporated many of their own cuſtoms with thoſe that were before eſtabliſhed; thereby, in all probability, improving the texture and wiſdom of the whole, by the accumulated wiſdom of divers particular countries. Our laws, ſaith lord Bacon, are mixed as our language; and as our language is ſo much the richer, the laws are the more complete.

And indeed our antiquarians and firſt hiſtorians do all poſitively aſſure us, that our body of laws is of this compounded nature. For they tell us, that in the time of Alfred the local cuſtoms of the ſeveral provinces of the kingdom were grown ſo various, that he found it expedient to compile his dome-book, or *liber judicialis*, for the general uſe of the whole kingdom. This book is ſaid to have been extant ſo late as the reign of Edward the fourth, but is now unfortunately loſt. It contained, we may probably ſuppoſe, the principal maxims of the common law, the penalties for miſdemeanours, and the forms of judicial proceedings. Thus much may at leaſt be collected from that injunction to obſerve it, which we find in the laws of king Edward the elder, the ſon of Alfred. *Omnibus qui reipublicæ præſunt etiam atque etiam mando, ut omnibus æquos ſe præbeant judices, perinde ac in judiciali libro ſcriptum habetur: nec quiquam formident quin jus commune audacter libereque dicant.*

But the irruption and eſtabliſhment of the Danes in England, which followed ſoon after, introduced new cuſtoms, and cauſed this code of Alfred in many provinces to fall into diſuſe, or at leaſt to be mixed and debaſed with other laws of a coarſer alloy. So that, about the beginning of the 11th century, there were three principal ſyſtems of laws prevailing in different diſtricts. 1. The *Mercen-Lage*, or Mercian laws, which were obſerved in many of the inland counties, and thoſe bordering on the principality of Wales, the retreat of the ancient Britons; and therefore very probably intermixed with the Britiſh or Druidical cuſtoms. 2. The *Weſt Saxon-Lage*, or laws of the Weſt Saxons, which obtained in the counties to the ſouth and weſt of the iſland, from Kent to Devonſhire. Theſe were probably much the ſame with the laws of Alfred above-mentioned, being the municipal law of the far moſt conſiderable part of his dominions, and particularly including Berkſhire, the ſeat of his peculiar reſidence. 3. The *Dane-Lage*, or Daniſh law, the very name of which ſpeaks its original and compoſition. This was principally maintained in the reſt of the midland counties, and alſo on the eaſtern coaſt, the part moſt expoſed to the viſits of that piratical people. As for the very northern provinces, they were at that time under a diſtinct government.

Out of theſe three laws, Roger Hoveden and Ranulphus Ceſtrenſis inform us, king Edward the confeſſor extracted one uniform law, or digeſt of laws, to be obſerved throughout the whole kingdom; though Hoveden and the author of an old manuſcript chronicle aſſure us likewiſe, that this work was projected and begun by his grandfather king Edgar. And indeed a general digeſt of the ſame nature has been conſtantly found expedient, and therefore put in practice by other great nations, which were formed from an aſſemblage of little provinces, governed by peculiar cuſtoms. As in Portugal, under king Edward, about the beginning of the 15th century. In Spain, under Alonzo X. who about the year 1250 executed the plan of his father St Ferdinand, and collected all the provincial cuſtoms into one uniform law, in the celebrated code entitled *las partidas*. And in Sweden, about the ſame æra, a univerſal body of common law was compiled out of the particular cuſtoms eſtabliſhed by the laghman of every province, and entitled the *land's lagh*, being analogous to the common law of England.

Both theſe undertakings, of king Edgar and Edward the confeſſor, ſeem to have been no more than a new edition, or freſh promulgation, of Alfred's code or dome-book, with ſuch additions and improvements as the experience of a century and an half had ſuggeſted. For Alfred is generally ſtyled by the ſame hiſtorians the *legum Anglicanarum conditor*, as Edward the confeſſor is the *reſtitutor*. Theſe, however, are the laws which our hiſtories ſo often mention under the name of the *laws of Edward the confeſſor*; which our anceſtors ſtruggled ſo hardly to maintain, under the firſt princes of the Norman line; and which ſubſequent princes ſo frequently promiſed to keep and to reſtore, as the moſt popular act they could do, when preſſed by foreign emergencies or domeſtic diſcontents. Theſe are the laws, that ſo vigorouſly withſtood the repeated attacks of the civil law; which eſtabliſhed in the 12th century a new Roman empire over moſt of the ſtates on the continent: ſtates that have loſt, and perhaps upon that account, their political liberties; while the free conſtitution of England, perhaps upon the ſame account, has been rather improved than debaſed. Theſe, in ſhort, are the laws which gave riſe and original to that collection of maxims and cuſtoms which is now known by the name of the *common law*. A name either given to it, in contradiſtinction to other laws, as the ſtatute law, the civil law, the law merchant, and the like; or, more probably, as a law common to all the realm, the *jus commune* or *folcright* mentioned by king Edward the elder, after the abolition of the ſeveral provincial cuſtoms and particular laws beforementioned.

38
Common law.

But though this is the moſt likely foundation of this collection of maxims and cuſtoms; yet the maxims and cuſtoms, ſo collected, are of higher antiquity than memory or hiſtory can reach: nothing being more difficult than to aſcertain the preciſe beginning and firſt ſpring of an ancient and long-eſtabliſhed cuſtom. Whence it is that in our law the goodneſs of a cuſtom depends upon its having been uſed time out of mind; or, in the ſolemnity of our legal phraſe, time whereof the memory of man runneth not to the contrary. This it is that gives it its weight and authority; and of this nature are the maxims and cuſtoms which compoſe the common law, or *lex non ſcripta*, of this kingdom.

This unwritten, or common law, is properly diſtinguiſhable into three kinds: 1. General cuſtoms; which are the univerſal rule of the whole kingdom, and form the common law in its ſtricter and more uſual ſignification. 2. Particular cuſtoms; which for the moſt part affect only the inhabitants of particular diſtricts. 3. Certain particular laws; which by cuſtom are adopted and uſed by ſome particular courts, of pretty general and extenſive juriſdiction.

19
Firſt branch of the unwritten law: General cuſtoms.

I. As to general cuſtoms, or the common law properly ſo called; this is that law, by which proceedings and determinations in the king's ordinary courts of juſtice are guided and directed. This, for the moſt part, ſettles the courſe in which lands deſcend by inheritance;

heritance; the manner and form of acquiring and transferring property; the ſolemnities and obligation of contracts; the rules of expounding wills, deeds, and acts of parliament; the reſpective remedies of civil injuries; the ſeveral ſpecies of temporal offences, with the manner and degree of puniſhment; and an infinite number of minuter particulars, which diffuſe themſelves as extenſively as the ordinary diſtribution of common juſtice requires. Thus, for example, that there ſhall be four ſuperior courts of record, the chancery, the king's bench, the common pleas, and the exchequer;---that the eldeſt ſon alone is heir to his anceſtor;---that property may be acquired and tranſferred by writing;---that a deed is of no validity unleſs ſealed and delivered;---that wills ſhall be conſtrued more favourably, and deeds more ſtrictly;---that money lent upon bond is recoverable by action of debt;---that breaking the public peace is an offence, and puniſhable by fine and impriſonment:---all theſe are doctrines that are not ſet down in any written ſtatute or ordinance; but depend merely upon immemorial uſage, that is, upon common law, for their ſupport.

Some have divided the common law into two principal grounds or foundations: 1. Eſtabliſhed cuſtoms; ſuch as that, where there are three brothers, the eldeſt brother ſhall be heir to the ſecond, in excluſion of the youngeſt: and, 2. Eſtabliſhed rules and maxims; as, "that the king can do no wrong, that no man ſhall "be bound to accuſe himſelf," and the like. But theſe ſeem to be one and the ſame thing. For the authority of theſe maxims reſts entirely upon general reception and uſage; and the only method of proving that this or that maxim is a rule of the common law, is by ſhewing that it hath been always the cuſtom to obſerve it.

But here a very natural, and very material, queſtion ariſes: How are theſe cuſtoms or maxims to be known, and by whom is their validity to be determined? The anſwer is, By the judges in the ſeveral courts of juſtice. They are the depoſitary of the laws; the living oracles who muſt decide in all caſes of doubt, and who are bound by an oath to decide according to the law of the land. Their knowledge of that law is derived from experience and ſtudy; from the *viginti annorum lucubrationes*, which Forteſcue mentions; and from being long perſonally accuſtomed to the judicial deciſions of their predeceſſors. And indeed theſe judicial deciſions are the principal and moſt authoritative evidence, that can be given, of the exiſtence of ſuch a cuſtom as ſhall form a part of the common law. The judgment itſelf, and all the proceedings previous thereto, are carefully regiſtered and preſerved under the name of *records*, in public repoſitories ſet apart for that particular purpoſe; and to them frequent recourſe is had, when any critical queſtion ariſes, in the determination of which former precedents may give light or aſſiſtance. And therefore, even ſo early as the conqueſt, we find the *præteritorum memoria eventorum* reckoned up as one of the chief qualifications of thoſe who were held to be *legibus patriæ optime inſtituti*. For it is an eſtabliſhed rule, To abide by former precedents, where the ſame points come again in litigation: as well to keep the ſcale of juſtice even and ſteady, and not liable to waver with every new judge's opinion; as alſo becauſe the law in that caſe being ſolemnly declared and determined, what before was uncertain, and perhaps indifferent, is now become a permanent rule, which it is not in the breaſt of any ſubſequent judge to alter or vary from according to his private ſentiments: he being ſworn to determine, not according to his own private judgement, but according to the known laws and cuſtoms of the land; not delegated to pronounce a new law, but to maintain and expound the old one. Yet this rule admits of exception, where the former determination is moſt evidently contrary to reaſon; much more if it be contrary to the divine law. But, even in ſuch caſes, the ſubſequent judges do not pretend to make a new law, but to vindicate the old one from miſrepreſentation. For if it be found that the former deciſion is manifeſtly abſurd or unjuſt, it is declared, not that ſuch a ſentence was bad law, but that it was not law; that is, that it is not the eſtabliſhed cuſtom of the realm, as has been erroneouſly determined. And hence it is that our lawyers are with juſtice ſo copious in their encomiums on the reaſon of the common law; that they tell us, that the law is the perfection of reaſon, that it always intends to conform thereto, and that what is not reaſon is not law. Not that the particular reaſon of every rule in the law can at this diſtance of time be always preciſely aſſigned; but it is ſufficient that there be nothing in the rule flatly contradictory to reaſon, and then the law will preſume it to be well founded. And it hath been an ancient obſervation in the laws of England, that whenever a ſtanding rule of law, of which the reaſon perhaps could not be remembered or diſcerned, hath been wantonly broke in upon by ſtatutes or new reſolutions, the wiſdom of the rule hath in the end appeared from the inconveniences that have followed the innovation.

The doctrine of the law then is this: That precedents and rules muſt be followed, unleſs flatly abſurd or unjuſt: for though their reaſon be not obvious at firſt view, yet we owe ſuch a deference to former times, as not to ſuppoſe they acted wholly without conſideration. To illuſtrate this doctrine by examples. It has been determined, time out of mind, that a brother of the half blood ſhall never ſucceed as heir to the eſtate of his half brother, but it ſhall rather eſcheat to the king, or other ſuperior lord. Now this is a poſitive law, fixed and eſtabliſhed by cuſtom; which cuſtom is evidenced by judicial deciſions; and therefore can never be departed from by any modern judge without a breach of his oath and the law. For herein there is nothing repugnant to natural juſtice; though the artificial reaſon of it, drawn from the feodal law, may not be quite obvious to every body. And therefore, on account of a ſuppoſed hardſhip upon the half brother, a modern judge might wiſh it had been otherwiſe ſettled; yet it is not in his power to alter it. But if any court were now to determine, that an elder brother of the half blood might enter upon and ſeize any lands that were purchaſed by his younger brother, no ſubſequent judges would ſcruple to declare that ſuch prior determination was unjuſt, was unreaſonable, and therefore was not law. So that the law, and the opinion of the judge, are not always convertible terms, or one and the ſame thing; ſince it ſometimes may happen that the judge may miſtake the law. Upon the whole, however, we may take it as a general rule, "That the deciſions of courts of juſtice are the evidence of what is common law;" in the ſame manner as, in the civil law, what the emperor had once determined was to ſerve for a guide for the future.

The deciſions therefore of courts are held in the higheſt regard, and are not only preſerved as authentic records in the treaſuries of the ſeveral courts, but are handed out to public view in the numerous volumes of reports which furniſh the lawyer's library. Theſe reports are hiſtories of the ſeveral caſes, with a ſhort ſummary of the proceedings, which are preſerved at large in the record; the arguments on both ſides, and the reaſons the court gave for its judgment; taken down in ſhort notes by perſons preſent at the determination. And theſe ſerve as indexes to, and alſo to explain, the records; which always, in matters of conſequence and nicety, the judges direct to be ſearched. The reports are extant in a regular ſeries from the reign of king Edward the ſecond incluſive; and from his time to that of Henry the eighth were taken by the prothonotaries, or chief ſcribes of the court, at the expenſe of the crown, and publiſhed annually, whence they are known under the denomination of the *year-books*. And it is much to be wiſhed that this beneficial cuſtom had, under proper regulations, been continued to this day: for, though king James the firſt, at the inſtance of lord Bacon, appointed two reporters with a handſome ſtipend, for this purpoſe; yet that wiſe inſtitution was ſoon neglected, and from the reign of Henry the eighth to the preſent time this taſk has been executed by many private and cotemporary hands; who ſometimes through haſte and innacuracy, ſometimes through miſtake and want of ſkill, have publiſhed very crude and imperfect (perhaps contradictory) accounts of one and the ſame determination. Some of the moſt valuable of the ancient reports are thoſe publiſhed by lord chief juſtice Coke; a man of infinite learning in his profeſſion, though not a little infected with the pedantry and quaintneſs of the times he lived in, which appear ſtrongly in all his works. However, his writings are ſo highly eſteemed, that they are generally cited without the author's name (A).

Beſides theſe reporters, there are alſo other authors, to whom great veneration and reſpect are paid by the ſtudents of the common law. Such are Glanvil and Bracton, Britton and Fleta, Littleton and Fitzherbert, with ſome others of ancient date, whoſe treatiſes are cited as authority; and are evidence that caſes have formerly happened in which ſuch and ſuch points were determined, which are now become ſettled and firſt principles. One of the laſt of theſe methodical writers in point of time, whoſe works are of any intrinſic authority in the courts of juſtice, and do not entirely depend on the ſtrength of their quotations from older authors, is the ſame learned judge we have juſt mentioned, Sir Edward Coke; who hath written four volumes of Inſtitutes, as he is pleaſed to call them, though they have little of the inſtitutional method to warrant ſuch a title. The firſt volume is a very extenſive comment upon a little excellent treatiſe of tenures, compiled by judge Littleton in the reign of Edward the fourth. This comment is a rich mine of valuable common-law learning, collected and heaped together from the ancient reports and year-books, but greatly defective in method (B). The ſecond volume is a comment upon many old acts of parliament, without any ſyſtematical order; the third a more methodical treatiſe of the pleas of the crown; and the fourth an account of the ſeveral ſpecies of courts (C).

And thus much for the firſt ground and chief cornerſtone of the laws of England; which is general immemorial cuſtom, or common law, from time to time declared in the deciſions of the courts of juſtice; which deciſions are preſerved among the public records, explained in the reports, and digeſted for general uſe in the authoritative writings of the venerable ſages of the law.

The Roman law, as practiſed in the times of its liberty, paid alſo a great regard to cuſtom; but not ſo much as our law: it only then adopting it, when the written law was deficient. Though the reaſons alledged in the digeſt will fully juſtify our practice, in making it of equal authority with, when it is not contradicted by, the written law. "For ſince (ſays Julianus) the written law binds us for no other reaſon but becauſe it is approved by the judgment of the people, therefore thoſe laws which the people have approved without writing ought alſo to bind every body. For where is the difference, whether the people declare their aſſent to a law by ſuffrage, or by a uniform courſe of acting accordingly?" Thus did they reaſon while Rome had ſome remains of her freedom; but, when the imperial tyranny came to be fully eſtabliſhed, the civil laws ſpeak a very different language. *Quod principi placuit legis habet vigorem, cum populus ei et in eum omne ſuum imperium et poteſtatem conferat*, ſays Ulpian. *Imperator ſolus et conditor et interpres legis exiſtimatur*, ſays the code. And again, *Sacrilegii inſtar eſt reſcripto principis obviari*. And indeed it is one of the characteriſtic marks of Britiſh liberty, that the common law depends upon cuſtom; which carries this internal evidence of freedom along with it it, that it probably was introduced by the voluntary conſent of the people.

40 Second branch of the unwritten laws: Particular cuſtoms.

II. The ſecond branch of the unwritten laws of England are particular cuſtoms, or laws which affect only the inhabitants of particular diſtricts.

Theſe particular cuſtoms, or ſome of them, are without doubt the remains of that multitude of local cuſtoms before-mentioned, out of which the common law, as it now ſtands, was collected at firſt by king Alfred, and afterwards by king Edgar and Edward the confeſſor: each diſtrict mutually ſacrificing ſome of its own ſpecial uſages, in order that the whole kingdom

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(A) His reports, for inſtance, are ſtyled κατ' ἐξοχὴν, "the reports;" and in quoting them we uſually ſay, 1 or 2 Rep. not 1 or 2 Coke's Rep. as in citing other authors. The reports of judge Croke are alſo cited in a peculiar manner, by the name of thoſe princes in whoſe reigns the caſes reported in his three volumes were determined; viz. queen Elizabeth, king James, and king Charles the firſt; as well as by the number of each volume. For ſometimes we call them 1, 2, and 3 Cro.; but more commonly Cro. Eliz. Cro. Jac. and Cro. Car.

(B) It is uſually cited either by the name of Co. Litt. or as 1 Inſt.

(C) Theſe are cited as 2, 3, or 4 Inſt. without any author's name. An honorary diſtinction, which, we obſerved, is paid to the works of no other writer; the generality of reports and other tracts being quoted in the name of the compiler, as 2 Ventris, 4 Leonard, 1 Siderfin, and the like.

might enjoy the benefit of one uniform and univerſal ſyſtem of laws. But, for reaſons that have been now long forgotten, particular counties, cities, towns, manors, and lordſhips, were very early indulged with the privilege of abiding by their own cuſtoms, in contradiſtinction to the reſt of the nation at large: which privilege is confirmed to them by ſeveral acts of parliament.

Such is the cuſtom of gavelkind in Kent and ſome other parts of the kingdom (though perhaps it was alſo general till the Norman conqueſt); which ordains, among other things, that not the eldeſt ſon only of the father ſhall ſucceed to his inheritance, but all the ſons alike; and that, though the anceſtor be attainted and hanged, yet the heir ſhall ſucceed to his eſtate, without any eſcheat to the lord.---Such is the cuſtom that prevails in divers ancient boroughs, and therefore called *borough-engliſh*, that the youngeſt ſon ſhall inherit the eſtate, in preference to all his elder brothers.---Such is the cuſtom in other boroughs, that a widow ſhall be intitled, for her dower, to all her huſband's lands; whereas at the common law ſhe ſhall be endowed of one third part only.---Such alſo are the ſpecial and particular cuſtoms of manors, of which every one has more or leſs, and which bind all the copyhold tenants that hold of the ſaid manors.---Such likewiſe is the cuſtom of holding divers inferior courts, with power of trying cauſes, in cities and trading towns; the right of holding which, when no royal grant can be ſhewn, depends entirely upon immemorial and eſtabliſhed uſage.---Such, laſtly, are many particular cuſtoms within the city of London, with regard to trade, apprentices, widows, orphans, and a variety of other matters. All theſe are contrary to the general law of the land, and are good only by ſpecial uſage; though the cuſtoms of London are alſo confirmed by act of parliament.

To this head may moſt properly be referred a particular ſyſtem of cuſtoms uſed only among one ſet of the king's ſubjects, called the *cuſtom of merchants*, or *lex mercatoria:* which, however different from the general rules of the common law, is yet ingrafted into it, and made a part of it; being allowed, for the benefit of trade, to be of the utmoſt validity in all commercial tranſactions; for it is a maxim of law, that *cuilibet in ſua arte credendum eſt.*

41 The rules relating to particular cuſtoms regard either the *proof* of their exiſtence; their *legality* when proved; or their uſual method of *allowance*. And firſt we will conſider the rules of *proof*.

As to gavelkind, and borough-engliſh, the law takes particular notice of them; and there is no occaſion to prove, that ſuch cuſtoms actually exiſt, but only that the lands in queſtion are ſubject thereto. All other private cuſtoms muſt be particularly pleaded; and as well the exiſtence of ſuch cuſtoms muſt be ſhewn, as that the thing in diſpute is within the cuſtom alleged. The trial in both caſes (both to ſhew the exiſtence of the cuſtom, as, "that in the manor of Dale lands ſhall deſcend only to the heirs male, and never to the heirs female;" and alſo to ſhew "that the lands in queſtion are within that manor") is by a jury of 12 men, and not by the judges; except the ſame particular cuſtom has been before tried, determined, and recorded, in the ſame court.

The cuſtoms of London differ from all others in point of trial: for, if the exiſtence of the cuſtom be brought in queſtion, it ſhall not be tried by a jury, but by certificate from the lord mayor and aldermen by the mouth of their recorder; unleſs it be ſuch a cuſtom as the corporation is itſelf intereſted in, as a right of taking toll, &c. for then the law permits them not to certify on their own behalf.

When a cuſtom is actually proved to exiſt, the next inquiry is into the *legality* of it; for, if it is not a good cuſtom, it ought to be no longer uſed. *Malus uſus abolendus eſt*, is an eſtabliſhed maxim of the law. To make a particular cuſtom good, the following are neceſſary requiſites.

1. That it have been uſed ſo long, that the memory of man runneth not to the contrary. So that, if any one can ſhew the beginning of it, it is no good cuſtom. For which reaſon, no cuſtom can prevail againſt an expreſs act of parliament; ſince the ſtatute itſelf is a proof of a time when ſuch a cuſtom did not exiſt.

2. It muſt have been *continued*. Any interruption would cauſe a temporary ceaſing: the revival gives it a new beginning, which will be within time of memory, and thereupon the cuſtom will be void. But this muſt be underſtood with regard to an interruption of the right; for an interruption of the poſſeſſion only, for 10 or 20 years, will not deſtroy the cuſtom. As if the inhabitants of a pariſh have a cuſtomary right of watering their cattle at a certain pool, the cuſtom is not deſtroyed though they do not uſe it for 10 years; it only becomes more difficult to prove: but if the right be any how diſcontinued for a day, the cuſtom is quite at an end.

3. It muſt have been *peaceable*, and acquieſced in; not ſubject to contention and diſpute. For as cuſtoms owe their original to common conſent, their being immemorially diſputed, either at law or otherwiſe, is a proof that ſuch conſent was wanting.

4. Cuſtoms muſt be *reaſonable*; or rather, taken negatively, they muſt not be unreaſonable. Which is not always, as Sir Edward Coke ſays, to be underſtood of every unlearned man's reaſon; but of artificial and legal reaſon, warranted by authority of law. Upon which account a cuſtom may be good, though the particular reaſon of it cannot be aſſigned; for it ſufficeth, if no good legal reaſon can be aſſigned againſt it. Thus a cuſtom in a pariſh, that no man ſhall put his beaſts into the common till the third of October, would be good; and yet it would be hard to ſhew the reaſon why that day in particular is fixed upon, rather than the day before or after. But a cuſtom, that no cattle ſhall be put in till the lord of the manor has firſt put in his, is unreaſonable, and therefore bad: for peradventure the lord will never put in his; and then the tenants will loſe all their profits.

5. Cuſtoms ought to be *certain*. A cuſtom, that lands ſhall deſcend to the moſt worthy of the owner's blood, is void; for how ſhall this worth be determined? but a cuſtom to deſcend to the next male of the blood excluſive of females, is certain, and therefore good. A cuſtom to pay two pence an acre in lieu of tithes, is good; but to pay ſometimes two pence and ſometimes three pence, as the occupier of the land pleaſes, is bad for its uncertainty. Yet a cuſtom, to pay a year's improved value for a fine on a copyhold eſtate, is good; though

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though the value is a thing uncertain: for the value may at any time be aſcertained; and the maxim of law is, *Id certum eſt, quod certum reddi poteſt.*

6. Cuſtoms, though eſtabliſhed by conſent, muſt be (when eſtabliſhed) *compulſory:* and not left to the option of every man, whether he will uſe them or no. Therefore a cuſtom, that all the inhabitants ſhall be rated toward the maintenance of a bridge, will be good; but a cuſtom, that every man is to contribute thereto at his own pleaſure, is idle and abſurd, and indeed no cuſtom at all.

7. Laſtly, cuſtoms muſt be *conſiſtent* with each other. One cuſtom cannot be ſet up in oppoſition to another. For if both are really cuſtoms, then both are of equal antiquity, and both eſtabliſhed by mutual conſent: which to ſay of contradictory cuſtoms, is abſurd. Therefore, if one man preſcribes that by cuſtom he has a right to have windows looking into another's garden; the other cannot claim a right by cuſtom to ſtop up or obſtruct thoſe windows: for theſe two contradictory cuſtoms cannot both be good, nor both ſtand together. He ought rather to deny the exiſtence of the former cuſtom.

Next, as to the *allowance* of ſpecial cuſtoms. Cuſtoms, in derogation of the common law, muſt be conſtrued ſtrictly. Thus, by the cuſtom of gavelkind, an infant of 15 years may by one ſpecies of conveyance (called *a deed of feoffment*) convey away his lands in fee ſimple, or for ever. Yet this cuſtom does not impower him to uſe any other conveyance, or even to leaſe them for ſeven years: for the cuſtom muſt be ſtrictly purſued. And, moreover, all ſpecial cuſtoms muſt ſubmit to the king's prerogative. Therefore, if the king purchaſes lands of the nature of gavelkind, where all the ſons inherit equally; yet, upon the king's demiſe, his eldeſt ſon ſhall ſucceed to thoſe lands alone. And thus much for the ſecond part of the *leges non ſcriptæ*, or thoſe particular cuſtoms which affect particular perſons or diſtricts only.

42 d ch of unwrit- laws.

III. The third branch of them are thoſe peculiar laws which by cuſtom are adopted and uſed only in certain peculiar courts and juriſdictions. And by theſe are underſtood the civil and canon laws.

It may ſeem a little improper, at firſt view, to rank theſe laws under the head of *leges non ſcriptæ*, or unwritten laws, ſeeing they are ſet forth by authority in their pandects, their codes, and their inſtitutions; their councils, decrees, and decretals; and enforced by an immenſe number of expoſitions, deciſions, and treatiſes of the learned in both branches of the law. But this is done after the example of Sir Matthew Hale, becauſe it is moſt plain, that it is not on account of their being written laws, that either the canon law, or the civil law, have any obligation within this kingdom: neither do their force and efficacy depend upon their own intrinſic authority; which is the caſe of our written laws or acts of parliament. They bind not the ſubjects of England, becauſe their materials were collected from popes or emperors; were digeſted by Juſtinian, or declared to be authentic by Gregory. Theſe conſiderations give them no authority here: for the legiſlature of England doth not, nor ever did, recognize any foreign power, as ſuperior or equal to it in this kingdom; or as having the right to give law to any, the meaneſt, of it ſubjects. But all the ſtrength that either the papal or imperial laws have obtained in this realm (or indeed in any other kingdom in Europe) is only becauſe they have been admitted and received by immemorial uſage and cuſtom in ſome particular caſes, and ſome particular courts; and then they form a branch of the *leges non ſcriptæ*, or cuſtomary law: or elſe, becauſe they are in ſome other caſes introduced by conſent of parliament, and then they owe their validity to the *leges ſcriptæ*, or ſtatute law. This is expreſsly declared in thoſe remarkable words of the ſtatute 25 Hen. VIII. c. 21. addreſſed to the king's royal majeſty.---"This your grace's realm, recognizing no ſuperior under God but only your grace, hath been "and is free from ſubjection to any man's laws, but "only to ſuch as have been deviſed, made, and ordained within this realm for the wealth of the ſame; "or to ſuch other as, by ſufferance of your grace and "your progenitors, the people of this your realm have "taken at their free liberty, by their own conſent, to "be uſed among them; and have bound themſelves "by long uſe and cuſtom to the obſervance of the "ſame: not as to the obſervance of the laws of any "foreign prince, potentate, or prelate; but as to the "cuſtomed and ancient laws of this realm, originally "eſtabliſhed as laws of the ſame, by the ſaid ſufferance, conſents, and cuſtom; and none otherwiſe."

43 Civil law.

1. By the civil law, abſolutely taken, is generally underſtood the civil or municipal law of the Roman empire, as compriſed in the inſtitutes, the code, and the digeſt of the emperor Juſtinian, and the novel conſtitutions of himſelf and ſome of his ſucceſſors; of which it may not be amiſs to give a ſhort and general account.

The Roman law (founded firſt upon the regal conſtitutions of their ancient kings, next upon the 12 tables of the decemviri, then upon the laws or ſtatutes enacted by the ſenate or people, the edicts of the prætor, and the *reſponſa prudentum* or opinions of learned lawyers, and laſtly upon the imperial decrees or conſtitutions of ſucceſſive emperors) had grown to ſo great a bulk, or, as Livy expreſſes it, *tam immenſus aliarum ſuper alias acervatarum legum cumulus*, that they were computed to be many camels load by an author who preceded Juſtinian. This was in part remedied by the collections of three private lawyers, Gregorius, Hermogenes, and Papirius; and then by the emperor Theodoſius the younger, by whoſe orders a code was compiled, A. D. 438, being a methodical collection of all the imperial conſtitutions then in force: which Theodoſian code was the only book of civil law received as authentic in the weſtern part of Europe, till many centuries after; and to this it is probable that the Franks and Goths might frequently pay ſome regard, in framing legal conſtitutions for their newly erected kingdoms. For Juſtinian commanded only in the eaſtern remains of the empire; and it was under his auſpices, that the preſent body of civil law was compiled and finiſhed by Tribonian and other lawyers, about the year 533.

44

This conſiſts of, 1. The inſtitutes; which contain the elements or firſt principles of the Roman law, in four books. 2. The digeſts or pandects, in 50 books; containing the opinions and writings of eminent lawyers, digeſted in a ſyſtematical method. 3. A new code, or collection of imperial conſtitutions; the lapſe of a whole century having rendred the former code of Theodoſius imperfect. 4. The novels, or new conſtitutions, poſterior in time to the other books, and amounting to a ſupplement to the code; containing new decrees of ſucceſſive emperors, as new queſtions happened to ariſe. Theſe form the body of Roman law, or *corpus juris civilis*, as publiſhed about the time of Juſtinian: which, however, fell ſoon into neglect and oblivion, till about the year 1130, when a copy of the digeſts was found at Amalfi in Italy; which accident, concurring with the policy of the Roman eccleſiaſtics, ſuddenly gave new vogue and authority to the civil law, introduced it into ſeveral nations, and occaſioned that mighty inundation of voluminous comments, with which this ſyſtem of law, more than any other, is now loaded.

45 Canon law. 2. The canon law is a body of Roman eccleſiaſtical law, relative to ſuch matters as that church either has, or pretends to have, the proper juriſdiction over. This is compiled from the opinions of the ancient Latin fathers, the decrees of general councils, the decretal epiſtles and bulles of the holy ſee. All which lay in the ſame diſorder and confuſion as the Roman civil law: till, about the year 1151, one Gratian an Italian monk, animated by the diſcovery of Juſtinian's pandects, reduced the eccleſiaſtical conſtitutions alſo into ſome method, in three books; which he entitled *Concordia diſcordantium canonum*, but which are generally known by the name of *Decretum Gratiani*. Theſe reached as low as the time of pope Alexander III. The ſubſequent papal decrees, to the pontificate of Gregory IX. were publiſhed in much the ſame method under the auſpices of that pope, about the year 1230, in five books; entitled *Decretalia Gregorii noni*. A ſixth book was added by Boniface VIII. about the year 1298, which is called *Sextus Decretalium*. The Clementine conſtitutions, or decrees of Clement V. were in like manner authenticated in 1317 by his ſucceſſor John XXII.; who alſo publiſhed 20 conſtitutions of his own, called the *Extravagantes Joannis*: all which in ſome meaſure anſwer to the novels of the civil law. To theſe have been ſince added ſome decrees of later popes in five books, called *Extravagantes Communes*. And all theſe together, Gratian's decree, Gregory's decretals, the ſixth decretal, the Clementine conſtitutions, and the extravagants of John and his ſucceſſors, form the *corpus juris canonici*, or body of the Roman canon law.

Beſides theſe pontifical collections, which during the times of popery were received as authentic in this iſland, as well as in other parts of Chriſtendom, there is alſo a kind of national canon law, compoſed of legatine and provincial conſtitutions, and adapted only to the exigencies of this church and kingdom. The legatine conſtitutions were eccleſiaſtical laws, enacted in national ſynods, held under the cardinals Otho and Othobon, legates from pope Gregory IX. and pope Clement IV. in the reign of king Henry III. about the years 1220 and 1268. The provincial conſtitutions are principally the decrees of provincial ſynods, held under divers archbiſhops of Canterbury, from Stephen Langton in the reign of Henry III. to Henry Chichele in the reign of Henry V.; and adopted alſo by the province of York in the reign of Henry VI. At the dawn of the reformation, in the reign of king Henry VIII. it was enacted in parliament, that a review ſhould be had of the canon law; and till ſuch review ſhould be made, all canons, conſtitutions, ordinances and ſynodals provincial, being then already made, and not repugnant to the law of the land or the king's prerogative, ſhould ſtill be uſed and executed. And, as no ſuch review has yet been perfected, upon this ſtatute now depends the authority of the canon law in England.

As for the canons enacted by the clergy under James I. in the year 1603, and never confirmed in parliament, it has been ſolemnly adjudged upon the principles of law and the conſtitution, that where they are not merely declaratory of the ancient canon law, but are introductory of new regulations, they do not bind the laity, whatever regard the clergy may think proper to pay them.

46 There are four ſpecies of courts, in which the civil and canon laws are permitted under different reſtrictions to be uſed. 1. The courts of the archbiſhops and biſhops, and their derivative officers; uſually called *courts Chriſtian, (curiæ Chriſtianitatis)*, or the *eccleſiaſtical courts*. 2. The military courts. 3. The courts of admiralty. 4. The courts of the two univerſities. In all, their reception in general, and the different degrees of that reception, are grounded entirely upon cuſtom; corroborated in the latter inſtance by act of parliament, ratifying thoſe charters which confirm the cuſtomary law of the univerſities. The more minute conſideration of them will fall under their proper articles. It will ſuffice at preſent to remark a few particulars relative to them all, which may ſerve to inculcate more ſtrongly the doctrine laid down concerning them.

1. And firſt, the courts of common law have the ſuperintendency over theſe courts; to keep them within their juriſdictions; to determine wherein they exceed them; to reſtrain and prohibit ſuch exceſs; and (in caſe of contumacy) to puniſh the officer who executes, and in ſome caſes the judge who enforces, the ſentence ſo declared to be illegal.

2. The common law has reſerved to itſelf the expoſition of all ſuch acts of parliament, as concern either the extent of theſe courts, or the matters depending before them. And therefore, if theſe courts either refuſe to allow theſe acts of parliament, or will expound them in any other ſenſe than what the common law puts upon them, the king's courts at Weſtminſter will grant prohibitions to reſtrain and control them.

3. An appeal lies from all theſe courts to the king, in the laſt reſort; which proves that the juriſdiction exerciſed in them is derived from the crown of England, and not from any foreign potentate, or intrinſic authority of their own.---And, from theſe three ſtrong marks and enſigns of ſuperiority, it appears beyond a doubt, that the civil and canon laws, though admitted in ſome caſes by cuſtom in ſome courts, are only ſubordinate and *leges ſub graviori lege*; and that thus admitted, reſtrained, altered, new-modelled, and amended, they are by no means with us a diſtinct independent ſpecies of laws, but are inferior branches of the cuſtomary or unwritten laws of England, properly called the *king's eccleſiaſtical, the king's military, the king's maritime, or the king's academical, laws*.

Let us next proceed to the *leges ſcriptæ*, the written laws of the kingdom; which are ſtatutes, acts, or edicts, made by the king's majeſty, by and with the advice of the lords ſpiritual and temporal and commons in parliament aſſembled. The oldeſt of theſe now extant, and printed in our ſtatute books, is the famous *magna carta*, as confirmed in parliament 9 Hen. III. though doubtleſs there were many acts before that time, the records of which are now loſt, and the determinations of them perhaps at preſent currently received for the maxims of the old common law.

47 written

The manner of making theſe ſtatutes being explained under the articles BILL and PARLIAMENT, we ſhall here only take notice of the different kinds of ſtatutes; and of ſome general rules with regard to their conſtruction (D).

48 s of es.

Firſt, as to their ſeveral kinds. Statutes are either *general* or *ſpecial*, public or private. A general or public act is an univerſal rule that regards the whole community: and of this the courts of law are bound to take notice judicially and *ex officio*, without the ſtatute being particularly pleaded, or formally ſet forth, by the party who claims an advantage under it. Special or private acts are rather exceptions than rules, being thoſe which only operate upon particular perſons and private concerns; ſuch as the Romans entitled *ſenatus-decreta*, in contradiſtinction to the *ſenatus-conſulta*, which regarded the whole community; and of theſe the judges are not bound to take notice, unleſs they be formally ſhewn and pleaded. Thus, to ſhew the diſtinction, the ſtatute 13 Eliz. c. 10. to prevent ſpiritual perſons from making leaſes for longer terms than 21 years or three lives, is a public act; it being a rule preſcribed to the whole body of ſpiritual perſons in the nation: but an act to enable the biſhop of Cheſter to make a leaſe to A. B. for 60 years, is an exception to this rule; it concerns only the parties and the biſhop's ſucceſſors, and is therefore a private act.

Statutes alſo are either *declaratory* of the common law, or *remedial* of ſome defects therein. Declaratory, where the old cuſtom of the kingdom is almoſt fallen into diſuſe, or become diſputable; in which caſe the parliament has thought proper, *in perpetuum rei teſtimonium*, and for avoiding all doubts and difficulties, to declare what the common law is and ever hath been. Thus the ſtatute of treaſons, 25 Edw. III. cap. 2. doth not make any new ſpecies of treaſons; but only, for the benefit of the ſubject, declares and enumerates thoſe ſeveral kinds of offence which before were treaſon at the common law. Remedial ſtatutes are thoſe which are made to ſupply ſuch defects, and abridge ſuch ſuperfluities, in the common law, as ariſe either from the general imperfection of all human laws, from change of time and circumſtances, from the miſtakes and unadviſed determinations of unlearned judges, or from any other cauſe whatſoever. And this being done, either by enlarging the common law where it was too narrow and circumſcribed, or by reſtraining it where it was too lax and luxuriant, hath occaſioned another ſubordinate diviſion of remedial acts of parliament into *enlarging* and *reſtraining* ſtatutes. To inſtance again in the caſe of treaſon. Clipping the current coin of the kingdom was an offence not ſufficiently guarded againſt by the common law: therefore it was thought expedient by ſtatute 5 Eliz. c. 11. to make it high treaſon, which it was not at the common law: ſo that this was an *enlarging* ſtatute. At common law, alſo, ſpiritual corporations might leaſe out their eſtates for any term of years, till prevented by the ſtatute 13 Eliz. before-mentioned: this was therefore a *reſtraining* ſtatute.

49 Conſtruction of ſtatutes.

Secondly, the rules to be obſerved with regard to the conſtruction of ſtatutes are principally theſe which follow.

1. There are three points to be conſidered in the conſtruction of all remedial ſtatutes; the old law, the miſchief, and the remedy: that is, how the common law ſtood at the making of the act; what the miſchief was, for which the common law did not provide; and what remedy the parliament hath provided to cure this miſchief. And it is the buſineſs of the judges ſo to conſtrue the act, as to ſuppreſs the miſchief and advance the remedy. Let us inſtance again in the ſame reſtraining ſtatute of 13 Eliz. c. 10. By the common law, eccleſiaſtical corporations might let as long leaſes as they thought proper: the miſchief was, that they let long and unreaſonable leaſes, to the impoveriſhment of their ſucceſſors: the remedy applied by the ſtatute was by making void all leaſes by eccleſiaſtical bodies for longer terms than three lives or 21 years. Now in the conſtruction of this ſtatute it is held, that leaſes, tho' for a longer term, if made by a biſhop, are not void during the biſhop's continuance in his fee; or, if made by a dean and chapter, they are not void during the continuance of the dean; for the act was made for the benefit and protection of the ſucceſſor. The miſchief is therefore ſufficiently ſuppreſſed by vacating them after the determination of the intereſt of the granters; but the leaſes, during their continuance, being not within the miſchief, are not within the remedy.

2. A ſtatute, which treats of things or perſons of an inferior rank, cannot by any *general words* be extended to thoſe of a ſuperior. So a ſtatute, treating of "deans, prebendaries, parſons, vicars, *and others* having

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(D) The method of citing theſe acts of parliament is various. Many of the ancient ſtatutes are called after the name of the place where the parliament was held that made them; as the ſtatutes of Merton and Marleberge, of Weſtminſter, Glocester, and Wincheſter. Others are denominated entirely from their ſubject; as the ſtatutes of Wales and Ireland, the *articuli cleri*, and the *prerogativa regis*. Some are diſtinguiſhed by their initial words, a method of citing very ancient: being uſed by the Jews, in denominating the books of the pentateuch; by the Chriſtian church, in diſtinguiſhing their hymns and divine offices; by the Romaniſts, in deſcribing their papal bulles; and in ſhort by the whole body of ancient civilians and canoniſts, among whom this method of citation generally prevailed, not only with regard to chapters, but inferior ſections alſo; in imitation of all which we ſtill call ſome of the old ſtatutes by their initial words, as the ſtatute of *quia emptores*, and that of *circumſpecte agatis*. But the moſt uſual method of citing them, eſpecially ſince the time of Edward the ſecond, is by naming the year of the king's reign in which the ſtatute was made, together with the chapter or particular act, according to its numeral order; as, 9 Geo. II. c. 4. For all the acts of one ſeſſion of parliament taken together make properly but one ſtatute: and therefore, when two ſeſſions have been held in one year, we uſually mention ſtat. 1. or 2. Thus the bill of rights is cited, as 1 W. & M. ſt. 2. c. 2. ſignifying that it is the ſecond chapter or act of the ſecond ſtatute or the laws made in the ſecond ſeſſions of parliament held in the firſt year of king William and queen Mary.

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having ſpiritual promotion," is held not to extend to biſhops, though they have ſpiritual promotion; deans being the higheſt perſons named, and biſhops being of a ſtill higher order.

3. Penal ſtatutes muſt be conſtrued ſtrictly. Thus the ſtatute 1 Edw. VI. c. 12. having enacted that thoſe who are convicted of ſtealing *horſes* ſhould not have the benefit of clergy, the judges conceived that this did not extend to him who ſhould ſteal but one *horſe*, and therefore procured a new act for that purpoſe in the following year. And, to come nearer to our own times, by the ſtatute 14 Geo. II. c. 6. ſtealing ſheep *or other cattle*, was made felony without benefit of clergy. But theſe general words, "or other cattle," being looked upon as much too looſe to create a capital offence, the act was held to extend to nothing but mere ſheep. And therefore, in the next ſeſſions, it was found neceſſary to make another ſtatute, 15 Geo. II. c. 34. extending the former to bulls, cows, oxen, ſteers, bullocks, heifers, calves, and lambs, by name.

4. Statutes againſt frauds are to be liberally and beneficially expounded. This may ſeem a contradiction to the laſt rule; moſt ſtatutes againſt frauds being in their conſequences penal. But this difference is here to be taken: where the ſtatute acts upon the offender, and inflicts a penalty, as the pillory or a fine, it is then to be taken ſtrictly; but when the ſtatute acts upon the offence, by ſetting aſide the fradulent tranſaction, here it is to be conſtrued liberally. Upon this footing the ſtatute of 13 Eliz. c. 5. which voids all gifts of goods, *&c.* made to defraud creditors *and others*, was held to extend by the general words to a gift made to defraud the queen of a forfeiture.

5. One part of a ſtatute muſt be ſo conſtrued by another, that the whole may (if poſſible) ſtand: *ut res magis valeat quam pereat*. As if land be veſted in the king and his heirs by act of parliament, ſaving the right of A; and A has at that time a leaſe of it for three years; here A ſhall hold it for his term of three years, and afterwards it ſhall go to the king. For this interpretation furniſhes matter for every clauſe of the ſtatute to work and operate upon. But,

6. A ſaving, totally repugnant to the body of the act, is void. If therefore an act of parliament veſts land in the king and his heirs, ſaving the right of all perſons whatſoever; or veſts the land of A in the king, ſaving the right of A: in either of theſe caſes the ſaving is totally repugnant to the body of the ſtatute, and (if good) would render the ſtatute of no effect or operation; and therefore the ſaving is void, and the land veſts abſolutely in the king.

7. Where the common law and a ſtatute differ, the common law gives place to the ſtatute; and an old ſtatute gives place to a new one. And this upon the general principle laid down in the laſt ſection, that *leges poſteriores priores contrarias abrogant*. But this is to be underſtood, only when the latter ſtatute is couched in negative terms, or by its matter neceſſarily implies a negative. As if a former act ſays, that a juror upon ſuch a trial ſhall have twenty pounds a-year, and a new ſtatute comes and ſays he ſhall have twenty merks; here the latter ſtatute, tho' it does not expreſs, yet neceſſarily implies, a negative, and virtually repeals the former. For if twenty marks be made qualification ſufficient, the former ſtatute which requires twenty pounds is at an end. But if both acts be merely affirmative, and the ſubſtance ſuch that both may ſtand together, here the latter does not repeal the former, but they ſhall both have a concurrent efficacy. If by a former law an offence be indictable at the quarter-ſeſſions, and a later law makes the ſame offence indictable at the aſſizes; here the juriſdiction of the ſeſſions is not taken away, but both have a concurrent juriſdiction, and the offender may be proſecuted at either: unleſs the new ſtatute ſubjoins expreſs negative words; as, that the offence ſhall be indictable at the aſſizes, *and not elſewhere*.

8. If a ſtatute, that repeals another, is itſelf repealed afterwards, the firſt ſtatute is hereby revived, without any formal words for that purpoſe. So when the ſtatutes of 26 and 35 Hen. VIII. declaring the king to be the ſupreme head of the church, were repealed by a ſtatute 1 and 2 Philip and Mary, and this latter ſtatute was afterwards repealed by an act of 1 Eliz. there needed not any expreſs words of revival in queen Elizabeth's ſtatute, but theſe acts of king Henry were impliedly and virtually revived.

9. Acts of parliament derogatory from the power of ſubſequent parliaments bind not. So the ſtatute 11 Hen. VII. c. 1. which directs, that no perſon for aſſiſting a king *de facto* ſhall be attainted of treaſon by act of parliament or otherwiſe, is held to be good only as to common proſecutions for high treaſon; but will not reſtrain or clog any parliamentary attainder. Becauſe the legiſlature, being in truth the ſovereign power, is always of equal, always of abſolute authority: it acknowleges no ſuperior upon earth, which the prior legiſlature muſt have been if its ordinances could bind the preſent parliament. And upon the ſame principle Cicero, in his letters to Atticus, treats with a proper contempt theſe reſtraining clauſes, which endeavour to tie up the hands of ſucceeding legiſlatures. "When you repeal the law itſelf, (ſays he,) you at the ſame time repeal the prohibitory clauſe which guards againſt ſuch repeal."

10. Laſtly, acts of parliament that are impoſſible to be performed are of no validity: and if there ariſe out of them collaterally any abſurd conſequences, manifeſtly contradictory to common reaſon, they are with regard to thoſe collateral conſequences void. We lay down the rule with theſe reſtrictions; though we know it is generally laid down more largely, that acts of parliament contrary to reaſon are void. But if the parliament will poſitively enact a thing to be done which is unreaſonable, we know of no power that can control it: and the examples uſually alleged in ſupport of this ſenſe of the rule do none of them prove, that, where the main object of a ſtatute is unreaſonable, the judges are at liberty to reject it; for that were to ſet the judicial power above that of the legiſlature, which would be ſubverſive of all government. But where ſome collateral matter ariſes out of the general words, and happens to be unreaſonable; there the judges are in decency to conclude that this conſequence was not foreſeen by the parliament, and therefore they are at liberty to expound the ſtatute by equity, and only *quoad hoc* diſregard it. Thus if an act of parliament gives a man power to try all cauſes that ariſe within his manor of Dale; yet, if a cauſe ſhould ariſe in which he himſelf is party, the act is conſtrued not to extend to that, becauſe it is unreaſonable that any man ſhould

determine his own quarrel. But, if we could conceive it poſſible for the parliament to enact, that he ſhould try as well his own cauſes as thoſe of other perſons, there is no court that has power to defeat the intent of the legiſlature, when couched in ſuch evident and expreſs words as leave no doubt whether it was the intent of the legiſlature or no.

Theſe are the ſeveral grounds of the laws of England: over and above which, equity is alſo frequently called in to aſſiſt, to moderate, and to explain them. What equity is, and how impoſſible in its very eſſence to be reduced to ſtated rules, hath been ſhewn above. It may be ſufficient, therefore, to add in this place, that (beſides the liberality of ſentiment with which our common-law judges interpret acts of parliament, and ſuch rules of the unwritten law as are not of a poſitive kind) there are alſo courts of equity eſtabliſhed for the benefit of the ſubject, to detect latent frauds and concealments, which the proceſs of the courts of law is not adapted to reach; to enforce the execution of ſuch matters of truſt and confidence, as are binding in conſcience, though not cognizable in a court of law; to deliver from ſuch dangers as are owing to miſfortune or overſight; and to give a more ſpecific relief, and more adapted to the circumſtances of the caſe, than can always be obtained by the generality of the rules of the poſitive or common law. This is the buſineſs of the courts of equity, which however are only converſant in matters of property. For the freedom of our conſtitution will not permit, that in criminal caſes a power ſhould be lodged in any judge to conſtrue the law otherwiſe than according to the letter. This caution, while it admirably protects the public liberty, can never bear hard upon individuals. A man cannot ſuffer *more* puniſhment than the law aſſigns, but he may ſuffer *leſs*. The laws cannot be ſtrained by partiality to inflict a penalty beyond what the letter will warrant; bnt, in caſes where the letter induces any apparent hardſhip, the crown has the power to pardon.

The objects of the laws of England are, 1. The rights of perſons. 2. The rights of things. 3. Private wrongs. 4. Public wrongs.

CHAP. I.

Of the RIGHTS *of* PERSONS.

v.]

SECT. I. *Of the abſolute rights of individuals.*

(1.) THE objects of the *Laws* of England are, 1. *Rights*, 2. *Wrongs*.

(2.) *Rights* are the rights of *perſons*, or the rights of *things*.

(3.) The rights of *perſons* are ſuch as concern, and are annexed to, the perſons of men: and, when the perſon *to* whom they are due is regarded, they are called (ſimply) *rights*; but, when we conſider the perſon *from* whom they are due, they are then denominated *duties*.

(4.) *Perſons* are either *natural*, that is, ſuch as they are formed by nature; or *artificial*, that is, created by human policy, as bodies politic or *corporations*.

(5.) The rights of *natural* perſons are, 1. *Abſolute*, or ſuch as belong to individuals. 2. *Relative*, or ſuch as regard members of ſociety.

(6.) The *abſolute rights of individuals*, regarded by the municipal laws, (which pay no attention to *duties* of the abſolute kind) compoſe what is called political or civil *liberty*.

(7.) Political or civil *liberty* is the natural liberty of mankind, ſo far reſtrained by human laws as is neceſſary for the good of ſociety.

(8.) The abſolute rights or civil liberties of Engliſhmen, as frequently declared in parliament, are principally three; the right of *perſonal ſecurity*, of *perſonal liberty*, and of *private property*.

(9.) The right of *perſonal ſecurity* conſiſts in the legal enjoyment of life, limb, body, health, and reputation.

(10.) The right of *perſonal liberty* conſiſts in the free power of loco-motion, without illegal reſtraint or baniſhment.

(11.) The right of *private property* conſiſts in every man's free uſe and diſpoſal of his own lawful acquiſitions, without injury or illegal diminution.

(12.) Beſides theſe three *primary* rights, there are others which are *ſecondary* and ſubordinate; *viz.* (to preſerve the former from unlawful attacks) 1. The conſtitution and power of parliaments; 2. The limitation of the king's prerogative:—And (to vindicate them when actually violated) 3. The regular adminiſtration of public juſtice; 4. The right of petitioning for redreſs of grievances; 5. The right of having and uſing arms for ſelf-defence.

SECT. II. *Of the parliament.* [xlv.]

(1.) THE *relations* of perſons are, 1. *Public*. 2. *Private*. The *public* relations are thoſe of *magiſtrates* and *people*. *Magiſtrates* are *ſupreme* or *ſubordinate*. And of *ſupreme* magiſtrates, in England, the *parliament* is the ſupreme *legiſlative*, the *king* the ſupreme *executive*.

(2.) *Parliaments*, in ſome ſhape, are of as high antiquity as the Saxon government in this iſland; and have ſubſiſted, in their preſent form, at leaſt five hundred years.

(3.) The parliament is aſſembled by the king's writs, and its ſitting muſt not be intermitted above three years.

(4.) Its conſtituent parts are the king's majeſty, the lords ſpiritual and temporal, and the commons repreſented by their members: each of which parts has a negative, or neceſſary, voice in making laws.

(5.) With regard to the *general* law of parliament; its power is abſolute: each houſe is the judge of its own privileges; and all the members of either houſe are entitled to the privilege of ſpeech, of perſon, of their domeſtics, and of their lands and goods.

(6.) The *peculiar* privileges of the lords (beſides their judicial capacity) are to hunt in the king's foreſts; to be attended by the ſages of the law; to make proxies; to enter proteſts; and to regulate the election of the 16 peers of North-Britain.

(7.) The *peculiar* privileges of the commons are to frame taxes for the ſubject; and to determine the merits of their own elections, with regard to the qualifications of the electors and elected, and the proceedings at elections themſelves.

(8.) Bills are uſually twice read in each houſe, committed, engroſſed, and then read a third time; and when they have obtained the concurrence of both houſes, and received the royal aſſent, they become *acts* of parliament.

(9.) The houſes may adjourn themſelves; but the king only can prorogue the parliament.

(10.) Parliaments are diſſolved, 1. At the king's will. 2. By the demiſe of the crown, that is, within ſix months after. 3. By length of time, or having ſat for the ſpace of ſeven years.

[xlvi.] SECT. III. *Of the king and his title.*

(1.) THE ſupreme *executive* power of this kingdom is lodged in a ſingle perſon; the king or queen.

(2.) This royal perſon may be conſidered with regard to, 1. His title. 2. His royal family. 3. His councils. 4. His duties. 5. His prerogative. 6. His revenue.

(3.) With regard to his *title*; the crown of England, by the poſitive conſtitution of the kingdom, hath ever been deſcendible, and ſo continues.

(4.) The crown is deſcendible in a courſe peculiar to itſelf.

(5.) This courſe of deſcent is ſubject to limitation by parliament.

(6.) Notwithſtanding ſuch limitations, the crown retains its deſcendible quality, and becomes hereditary in the prince to whom it is limited.

(7.) King Egbert, king Canute, and king William I. have been ſucceſſively conſtituted the common ſtocks, or anceſtors, of this deſcent.

(8.) At the revolution the convention of eſtates, or repreſentative body of the nation, declared, that the miſconduct of king James II. amounted to an abdication of the government, and that the throne was thereby *vacant*.

(9.) In conſequence of this vacancy, and from a regard to the ancient line, the convention appointed the next proteſtant heirs of the blood royal of king Charles I. to fill the vacant throne, in the old order of ſucceſſion; with a temporary exception, or preference, to the perſon of king William III.

(10.) On the impending failure of the proteſtant line of king Charles I. (whereby the throne might again have become vacant) the king and parliament extended the ſettlement of the crown to the proteſtant line of king James I. viz. to the princeſs Sophia of Hanover, and the heirs of her body, being Proteſtants: And ſhe is now the common ſtock, from whom the heirs of the crown muſt deſcend.

[xlvii.] SECT. IV. *Of the king's royal family.*

(1.) THE king's royal *family* conſiſts, firſt, of the *queen*: who is regnant, conſort, or dowager.

(2.) The queen *conſort* is a public perſon, and hath many perſonal prerogatives and diſtinct revenues.

(3.) The prince and princeſs of Wales, and the princeſs-royal, are peculiarly regarded by the law.

(4.) The other princes of the blood-royal are only intitled to precedence.

[xlviii.] SECT. V. *Of the councils belonging to the king.*

(1.) THE *king's councils* are, 1. The *parliament*. 2. The great council of *peers*. 3. The *judges*, for matters of law. 4. The *privy* council.

(2.) In *privy-counſellors* may be conſidered, 1. Their creation. 2. Their qualifications. 3. Their duties. 4. Their powers. 5. Their privileges. 6. Their diſſolution.

[xlix.] SECT. VI. *Of the king's duties.*

(1.) THE *king's duties* are to govern his people according to law, to execute judgment in mercy, and to maintain the eſtabliſhed religion. Theſe are his part of the original contract between himſelf and the people; founded in the nature of ſociety, and expreſſed in his oath at the coronation.

SECT. VII. *Of the king's prerogative.* l.

(1.) PREROGATIVE is that ſpecial power and preeminence, which the king hath above other perſons, and out of the ordinary courſe of law, in right of his regal dignity.

(2.) Such *prerogatives* are either *direct*, or *incidental*. The *incidental*, ariſing out of other matters, are conſidered as they ariſe: We now treat only of the *direct*.

(3.) The *direct* prerogatives regard, 1. The *king's dignity*, or royal character; 2. His *authority*, or regal power; 3. His *revenue*, or royal income.

(4.) The *king's dignity* conſiſts in the legal attributes of, 1. Perſonal ſovereignty. 2. Abſolute perfection. 3. Political perpetuity.

(5.) In the *king's authority*, or regal power, conſiſts the executive part of government.

(6.) In *foreign* concerns; the *king*, as the repreſentative of the nation, has the right or *prerogative*, 1. Of ſending and receiving embaſſadors. 2. Of making treaties. 3. Of proclaiming war or peace. 4. Of iſſuing repriſals. 5. Of granting ſafe-conducts.

(7.) In *domeſtic* affairs; the *king* is, firſt, a conſtituent part of the ſupreme legiſlative power; hath a negative upon all new laws; and is bound by no ſtatute, unleſs ſpecially named therein.

(8.) He is alſo conſidered as the general of the kingdom, and may raiſe fleets and armies, build forts, appoint havens, erect beacons, prohibit the exportation of arms and ammunition, and confine his ſubjects within the realm, or recall them from foreign parts.

(9.) The *king* is alſo the fountain of juſtice, and general conſervator of the peace; and therefore may erect courts (wherein he hath a legal ubiquity) proſecute offenders, pardon crimes, and iſſue proclamations.

(10.) He is likewiſe the fountain of honour, of office, and of privilege.

(11.) He is alſo the arbiter of *domeſtic* commerce; (not of *foreign*, which is regulated by the law of merchants); and is therefore entitled to the erection of public marts, the regulation of weights and meaſures, and the coinage or legitimation of money.

(12.) The *king* is, laſtly, the ſupreme head of the church; and, as ſuch, convenes, regulates and diſſolves ſynods, nominates biſhops, and receives appeals in all eccleſiaſtical cauſes.

SECT. VIII. *Of the king's revenue.*

(1.) THE *king's revenue* is either *ordinary* or *extraordinary*. And the *ordinary* is, 1. *Eccleſiaſtical*. 2. *Temporal*.

(2.) THE *king's eccleſiaſtical* revenue conſiſts in, 1. The cuſtody of the temporalties of vacant biſhopricks.

ricks. 2. Corodies and penſions. 3. Extra-parochial tithes. 4. The firſt fruits and tenths of benefices.

(3.) The *king's* ordinary *temporal* revenue conſiſts in, 1. The demeſne lands of the crown. 2. The hereditary exciſe; being part of the conſideration for the purchaſe of his feodal profits, and the prerogatives of purveyance and pre-emption. 3. An annual ſum iſſuing from the duty on wine licences; being the reſidue of the ſame conſideration. 4. His foreſts. 5. His courts of juſtice. 6. Royal fiſh. 7. Wrecks, and things jetſam, flotſam, and ligan. 8. Royal mines. 9. Treaſure trove. 10. Waifs. 11. Eſtrays. 12. Forfeitures for offences, and deodands. 13. Eſcheats of lands. 14. Cuſtody of ideots and lunatics.

(4.) The *king's extraordinary revenue* conſiſts in aids, ſubſidies, and ſupplies, granted him by the commons in parliament.

(5.) Heretofore theſe were uſually raiſed by grants of the (nominal) *tenth* or *fifteenth* part of the moveables in every townſhip; or by ſcutages, hydages, and talliages; which were ſucceeded by *ſubſidies* aſſeſſed upon individuals, with reſpect to their lands and goods.

(6.) A new ſyſtem of taxation took place about the time of the revolution: our modern taxes are therefore, 1. *Annual*. 2. *Perpetual*.

(7.) The *annual taxes* are, 1. The land-tax, or the ancient ſubſidy raiſed upon a new aſſeſſment. 2. The malt-tax, being an annual exciſe on malt, mum, cyder, and perry.

(8.) The *perpetual* taxes are, 1. The cuſtoms, or tonnage and poundage of all merchandiſe exported or imported. 2. The exciſe-duty, or inland impoſition on a great variety of commodities. 3. The ſalt-duty, or exciſe on ſalt. 4. The poſt-office, or duty for the carriage of letters. 5. The ſtamp-duty on paper, parchment, &c. 6. The duty on houſes and windows. 7. The duty on licences for hackney coaches and chairs. 8. The duty on offices and penſions.

(9.) Part of this revenue is applied to pay the intereſt of the national debt, till the principal is diſcharged by parliament.

(10.) The produce of theſe ſeveral taxes were originally ſeparate and *ſpecific funds*, to anſwer *ſpecific loans* upon their reſpective credits; but are now conſolidated by parliament into three principal funds, the *aggregate*, *general*, and *South-ſea* funds, to anſwer *all* the debts of the nation: the public faith being alſo ſuperadded, to ſupply deficiencies, and ſtrengthen the ſecurity of the whole.

(11.) The ſurpluſſes of theſe funds, after paying the intereſt of the national debt, are carried together, and denominated the *ſinking* fund: which, unleſs otherwiſe appropriated by parliament, is annually to be applied towards paying off ſome part of the principal.

(12.) But, previous to this, the *aggregate* fund is now charged with an annual ſum for the *civil liſt*; which is the immediate proper revenue of the crown, ſettled by parliament on the king at his acceſſion, for defraying the charges of civil government.

SECT. IX. *Of ſubordinate magiſtrates.*

(1.) SUBORDINATE magiſtrates, of the moſt general uſe and authority, are, 1. *Sheriffs*. 2. *Coroners*. 3. *Juſtices* of the *Peace*. 4. *Conſtables*. 5. *Surveyors* of the *highways*. 6. *Overſeers* of the *poor*.

(2.) The *ſheriff* is the keeper of each county, annually nominated in due form by the king; and is (within his county) a judge, a conſervator of the peace, a miniſterial officer, and the king's bailiff.

(3.) *Coroners* are permanent officers of the crown in each county, elected by the freeholders; whoſe office it is to make enquiry concerning the death of the king's ſubjects, and certain revenues of the crown; and alſo, in particular caſes, to ſupply the office of ſheriff.

(4.) *Juſtices* of the *peace* are magiſtrates in each county, ſtatutably qualified, and commiſſioned by the king's majeſty: with authority to conſerve the peace; to hear and determine felonies, and other miſdemeanours; and to do many other acts, committed to their charge by particular ſtatutes.

(5.) *Conſtables* are officers of hundreds and townſhips, appointed at the leet, and empowered to preſerve the peace, to keep watch and ward, and to apprehend offenders.

(6.) *Surveyors* of the *highways* are officers appointed annually in every pariſh; to remove annoyances in, and to direct the reparation of, the public roads.

(7.) *Overſeers* of the poor are officers appointed annually in every pariſh; to relieve ſuch impotent, and employ ſuch ſturdy poor, as are *ſettled* in each pariſh, —by birth,—by parentage,—by marriage,—or by forty days reſidence; accompanied with, 1. Notice. 2. Renting a tenement of ten pounds annual value. 3. Paying their aſſeſſed taxations. 4. Serving an annual office. 5. Hiring and ſervice for a year. 6. Apprenticeſhip for ſeven years. 7. Having a ſufficient eſtate in the pariſh.

SECT. X. *Of the people, whether aliens, denizens, or natives.* liii.

(1.) THE *people* are either *aliens*, that is, born out of the dominions, or allegiance, of the crown of Great Britain; or *natives*, that is, born within it.

(2.) Allegiance is the duty of all ſubjects; being the reciprocal tie of the people to the prince, in return for the protection he affords them; and, in *natives*, this duty of allegiance is natural and perpetual; in *aliens*, is local and temporary only.

(3.) The rights of *natives* are alſo natural and perpetual: thoſe of *aliens*, local and temporary only; unleſs they be made denizens by the king, or naturalized by parliament.

SECT. XI. *Of the clergy.* liv.

(1.) THE people, whether aliens, denizens, or natives, are alſo either *clergy*, that is, all perſons in holy orders, or in eccleſiaſtical offices; or *laity*, which comprehends the reſt of the nation.

(2.) The *clerical* part of the nation, thus defined, are, 1. Archbiſhops and biſhops; who are elected by their ſeveral chapters, at the nomination of the crown, and afterwards confirmed and conſecrated by each other. 2. Deans and chapters. 3. Arch-deacons. 4. Rural deans. 5. Parſons (under which are included appropriators), and vicars; to whom there are generally requiſite, holy orders, preſentation, inſtitution, and induction. 6. Curates. To which may be added, 7. Churchwardens. 8. Pariſh-clerks and ſextons.

lv. **Sect. XII.** *Of the civil ſtate.*

(1.) The *laity* are diviſible into three ſtates; *civil, military*, and *maritime*.

(2.) The *civil* ſtate (which includes all the nation, except the clergy, the army, and the navy; and many individuals among them alſo,) may be divided into the *nobility*, and the *commonalty*.

(3.) The *nobility* are dukes, marquiſes, earls, viſcounts, and barons. Theſe had anciently duties annexed to their reſpective honours: they are created either by writ, that is, by ſummons to parliament; or by the king's letters-patent, that is, by royal grant: and they enjoy many privileges, excluſive of their ſenatorial capacity.

(4.) The *commonalty* conſiſt of knights of the garter, knights bannerets, baronets, knights of the bath, knights bachelors, eſquires, gentlemen, yeomen, tradeſmen, artificers, and labourers.

lvi. **Sect. XIII.** *Of the military and maritime ſtates.*

(1.) The *military* ſtate, by the ſtanding conſtitutional law, conſiſts of the militia of each county, raiſed from among the people by lot, officered by the principal landholders, and commanded by the lord lieutenant.

(2.) The more diſciplined occaſional troops of the kingdom are kept on foot only from year to year, by parliament; and, during that period, are governed by martial law, or arbitrary articles of war, formed at the pleaſure of the crown.

(3.) The *maritime* ſtate conſiſts of the officers and mariners of the Britiſh navy; who are governed by expreſs and permanent laws, or the articles of the navy, eſtabliſhed by act of parliament.

lvii. **Sect. XIV.** *Of maſter and ſervant.*

(1.) The *private*, œconomical, *relations* of perſons are thoſe of, 1. *Maſter* and *ſervant*. 2. *Huſband* and *wife*. 3. *Parent* and *child*. 4. *Guardian* and *ward*.

(2.) The firſt relation may ſubſiſt between a *maſter* and four ſpecies of *ſervants*; (for ſlavery is unknown to our laws): *viz.* 1. Menial ſervants; who are *hired*. 2. Apprentices; who are *bound* by indentures. 3. Labourers; who are caſually *employed*. 4. Stewards, bailiffs, and factors; who are rather in a *miniſterial* ſtate.

(3.) From this relation reſult divers powers to the maſter, and emoluments to the ſervant.

(4.) The maſter hath a property in the ſervice of his ſervant; and muſt be anſwerable for ſuch acts as the ſervant does by his expreſs, or implied, command.

lviii. **Sect. XV.** *Of huſband and wife.*

(1.) The ſecond private relation is that of *marriage*; which includes the reciprocal rights and duties of *huſband* and *wife*.

(2.) *Marriage* is duly contracted between perſons, 1. Conſenting: 2. Free from canonical impediments, which make it *voidable*: 3. Free alſo from the civil impediments,—of prior marriage;—of want of age;—of non-conſent of parents or guardians, where requiſite;—and of want of reaſon; either of which make it totally *void*. And it muſt be celebrated by a clergyman, in due form and place.

(3.) Marriage is diſſolved, 1. By death. 2. By divorce in the ſpiritual court; not *a menſa et thoro* only, but *a vinculo matrimonii*, for canonical cauſe exiſting previous to the contract. 3. By act of parliament, as for adultery.

(4.) By marriage the huſband and wife become one perſon in law; which unity is the principal foundation of their reſpective rights, duties, and diſabilities.

Sect. XVI. *Of parent and child.*

(1.) The third, and moſt univerſal, private relation is that of *parent* and *child*. lix.

(2.) *Children* are, 1. *Legitimate*; being thoſe who are born in lawful wedlock, or within a competent time after. 2. *Baſtards*, being thoſe who are not ſo.

(3.) The duties of parents to *legitimate* children are, 1. Maintenance. 2. Protection. 3. Education.

(4.) The power of parents conſiſts principally in correction, and conſent to marriage. Both may after death be delegated by will to a guardian; and the former alſo, living the parent, to a tutor or maſter.

(5.) The duties of *legitimate* children to parents are obedience, protection, and maintenance.

(6.) The duty of parents to *baſtards* is only that of maintenance.

(7.) The rights of a *baſtard* are ſuch only as he can acquire; for he is incapable of inheriting any thing.

Sect. XVII. *Of guardian and ward.* lx.

(1.) The fourth private relation is that of *guardian* and *ward*, which is plainly derived from the laſt; theſe being, during the continuance of their relation, reciprocally ſubject to the ſame rights and duties.

(2.) *Guardidns* are of divers ſorts: 1. Guardians by nature, or the parents. 2. Guardians for nurture, aſſigned by the eccleſiaſtical courts. 3. Guardians in ſocage, aſſigned by the common law. 4. Guardians by ſtatute, aſſigned by the father's will. All ſubject to the ſuperintendance of the court of chancery.

(3.) *Full age* in male or female for all purpoſes is the age of 21 years, (different ages being allowed for different purpoſes;) till which age the perſon is an *infant*.

(4.) An *infant*, in reſpect of his tender years, hath various privileges, and various diſabilities, in law; chiefly with regard to ſuits, crimes, eſtates, and contracts.

Sect. XVIII. *Of corporations.* lxi

(1.) Bodies politic, or *corporations*, which are *artificial* perſons, are eſtabliſhed for preſerving in perpetual ſucceſſion certain rights; which, being conferred on *natural* perſons only, would fail in proceſs of time.

(2.) Corporations are, 1. *Aggregate*, conſiſting of many members. 2. *Sole*, conſiſting of one perſon only.

(3.) Corporations are alſo either *ſpiritual*, erected to perpetuate the rights of the church; or *lay*. And the lay are, 1. *Civil*; erected for many temporal purpoſes. 2. *Eleemoſynary*; erected to perpetuate the charity of the founder.

(4.) Corporations are uſually erected, and named, by virtue of the king's royal charter; but may be created by act of parliament.

(5.) The powers incident to all corporations are, 1. To maintain perpetual ſucceſſion. 2. To act in their corporate capacity like an individual. 3. To hold lands, ſubject to the ſtatutes of mortmain. 4. To have a common ſeal. 5. To make by-laws. Which laſt power, in ſpiritual or eleemoſynary corporations, may be executed by the king or the founder.

(6.) The duty of corporations is to anſwer the ends of their inſtitution.

(7.) To enforce this duty, all corporations may be *viſited:* ſpiritual corporations by the ordinary; lay corporations by the founder, or his repreſentatives; *viz.* the civil by the king (who is the *fundator incipiens* of all) repreſented in his court of king's bench; the eleemoſynary by the endower, (who is the *fundator perficiens* of ſuch), or by his heirs or aſſigns.

(8.) Corporations may be diſſolved, 1. By act of parliament. 2. By the natural death of all their members. 3. By ſurrender of their franchiſes. 4. By forfeiture of their charter.

CHAP. II.

Of the RIGHTS *of* THINGS.

SECT. I. *Of Property in general.*

(1.) ALL *dominion* over external objects has its original from the gift of the Creator to man in general.

(2.) The *ſubſtance* of things was, at firſt, common to all mankind; yet a temporary property, in the *uſe* of them, might even then be acquired, and continued, by *occupancy.*

(3.) In proceſs of time a permanent property was eſtabliſhed in the *ſubſtance,* as well as the *uſe,* of things; which was alſo originally acquired by *occupancy* only.

(4.) Leſt this property ſhould determine by the owner's dereliction or death, whereby the thing would again become common, ſocieties have eſtabliſhed *conveyances, wills,* and *heirſhips,* in order to continue the property of the firſt occupant: and, where by accident ſuch property becomes diſcontinued or unknown, the thing uſually reſults to the *ſovereign* of the ſtate, by virtue of the municipal law.

(5.) But of ſome things, which are incapable of permanent ſubſtantial dominion, there ſtill ſubſiſts only the ſame tranſient uſufructuary property, which originally ſubſiſted in all things.

SECT. II. *Of real property; and, firſt, of corporeal hereditaments.*

(1.) In this *property,* or excluſive dominion, conſiſt the *rights* of *things;* which are, 1. Things *real.* 2. Things *perſonal.*

(2.) In things *real* may be conſidered, 1. Their ſeveral *kinds.* 2. The *tenures,* by which they may be holden. 3. The *eſtates* which may be acquired therein. 4. Their *title,* or the means of acquiring and loſing them.

(3.) All the ſeveral *kinds* of things real are reducible to one of theſe three, viz. *lands, tenements,* or *hereditaments;* whereof the ſecond includes the firſt, and the third includes the firſt and ſecond.

(4.) *Hereditaments* therefore, or whatever may come to be inherited, (being the moſt comprehenſive denomination of things real,) are either *corporeal* or *incorporeal.*

(5.) *Corporeal* hereditaments conſiſt wholly of *lands,* in their largeſt legal ſenſe; wherein they include not only the face of the earth, but every other object of ſenſe adjoining thereto, and ſubſiſting either above or beneath it.

SECT. III. *Of incorporeal hereditaments.* lxv.

(1.) INCORPOREAL hereditaments are rights iſſuing out of things corporeal, or concerning, or annexed to, or exerciſible within, the ſame.

(2.) Incorporeal hereditaments are, 1. *Advowſons.* 2. *Tithes.* 3. *Commons.* 4. *Ways.* 5. *Offices.* 6. *Dignities.* 7. *Franchiſes.* 8. *Corodies* or *penſions.* 9. *Annuities.* 10. *Rents.*

(3.) An *advowſon* is a right of preſentation to an eccleſiaſtical benefice; either appendant, or in groſs. This may be, 1. Preſentative. 2. Collative. 3. Donative.

(4.) *Tithes* are the tenth part of the increaſe yearly ariſing from the profits and ſtock of lands, and the perſonal induſtry of mankind. Theſe, by the ancient and poſitive law of the land, are due of common right to the parſon, or (by endowment) to the vicar; unleſs ſpecially diſcharged, 1. By real compoſition. 2. By Preſcription, either *de modo decimandi,* or *de non decimando.*

(5.) *Common* is a profit which a man hath in the lands of another; being, 1. Common of paſture; which is either appendant, appurtenant, becauſe of vicinage, or in groſs. 2. Common of piſcary. 3. Common of turbary. 4. Common of eſtovers, or botes.

(6.) *Ways* are a right of paſſing over another man's ground.

(7.) *Offices* are the right to exerciſe a public or private employment.

(8.) For *dignities,* which are titles of honour, ſee Chap. I. Sect. 12.

(9.) *Franchiſes* are a royal privilege, or branch of the king's prerogative, ſubſiſting in the hands of a ſubject.

(10.) *Corodies* are allotments for one's ſuſtenance; which may be converted into *penſions.* (See Chap. I. Sect. 8.)

(11.) An *annuity* is a yearly ſum of money, charged upon the perſon, and not upon the lands of the grantor.

(12.) *Rents* are a certain profit iſſuing yearly out of lands and tenements; and are reducible to, 1. Rent-ſervice. 2. Rent-charge. 3. Rent-ſeck.

SECT. IV. *Of the Feodal Syſtem.* lxvi.

(1.) THE doctrine of *tenures* is derived from the *feodal* law; which was planted in Europe by its northern conquerors at the diſſolution of the Roman empire.

(2.) Pure and *proper feuds* were parcels of land allotted by a chief to his followers, to be held on the condition of perſonally rendering due military ſervice to their lord.

(3.) Theſe were granted by inveſtiture; were held under the bond of fealty; were inheritable only by deſcendants; and could not be transferred without the mutual conſent of the lord and vaſſal.

(4.) *Improper feuds* were derived from the other;

but differed from them in their original, their ſervices and renders, their deſcent, and other circumſtances.

(5.) The lands of England were converted into *feuds*, of the improper kind, ſoon after the Norman conqueſt: which gave riſe to the grand maxim of tenure, viz. That all lands in the kingdom are *holden*, mediately or immediately, of the king.

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SECT. V. *Of the ancient Engliſh tenures.*

(1.) THE diſtinction of tenures conſiſted in the nature of their ſervices: as, 1. *Chivalry*, or *knight-ſervice;* where the ſervice was free, but uncertain. 2. *Free ſocage;* where the ſervice was free, and certain. 3. Pure *villenage*; where the ſervice was baſe, and uncertain. 4. *Privileged villenage*, or *villein ſocage;* where the ſervice was baſe, but certain.

(2.) The moſt univerſal ancient tenure was that in *chivalry*, or by *knight-ſervice;* in which the tenant of every knight's fee was bound, if called upon, to attend his lord to the wars. This was granted by livery, and perfected by homage and fealty; which uſually drew after them ſuit of court.

(3.) The other fruits and conſequences of the tenure by knight-ſervice were, 1. Aid. 2. Relief. 3. Primer ſeiſin. 4. Wardſhip. 5. Marriage. 6. Fines upon alienation. 7. Eſcheat.

(4.) *Grand ſerjeanty* differed from chivalry principally in its render, or ſervice; and not in its fruits and conſequences.

(5.) The perſonal ſervice in chivalry was at length gradually changed into pecuniary aſſeſſments, which were called *ſcutage* or *eſcuage*.

(6.) Theſe military tenures (except the ſervices of grand ſerjeanty) were, at the reſtoration of King Charles, totally aboliſhed, and reduced to free ſocage by act of parliament.

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SECT. VI. *Of the modern Engliſh tenures.*

(1.) FREE *ſocage* is a tenure by any free, certain, and determinate ſervice.

(2.) This tenure, the relic of Saxon liberty, includes *petit ſerjeanty*, tenure in *burgage*, and *gavelkind*.

(3.) Free ſocage lands partake ſtrongly of the feodal nature, as well as thoſe in chivalry: being holden; ſubject to ſome ſervice, at the leaſt to fealty and ſuit of court; ſubject to relief, to wardſhip, and to eſcheat, but not to marriage; ſubject alſo formerly to aids, primer ſeiſin, and fines for alienation.

(4.) *Pure villenage* was a precarious and ſlaviſh tenure, at the abſolute will of the lord, upon uncertain ſervices of the baſeſt nature.

(5.) From hence, by tacit conſent or encroachment, have ariſen the modern *copyholds*, or tenure by copy of court-roll; in which lands may be ſtill held at the (nominal) will of the lord, (but regulated) according to the cuſtom of the manor.

(6.) Theſe are ſubject, like ſocage lands, to ſervices, relief, and eſcheat; and alſo to heriots, wardſhip, and fines upon deſcent and alienation.

(7.) *Privileged villenage*, or *villein ſocage*, is an exalted ſpecies of copyhold tenure, upon baſe, but certain, ſervices; ſubſiſting only in the ancient demeſnes of the crown; whence the tenure is denominated the tenure in *ancient demeſne*.

(8.) Theſe copyholds of ancient demeſne have divers immunities annexed to their tenure; but are ſtill held by copy of court-roll, according to the cuſtom of the manor, though not at the will of the lord.

(9.) *Frankalmoign* is a tenure by ſpiritual ſervices at large, whereby many eccleſiaſtical and eleemoſynary corporations now hold their lands and tenements; being of a nature diſtinct from tenure by divine ſervice in certain.

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SECT. VII. *Of freehold eſtates of inheritance.*

(1.) ESTATES in lands, tenements, and hereditaments, are ſuch intereſt as the tenant hath therein; to aſcertain which, may be conſidered, 1. The *quantity* of *intereſt*. 2. The *time* of *enjoyment*. 3. The *number* and *connexions* of the *tenants*.

(2.) Eſtates, with reſpect to their *quantity* of *intereſt*, or duration, are either *freehold*, or *leſs* than *freehold*.

(3.) A *freehold* eſtate, in lands, is ſuch as is created by livery of ſeiſin at common law; or, in tenements of an incorporeal nature, by what is equivalent thereto.

(4.) Freehold eſtates are either eſtates of *inheritance*, or *not* of *inheritance*, viz. for *life* only: and *inheritances* are, 1. *Abſolute*, or *fee ſimple*. 2. *Limited fees*.

(5.) Tenant in *fee ſimple* is he that hath lands, tenements, or hereditaments, to hold to him and his heirs for ever.

(6.) *Limited fees* are, 1. *Qualified*, or *baſe*, fees. 2. Fees *conditional* at the common law.

(7.) *Qualified* or *baſe* fees are thoſe which, having a qualification ſubjoined thereto, are liable to be defeated when that qualification is at an end.

(8.) *Conditional* fees, at the common law, were ſuch as were granted to the donee, and the heirs of his body, in excluſion of collateral heirs.

(9.) Theſe were held to be fees, granted on condition that the donee had iſſue of his body; which condition being once performed by the birth of iſſue, the donee might immediately aliene the land: but, the ſtatute *de donis* being made to prevent ſuch alienation, thereupon from the diviſion of the fee (by conſtruction of this ſtatute) into a particular eſtate and a reverſion, the conditional fees began to be called *fees-tail*.

(10.) All tenements real, or ſavouring of the realty, are ſubject to entails.

(11.) Eſtates tail may be, 1. general, or ſpecial; 2. male, or female; 3. given in frank marriage.

(12.) Incident to eſtates tail are, 1. Waſte. 2. Dower. 3. Curteſy. 4. Bar;—by fine, recovery, or lineal warranty with aſſets.

(13.) Eſtates tail are now, by many ſtatutes and reſolutions of the courts, almoſt brought back to the ſtate of conditional fees at the common law.

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SECT. VIII. *Of freeholds, not of inheritance.*

(1.) FREEHOLDS, *not* of *inheritance*, or for *life* only, are, 1. *Conventional*, or created by the act of the parties. 2. *Legal*, or created by operation of law.

(2.) *Conventional* eſtates for *life* are created by an expreſs grant for term of one's own life, or *pur auter vie*; or by a general grant, without expreſſing any term at all.

(3.) Incident to this, and all other eſtates for life, are eſtovers, and emblements: and to eſtates *pur auter vie*

vie general occupancy was alſo incident; as ſpecial occupancy ſtill is, if *ceſtuy que vie* ſurvives the tenant.

(4.) *Legal* eſtates for *life* are, 1. Tenancy in *tail*, after *poſſibility* of iſſue *extinct*. 2. Tenancy by the *curteſy* of England. 3. Tenancy in *dower*.

(5.) Tenancy in *tail*, after *poſſibility* of iſſue *extinct*, is where an eſtate is given in ſpecial tail; and, before iſſue had, a perſon dies from whoſe body the iſſue was to ſpring; whereupon the tenant (if ſurviving) becomes tenant in *tail*, after *poſſibility* of iſſue *extinct*.

(6.) This eſtate partakes both of the incidents to an eſtate tail, and thoſe of an eſtate for life.

(7.) Tenancy by the *curteſy* of England is where a man's wife is ſeiſed of an eſtate of inheritance; and he by her has iſſue, born alive, which was capable of inheriting her eſtate; in which caſe he ſhall, upon her death, hold the tenements for his own life, as tenant by the *curteſy*.

(8.) Tenancy in *dower* is where a woman's huſband is ſeiſed of an eſtate of inheritance, of which her iſſue might by any poſſibility have been heir; and the huſband dies: the woman is hereupon entitled to *dower*, or one third part of the lands and tenements, to hold for her natural life.

(9.) Dower is either by the common law; by ſpecial cuſtom; *ad oſtium eccleſiæ*; or, *ex aſſenſu patris*.

(10.) Dower may be forfeited or barred, particularly by an eſtate in *jointure*.

xxi. SECT. IX. *Of eſtates leſs than freehold.*

(1.) ESTATES *leſs* than *freehold* are, 1. Eſtates for *years*. 2. Eſtates at *will*. 3. Eſtates at *ſufferance*.

(2.) An eſtate for *years* is where a man, ſeiſed of lands and tenements, letteth them to another for a certain period of time, which transfers the intereſt of the term; and the leſſee enters thereon, which gives him poſſeſſion of the term, but not legal ſeiſin of the land.

(3.) Incident to this eſtate are eſtovers; and alſo emblements, if it determines before the full end of the term.

(4.) An eſtate at *will* is where lands are let by one man to another, to hold at the will of both parties; and the leſſee enters thereon.

(5.) *Copyholds* are eſtates held at the will of the lord, (regulated) according to the cuſtom of the manor.

(6.) An eſtate at *ſufferance* is where one comes into poſſeſſion of land by lawful title, but keeps it afterwards without any title at all.

xxii. SECT. X. *Of eſtates upon condition.*

(1.) ESTATES (whether freehold or otherwiſe) may alſo be held upon *condition*; in which caſe their exiſtence depends on the happening, or not happening, of ſome uncertain event.

(2.) Theſe eſtates are, 1. On condition *implied*. 2. On condition *expreſſed*. 3. Eſtates in *gage*. 4. Eſtates by *ſtatute*, merchant or ſtaple. 5. Eſtates by *elegit*.

(3.) Eſtates on condition *implied* are where a grant of an eſtate has, from its eſſence and conſtitution, a condition inſeparably annexed to it; though none be expreſſed in words.

(4.) Eſtates on condition *expreſſed* are where an expreſs qualification or proviſion is annexed to the grant of an eſtate.

(5.) On the performance of theſe conditions either expreſſed or implied (if *precedent*) the eſtate may be veſted or enlarged: or, on the breach of them (if *ſubſequent*) an eſtate already veſted may be defeated.

(6.) Eſtates in *gage*, *in vadio*, or in pledge, are eſtates granted as a ſecurity for money lent; being 1. *In vivo vadio*, or *living gage*; where the profits of land are granted till a debt be paid, upon which payment the granter's eſtate will revive. 2. *In mortuo vadio*, in *dead*, or *mort gage*; where an eſtate is granted, on condition to be void at a day certain, if the granter then repays the money borrowed; on failure of which, the eſtate becomes abſolutely dead to the granter.

(7.) Eſtates by *ſtatute*-merchant, or *ſtatute*-ſtaple, are alſo eſtates conveyed to creditors, in purſuance of certain ſtatutes, till their profits ſhall diſcharge the debt.

(8.) Eſtates by *elegit* are where, in conſequence of a judicial writ ſo called, lands are delivered by the ſheriff to a plaintiff, till their profits ſhall ſatisfy a debt adjudged to be due by law.

SECT. XI. *Of eſtates in poſſeſſion, remainder, and reverſion.* lxxiii.

(1.) ESTATES, with reſpect to their *time* of *enjoyment*, are either in immediate *poſſeſſion*, or in *expectancy*; which eſtates in *expectancy* are created at the ſame time, and are parcel of the ſame eſtates, as thoſe upon which they are expectant. Theſe are, 1. *Remainders*. 2. *Reverſions*.

(2.) A *remainder* is an eſtate limited to take effect, and be enjoyed, after another *particular* eſtate is determined.

(3.) Therefore, 1. There muſt be a precedent particular eſtate, in order to ſupport a remainder. 2. The remainder muſt paſs out of the granter, at the creation of the particular eſtate. 3. The remainder muſt veſt in the grantee, during the continuance, or at the determination, of the particular eſtate.

(4.) Remainders are, 1. Veſted; where the eſtate is fixed to remain to a *certain* perſon, after the particular eſtate is ſpent. 2. Contingent; where the eſtate is limited to take effect, either to an *uncertain* perſon, or upon an *uncertain* event.

(5.) An *executory deviſe* is ſuch a diſpoſition of lands, by will, that an eſtate ſhall not veſt thereby at the death of the deviſor, but only upon ſome future contingency, and without any precedent particular eſtate to ſupport it.

(6.) A *reverſion* is the reſidue of an eſtate left in the granter, to commence in poſſeſſion after the determination of ſome *particular* eſtate granted: to which are incident fealty, and rent.

(7.) Where two eſtates, the one leſs, the other greater, the one in poſſeſſion, the other in expectancy, meet together in one and the ſame perſon, and in one and the ſame right, the leſs is *merged* in the greater.

SECT. XII. *Of eſtates, in ſeveralty, joint tenancy, coparcenary, and common.* lxxiv.

(1.) ESTATES, with reſpect to the *number* and *connections* of their *tenants*, may be held, 1. In *ſeveralty*.

ty. 2. In *joint-tenancy*. 3. In *coparcenary*. 4. In *common*.

(2.) An eſtate in *ſeveralty* is where one tenant holds it in his own ſole right, without any other perſon being joined with him.

(3.) An eſtate in *joint-tenancy* is where an eſtate is granted to two or more perſons; in which caſe the law conſtrues them to be *joint-tenants*, unleſs the words of the grant expreſsly exclude ſuch conſtruction.

(4.) Joint-tenants have an unity of intereſt, of title, of time, and of poſſeſſion: they are ſeiſed *per my & per tout:* and therefore upon the deceaſe of one joint-tenant, the whole intereſt remains to the ſurvivor.

(5.) Joint-tenancy may be diſſolved, by deſtroying one of its four conſtituent unities.

(6.) An eſtate in *coparcenary* is where an eſtate of inheritance deſcends from the anceſtor to two or more perſons; who are called *parceners*, and all together make but one heir.

(7.) Parceners have an unity of intereſt, title, and poſſeſſion; but are only ſeiſed *per my*, and not *per tout:* wherefore there is no ſurvivorſhip among parceners.

(8.) Incident to this eſtate is the law of *hotchpot*.

(9.) Coparcenary may alſo be diſſolved, by deſtroying any of its three conſtituent unities.

(10.) An eſtate in *common* is where two or more perſons hold lands, poſſibly by diſtinct titles, and for diſtinct intereſts; but by unity of poſſeſſion, becauſe none knoweth his own ſeveralty.

(11.) Tenants in common have therefore an unity of poſſeſſion, (without ſurvivorſhip; being ſeiſed *per my*, and not *per tout;*) but no neceſſary unity of title, time, or intereſt.

(12.) This eſtate may be created, 1. By diſſolving the conſtituent unities of the two former; 2. By expreſs limitation in a grant: and may be deſtroyed, 1. By uniting the ſeveral titles in one tenant; 2. By partition of the land.

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SECT. XIII. *Of the title to things real, in general.*

(1.) A *title* to things real is the means whereby a man cometh to the juſt poſſeſſion of his property

(2.) Herein may be conſidered, 1. A mere or naked poſſeſſion. 2. The right of poſſeſſion; which is, 1*ſt*, an apparent, 2*dly*, an actual, right. 3. The mere right of property. 4. The conjunction of actual poſſeſſion with both theſe rights; which conſtitutes a perfect *title*.

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SECT. XIV. *Of title by deſcent.*

(1.) THE *title* to things real may be reciprocally acquired or loſt, 1. By *deſcent*. 2. By *purchaſe*.

(2.) *Deſcent* is the means whereby a man, on the death of his anceſtor, acquires a title to his eſtate, in right of repreſentation, as his *heir* at law.

(3.) To underſtand the doctrine of deſcents, we muſt form a clear notion of *conſanguinity;* which is the connexion, or relation, of perſons deſcended from the ſame ſtock or common anceſtor; and it is, 1. *Lineal*, where one of the kinſmen is lineally deſcended from the other. 2. *Collateral*, where they are lineally deſcended, not one from the other, but both from the ſame common anceſtor.

(4.) The rules of deſcent, or *canons* of *inheritance*, obſerved by the laws of England, are theſe:

1*ſt*, Inheritances ſhall lineally *deſcend* to the *iſſue* of the perſon laſt actually ſeiſed, *in infinitum;* but ſhall never lineally *aſcend*.

2*d*, The *male* iſſue ſhall be admitted before the *female*.

3*d*, Where there are two or more males in equal degree, the *eldeſt* only ſhall inherit; but the females *all* together.

4*th*, The lineal deſcendants, *In infinitum*, of any perſon deceaſed ſhall *repreſent* their anceſtor; that is, ſhall ſtand in the ſame place as the perſon himſelf would have done, had he been living.

5*th*, On failure of *lineal* deſcendants, or iſſue, of the perſon laſt ſeiſed, the inheritance ſhall deſcend to the blood of the *firſt purchaſer;* ſubject to the three preceding rules. To evidence which blood, the two following rules are eſtabliſhed.

6*th*, The collateral heir of the perſon laſt ſeiſed muſt be his next collateral kinſman, of the *whole* blood.

7*th*, In collateral inheritances, the *male ſtocks* ſhall be preferred to the *female;* that is, kindred derived from the blood of the male anceſtors ſhall be admitted before thoſe from the blood of the female: unleſs where the lands have, in fact, deſcended from a female.

SECT. XV. *Of title by purchaſe, and firſt by eſcheat.* lxxvi

(1.) PURCHASE, or perquiſition, is the poſſeſſion of an eſtate which a man hath by his own act or agreement; and not by the mere act of law, or deſcent from any of his anceſtors. This includes, 1. *Eſcheat*. 2. *Occupancy*. 3. *Preſcription*. 4. *Forſeiture*. 5. *Alienation*.

(2.) *Eſcheat* is where, upon deficiency of the tenant's *inheritable blood*, the eſtate falls to the lord of the fee.

(3.) *Inheritable blood* is wanting to, 1. Such as are not related to the perſon laſt ſeiſed. 2. His maternal relations in paternal inheritances, and *vice verſa*. 3. His kindred of the half blood. 4. Monſters. 5. Baſtards. 6. Aliens, and their iſſue. 7. Perſons attainted of treaſon or felony. 8. Papiſts, in reſpect of themſelves only, by the ſtatute law.

SECT. XVI. *Of title by occupancy.* lxxv

(1.) OCCUPANCY is the taking poſſeſſion of thoſe things which before had no owner.

(2.) Thus, at the common law, where tenant *pur auter vie* died during the life of *ceſtuy que vie*, he, who could firſt enter, might lawfully retain the poſſeſſion; unleſs by the original grant the heir was made a *ſpecial* occupant.

(3.) The law of *derelictions* and *alluvions* has narrowed the title by occupancy.

SECT. XVII. *Of title by preſcription.* lxx

(1.) PRESCRIPTION (as diſtinguiſhed from *cuſtom*) is a *perſonal* immemorial uſage of enjoying a right in ſome incorporeal hereditament, by a man, and either his anceſtors or thoſe whoſe eſtate of inheritance he hath: of which the firſt is called *preſcribing in his anceſtors*, the latter in a *que eſtate*.

SECT.

SECT. XVIII. *Of title by forfeiture.*

(1.) FORFEITURE is a puniſhment annexed by law to ſome illegal act, or negligence, in the owner of things real; whereby the eſtate is transferred to another, who is uſually the party injured.

(2.) Forfeitures are occaſioned, 1. By *crimes*. 2. By *alienation*, contrary to law. 3. By *lapſe*. 4. By *ſimony*. 5. By *nonperformance* of *conditions*. 6. By *waſte*. 7. By *breach* of *copyhold cuſtoms*. 8. By *bankruptcy*.

(3.) Forfeitures for *crimes*, or miſdemeanours, are for, 1. Treaſon. 2. Felony. 3. Miſpriſion of treaſon. 4. *Præmunire*. 5. Aſſaults on a judge, and batteries, ſitting the courts. 6. Popiſh recuſancy, &c.

(4.) *Alienations*, or conveyances, which induce a forfeiture, are, 1. Thoſe in mortmain, made to corporations contrary to the ſtatute law. 2. Thoſe made to aliens. 3. Thoſe made by particular tenants, when larger than their eſtates will warrant.

(5.) *Lapſe* is a forfeiture of the right of preſentation to a vacant church, by neglect of the patron to preſent within ſix calendar months.

(6.) *Simony* is the corrupt preſentation of any one to an eccleſiaſtical benefice, whereby that turn becomes forfeited to the crown.

(7.) For forfeiture by *nonperformance* of *conditions*, ſee Sect. 10.

(8.) *Waſte* is a ſpoil, or deſtruction, in any corporeal hereditaments, to the prejudice of him that hath the inheritance.

(9.) *Copyhold* eſtates may have alſo other peculiar cauſes of forfeiture, according to the cuſtom of the manor.

(10.) *Bankruptcy* is the act of becoming a *bankrupt*; that is, a trader who ſecretes himſelf, or does certain other acts tending to defraud his creditors, (See Sect. 22.)

(11.) By bankruptcy all the eſtates of the bankrupt are transferred to the aſſignees of his commiſſioners, to be ſold for the benefit of his creditors.

Sect. XIX. *Of title by alienation.*

(1.) ALIENATION, conveyance, or purchaſe in its more limited ſenſe, is a means of transferring real eſtates, wherein they are voluntarily reſigned by one man, and accepted by another.

(2.) This formerly could not be done by a tenant, without *licence* from his lord; nor by a lord, without *attornment* of his tenant.

(3.) All perſons are *capable* of purchaſing; and all that are in poſſeſſion of any eſtates, are *capable* of conveying them: unleſs under peculiar diſabilities by law; as being attainted, *non compotes*, infants, under dureſs, feme-coverts, aliens, or papiſts.

(4.) Alienations are made by *common aſſurances*; which are, 1. By *deed*, or matter in *pais*. 2. By matter of *record*. 3. By ſpecial *cuſtom*. 4. By *deviſe*.

Sect. XX. *Of alienation by deed.*

(1.) IN aſſurances by *deed* may be conſidered, 1. Its *general nature*. 2 Its *ſeveral ſpecies*.

(2.) A deed, in *general*, is the ſolemn act of the parties; being, uſually, a writing ſealed and delivered; and it may be, 1. A deed indented, or indenture. 2. A deed-poll.

(3.) The *requiſites* of a deed are, 1. Sufficient *parties*, and proper *ſubject-matter*. 2. A good and ſufficient *conſideration*. 3. *Writing* on paper, or parchment, duly ſtamped. 4. Legal and orderly *parts*: (which are uſually, 1ſt, the premiſes; 2dly, the *habendum*; 3dly, the *tenendum*; 4thly, the *reddendum*; 5thly, the conditions; 6thly, the warranty, which is either lineal or collateral; 7thly, the covenants; 8thly, the concluſion, which includes the date.) 5. *Reading* it, if deſired. 6. *Sealing*, and, in many caſes, *ſigning* it alſo. 7. *Delivery*. 8. *Atteſtation*.

(4.) A deed may be *avoided*, 1. By the want of any of the requiſites before-mentioned. 2. By ſubſequent matter; as, 1ſt, Raſure, or alteration. 2dly, Defacing its ſeal. 3dly, Cancelling it. 4thly, Diſagreement of thoſe whoſe conſent is neceſſary. 5thly, Judgment of a court of juſtice.

(5.) Of the ſeveral *ſpecies* of deeds, ſome ſerve to *convey* real property, ſome only to *charge* and *diſcharge* it.

(6.) Deeds which ſerve to *convey* real property, or *conveyances*, are either by *common law*, or by *ſtatute*. And, of conveyances by *common law*, ſome are *original* or primary, others *derivative* or ſecondary.

(7.) *Original* conveyances are, 1. *Feoffments*. 2 *Gifts*. 3. *Grants*. 4. *Leaſes*. 5. *Exchanges*. 6. *Partitions*. *Derivative* are, 7. *Releaſes*. 8. *Confirmations*. 9. *Surrenders*. 10. *Aſſignments*. 11. *Defeazances*.

(8.) A *feoffment* is the transfer of any *corporeal* hereditament to another, perfected by *livery* of *ſeiſin*, or delivery of bodily poſſeſſion from the feoffor to the feoffee; without which no freehold eſtate therein can be created at common law.

(9.) A *gift* is properly the conveyance of lands in tail.

(10.) A *grant* is the regular method, by common law, of conveying *incorporeal* hereditaments.

(11.) A *leaſe* is the demiſe, granting, or letting to farm of any tenement, uſually for a leſs term than the leſſor hath therein; yet ſometimes poſſibly for a greater; according to the regulations of the reſtraining and enabling ſtatutes.

(12.) An *exchange* is the mutual conveyance of equal intereſts, the one in conſideration of the other.

(13.) A *partition* is the diviſion of an eſtate held in joint-tenancy, in coparcenary, or in common, between the reſpective tenants; ſo that each may hold his diſtinct part in ſeveralty.

(14.) A *releaſe* is the diſcharge or conveyance of a man's right, in lands and tenements, to another that hath ſome former eſtate in poſſeſſion therein.

(15.) A *confirmation* is the conveyance of an eſtate or right *in eſſe*, whereby a voidable eſtate is made ſure, or a particular eſtate is increaſed.

(16.) A *ſurrender* is the yielding up of an eſtate for life, or years, to him that hath the immediate remainder or reverſion; wherein the particular eſtate may merge.

(17.) An *aſſignment* is the transfer, or making over to another, of the whole right one has in any eſtate; but uſually in a leaſe, for life or years.

(18.) A *defeazance* is a collateral deed. made at the ſame time with the original conveyance; containing

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ing ſome condition, upon which the eſtate may be defeated.

(19.) Conveyances by *ſtatute* depend much on the doctrine of *uſes* and *truſts:* which are a confidence repoſed in the *terre-tenant*, or tenant of the land, that he ſhall permit the profits to be enjoyed, according to the directions of *ceſtuy que uſe*, or *ceſtuy que truſt*.

(20.) The ſtatute of uſes, having transferred all uſes into actual poſſeſſion, (or, rather, having drawn the the poſſeſſion to the uſe), has given birth to divers other ſpecies of conveyance: 1. A *covenant* to ſtand ſeiſed to *uſe*. 2. A *bargain* and *ſale*, enrolled. 3. A *leaſe* and *releaſe*. 4. A deed to *lead* or *declare* the uſe of other more direct conveyances. 5. A *revocation* of *uſes*; being the execution of a power, reſerved at the creation of the uſe, of recalling at a future time the uſe or eſtate ſo creating. All which owe their preſent operation principally to the ſtatute of uſes.

(21.) Deeds which do not *convey*, but only *charge* real property, and *diſcharge* it, are, 1. *Obligations*. 2. *Recognizances*. 3. *Defeazances* upon both.

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Sect. XXI. *Of alienation by matter of record.*

(1.) Assurances by matter of *record* are where the ſanction of ſome court of record is called in, to ſubſtantiate and witneſs the transfer of real property. Theſe are, 1. *Private acts* of *parliament*. 2. The *king's grants*. 3. *Fines*. 4. Common *recoveries*.

(2.) *Private acts* of *parliament* are a ſpecies of aſſurances, calculated to give (by the tranſcendent authority of parliament) ſuch reaſonable powers or relief as are beyond the reach of the ordinary courſe of law.

(3.) The *king's grants*, contained in charters or letters patent, are all entered on record, for the dignity of the royal perſon, and ſecurity of the royal revenue.

(4.) A *fine* (ſometimes ſaid to be a feoffment of record) is an amicable compoſition and agreement of an actual, or fictitious, ſuit; whereby the eſtate in queſtion is acknowledged to be the right of one of the parties.

(5.) The *parts* of a fine are, 1. The writ of covenant. 2. The licence to agree. 3. The concord. 4. The note. 5. The foot. To which the ſtatute hath added, 6. Proclamations.

(6.) Fines are of four *kinds:* 1. *Sur cognizance de droit, come ceo que il ad de ſon done*. 2. *Sur cognizance de droit tantum*. 3. *Sur conceſſit*. 4. *Sur done, grant, et render;* which is a double fine.

(7.) The *force* and *effect* of fines (when levied by ſuch as have themſelves any intereſt in the eſtate) are to aſſure the lands in queſtion to the cognizee, by barring the reſpective rights of parties, privies, and ſtrangers.

(8.) A common *recovery* is by an actual, or fictitious, ſuit or action for land, brought againſt the tenant of the freehold; who thereupon vouches another, who undertakes to warrant the tenant's title: but, upon ſuch vouchee's making default, the land is *recovered* by judgment at law againſt the tenant; who, in return, obtains judgment againſt the vouchee to recover lands of equal value in recompenſe.

(9.) The *force and effect* of a recovery are to aſſure lands to the recoverer, by barring eſtates tail, and all remainders and reverſions expectant thereon; provided the tenant in tail either ſuffers, or is vouched in, ſuch recovery.

(10.) The *uſes* of a fine or recovery may be directed by, 1. Deeds to *lead* ſuch uſes; which are made previous to the levying or ſuffering them. 2. Deeds to *declare* the uſes; which are made ſubſequent.

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Sect. XXII. *Of alienation by ſpecial cuſtom.*

(1.) Assurances by ſpecial *cuſtom* are confined to the transfer of *copyhold* eſtates.

(2.) This is effected by, 1. *Surrender* by the tenant into the hands of the lord to the uſe of another, according to the cuſtom of the manor. 2. *Preſentment*, by the tenants or homage, of ſuch ſurrender. 3. *Admittance* of the ſurrenderee by the lord, according to the uſes expreſſed in ſuch ſurrender.

(3.) *Admittance* may alſo be had upon original *grants* to the tenant from the lord, and upon *deſcents* to the heir from the anceſtor.

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Sect. XXIII. *Of alienation by deviſe.*

(1.) Devise is a diſpoſitions of lands and tenements, contained in the laſt will and teſtament of the owner.

(2.) This was not permitted by the common law, as it ſtood ſince the conqueſt; but was introduced by the ſtatute law, under Henry VIII. ſince made more univerſal by the ſtatute of tenures under Charles II. with the introduction of additional ſolemnities by the ſtatute of frauds and perjuries in the ſame reign.

(3.) The *conſtruction* of all *common aſſurances* ſhould be, 1. Agreeable to the intention. 2. To the words, of the parties. 3. Made upon the entire deed. 4. Bearing ſtrongeſt againſt the contractor. 5. Conformable to law. 6. Rejecting the latter of two totally repugnant clauſes in a deed, and the former in a will. 7. Moſt favourable in caſe of a deviſe.

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Sect. XXIV. *Of things perſonal.*

(1.) Things *perſonal* are comprehended under the general name of *chattels;* which includes whatever wants either the duration, or the immobility, attending things real.

(2.) In theſe are to be conſidered, 1. Their *diſtribution*. 2. The *property* of them. 3. The *title* to that property.

(3.) As to the *diſtribution* of chattels, they are, 1. Chattels *real*. 2. Chattels *perſonal*.

(4.) Chattels *real* are ſuch quantities of intereſt, in things *immoveable*, as are ſhort of the duration of freeholds; being limited to a time certain, beyond which they cannot ſubſiſt. (See Sect. 7.)

(5.) Chattels *perſonal* are things *moveable;* which may be transferred from place to place, together with the perſon of the owner.

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Sect. XXV. *Of property in things perſonal.*

(1.) Property, in chattels perſonal, is either in *poſſeſſion*, or in *action*.

(2.) Property in *poſſeſſion*, where a man has the actual enjoyment of the thing, is, 1. *Abſolute*. 2. *Qualified*.

(3.) *Abſolute* property is where a man has ſuch an excluſive right in the thing, that it cannot ceaſe to be his, without his own act or default.

(4.) *Qualified* property is ſuch as is not, in its nature, permanent; but may ſometimes ſubſiſt, and at other times not ſubſiſt.

(5.) This may ariſe, 1. Where the ſubject is incapable of abſolute ownerſhip. 2. From the peculiar circumſtances of the owners.

(6.) Property in *action*, is where a man hath not the actual *occupation* of the thing; but only a *right* to it, ariſing upon ſome contract, and recoverable by an action at law.

(7.) The property of chattels perſonal is liable to remainders, expectant on eſtates for life; to joint-tenancy; and to tenancy in common.

SECT. XXVI. *Of title to things perſonal by occupancy.*

(1.) The *title* to things perſonal may be acquired or loſt by, 1. *Occupancy.* 2. *Prerogative.* 3. *Forfeiture.* 4. *Cuſtom.* 5. *Succeſſion.* 6. *Marriage.* 7. *Judgment.* 8. *Gift*, or *grant.* 9. *Contract.* 10. *Bankruptcy.* 11. *Teſtament.* 12. *Adminiſtration.*

(2.) Occupancy ſtill gives the firſt occupant a right to thoſe few things, which have no legal owner, or which are incapable of permanent ownerſhip. Such as, 1. Goods of alien enemies. 2. Things found. 3. The benefit of the elements. 4. Animals *feræ naturæ.* 5. Emblements. 6. Things gained by acceſſion; or, 7. By confuſion. 8. Literary property.

SECT. XXVII. *Of title by prerogative, and forfeiture.*

(1.) By *prerogative* is veſted in the crown, or its grantees, the property of the royal revenue; (ſee Chap. I. Sect. 8.) and alſo the property of all game in the kingdom, with the right of purſuing and taking it.

(2.) By *forfeiture*, for crimes and miſdemeanours, the right of goods and chattels may be transferred from one man to another; either in part or totally.

(3.) Total forfeitures of goods ariſe from conviction of, 1. Treaſon, and miſpriſion thereof. 2. Felony. 3. Excuſable homicide. 4. Outlawry for treaſon or felony. 5. Flight. 6. Standing mute. 7. Aſſaults on a judge; and batteries, ſitting the courts. 8. *Præmunire.* 9. Pretended prophecies. 10. Owling. 11. Reſiding abroad of artificers. 12. Challenges to fight, for debts at play.

SECT. XXVIII. *Of title by cuſtom.*

(1.) By *cuſtom*, obtaining in particular places, a right may be acquired in chattels: the moſt uſual of which cuſtoms are thoſe relating to, 1. *Heriots.* 2. *Mortuaries.* 3. *Heir-looms.*

(2.) *Heriots* are either heriot-*ſervice*, which differs little from a rent; or heriot-cuſtom, which is a cuſtomary tribute, of goods and chattels, payable to the lord of the fee on the deceaſe of the owner of lands.

(3.) *Mortuaries* are a cuſtomary gift, due to the miniſter in many pariſhes, on the death of his pariſhioners.

(4.) *Heir-looms* are ſuch perſonal chattels, as deſcend by ſpecial cuſtom to the heir, along with the inheritance of his anceſtor.

SECT. XXIX. *Of title by ſucceſſion, marriage, and judgment.*

(1.) By *ſucceſſion* the right of chattels is veſted in corporations *aggregate*; and likewiſe in ſuch corporations *ſole* as are the heads and repreſentatives of bodies aggregate.

(2.) By *marriage* the chattels real and perſonal of the wife are veſted in the huſband, in the ſame degree of property, and with the ſame powers, as the wife when ſole had over them; provided he reduces them to poſſeſſion.

(3.) The wife alſo acquires, by *marriage*, a property in her *paraphernalia.*

(4.) By *judgment*, conſequent on a ſuit at law, a man may in ſome caſes, not only *recover*, but originally *acquire*, a right to perſonal property. As, 1. To penalties recoverable by action popular. 2. To damages. 3. To coſts of ſuit.

SECT. XXX. *Of title by gift, grant, and contract.* xci.

(1.) A *gift*, or *grant*, is a voluntary conveyance of a chattel perſonal in poſſeſſion, without any conſideration or equivalent.

(2.) A *contract* is an agreement, upon ſufficient conſideration, to do or not to do a particular thing: and, by ſuch contract, any perſonal property (either in poſſeſſion or in action) may be transferred.

(3.) Contracts may either be expreſs or implied; either executed or executory.

(4.) The *conſideratibn* of contracts is, 1. A good conſideration. 2. A valuable conſideration; which is, 1. *Do, ut des.* 2. *Facio, ut facias.* 3. *Facio, ut des.* 4. *Do, ut facias.*

(5.) The moſt uſual *ſpecies* of perſonal contracts are, 1. *Sale* or *exchange.* 2. *Bailment.* 3. *Hiring* or *borrowing* 4. *Debt.*

(6.) *Sale* or *exchange* is a tranſmutation of property from one man to another, in conſideration of ſome recompenſe in value.

(7.) *Bailment* is the delivery of goods in truſt; upon a contract, expreſs or implied, that the truſt ſhall be faithfully performed by the bailee.

(8.) *Hiring* or *borrowing* is a contract, whereby the poſſeſſion of chattels is transferred for a particular time, on condition that the identical goods (or, ſometimes, their value) be reſtored at the time appointed; together with (in caſe of *hiring*) a ſtipend or price for the uſe.

(9.) This price, being calculated to anſwer the hazard as well as inconvenience of lending, gives birth to the doctrine of *intereſt*, or *uſury*, upon loans; and, conſequently, to the doctrine of *bottomry* or *reſpondentia*, and *inſurance.*

(10.) *Debt* is any contract, whereby a certain ſum of *money* becomes due to the creditor. This is, 1. A debt of *record.* 2. A debt upon *ſpecial* contract. 3. A debt upon *ſimple* contract; which laſt includes paper credit, or bills of exchange, and promiſſory notes.

SECT. XXXI. *Of title by bankruptcy.* xcii.

(1.) Bankruptcy (as defined in Sect. 18.) is the act of becoming a bankrupt.

(2.) Herein may be conſidered, 1. Who may become a bankrupt. 2. The *acts* whereby he may become a bankrupt. 3. The *proceedings* on a commiſſion of bankrupt. 4. How his *property* is transferred thereby.

(3.) Perſons of full age, *uſing* the *trade* of merchandize, by buying, and ſelling, and ſeeking their livelihood thereby, are liable to become bankrupts; for debts of a ſufficient amount.

(4.) A trader, who endeavours to avoid his creditors, or evade their juſt demands, by any of the ways ſpecified in the ſeveral ſtatutes of bankruptcy, doth thereby commit an *act* of bankruptcy.

(5.) The *proceedings* on a commiſſion of bankrupt, ſo far as they affect the bankrupt himſelf, are principally by, 1. Petition. 2. Commiſſion. 3. Declaration of bankruptcy. 4. Choice of aſſignees. 5. The bankrupt's ſurrender. 6. His examination. 7. His diſcovery. 8. His certificate. 9. His allowance. 10. His indemnity.

(6.) The *property* of a bankrupt's perſonal eſtate is, immediately upon the act of bankruptcy, veſted by conſtruction of law in the aſſignees: and they, when they have collected, diſtribute the whole by equal dividends among all the creditors.

xciii. SECT. XXXII. *Of title by teſtament, and adminiſtration.*

(1.) CONCERNING *teſtaments* and *adminiſtrations*, conſidered jointly, are to be obſerved, 1. Their *original* and *antiquity*. 2. *Who* may make a teſtament. 3. Its *nature* and *incidents*. 4. What are *executors* and *adminiſtrators*. 5. Their *office* and *duty*.

(2.) *Teſtaments* have ſubſiſted in England immemorially; whereby the deceaſed was at liberty to diſpoſe of his perſonal eſtate, reſerving anciently to his wife and children their *reaſonable part* of his effects.

(3.) The goods of *inteſtates* belonged anciently to the king; who granted them to the prelates to be diſpoſed in pious uſes: but, on their abuſe of this truſt in the times of popery, the legiſlature compelled them to delegate their power to *adminiſtrators* expreſsly provided by law.

(4.) *All* perſons may make a teſtament, unleſs diſabled by, 1. Want of diſcretion. 2. Want of freewill. 3. Criminal conduct.

(5.) *Teſtaments* are the legal declaration of a man's intentions, which he wills to be performed after his death. Theſe are, 1. Written. 2. Nuncupative.

(6.) An *executor* is he, to whom a man by his will commits the execution thereof.

(7.) *Adminiſtrators* are, 1. *Durante minore ætate* of an infant executor or adminiſtrator; or *durante abſentia;* or *pendente lite*. 2. *Cum teſtamento annexo;* when no executor is named, or the executor refuſes to act. 3. General adminiſtrators; in purſuance of the ſtatutes of Edward III. and Henry VIII. 4. Adminiſtrators *de bonis non;* when a former executor or adminiſtrator dies without completing his truſt.

(8.) The *office* and *duty* of executors, (and, in many points, of adminiſtrators alſo,) are, 1. To bury the deceaſed. 2. To prove the will, or take out adminiſtration. 3. To make an inventory. 4. To collect the goods and chattels. 5. To pay debts; obſerving the rules of priority. 6. To pay legacies, either general or ſpecific; if they be veſted, and not lapſed. 7. To diſtribute the undeviſed ſurplus, according to the ſtatute of diſtributions.

CHAP. III.

Of PRIVATE WRONGS.

SECT. I. *Of the redreſs of private wrongs, by the mere act of the parties.* xcv.

(1.) WRONGS are the privation of *right;* and are, 1. *Private*. 2. *Public*.

(2.) *Private wrongs*, or *civil injuries*, are an infringement, or privation, of the civil rights of individuals, conſidered as individuals.

(3.) The *redreſs* of civil injuries is one principal object of the laws of England.

(4.) This *redreſs* is effected, 1. By the mere *act* of the *parties*. 2. By the mere *operation* of *law*. 3. By *both* together, or *ſuit* in *courts*.

(5.) *Redreſs*, by the mere *act* of the *parties*, is that which ariſes, 1. From the *ſole* act of the party injured. 2. From the *joint* act of all the parties.

(6.) Of the firſt ſort are, 1. Defence of one's ſelf, or relations. 2. Recaption of goods. 3. Entry on lands and tenements. 4. Abatement of nuſances. 5. Diſtreſs; for rent, for ſuit or ſervice, for amercements, for damage, or for divers ſtatutable penalties; —made of ſuch things only as are legally diſtreinable; —and taken and diſpoſed of according to the due courſe of law. 6. Seiſing of heriots, &c.

(7.) Of the ſecond ſort are, 1. Accord. 2. Arbitration.

SECT. II. *Of redreſs by the mere operation of law.* xcv

REDRESS, effected by the mere *operation* of *law*, is, 1. In the caſe of *retainer;* where a creditor is executor or adminiſtrator, and is thereupon allowed to retain his own debt. 2. In the caſe of *remitter;* where one, who has a *good* title to lands, &c. comes into poſſeſſion by a *bad* one, and is thereupon remitted to his ancient good title, which protects his ill-acquired poſſeſſion.

SECT. III. *Of courts in general.* xcv

(1.) REDRESS, that is effected by the *act* both of law and of the *parties*, is by *ſuit* or *action* in the *courts* of juſtice.

(2.) Herein may be conſidered, 1. The *courts* themſelves. 2. The *cognizance* of wrongs, or injuries, therein. And, of *courts*, 1. Their *nature* and *incidents*. 2. Their ſeveral *ſpecies*.

(3.) A *court* is a place wherein juſtice is judicially adminiſtered, by officers delegated by the crown; being a court either of record, or not of record.

(4.) *Incident* to all courts are a plaintiff, defendant, and judge: and, with us, there are alſo uſually attorneys; and advocates or counſel, *viz.* either barriſters, or ſerjeants at law.

SECT. IV. *Of the public courts of common law and equity.* xc

(1.) COURTS of juſtice, with regard to their ſeveral *ſpecies*,

ſpecies, are, 1. Of a *public*, or general, juriſdiction throughout the realm. 2. Of a *private*, or ſpecial, juriſdiction.

(2.) *Public* courts of juſtice are, 1. The courts of *common law* and *equity*. 2. The *eccleſiaſtical* courts. 3. The *military* courts. 3. The *maritime* courts.

(3.) The general and public courts of *common law* and *equity* are, 1. The court of piepoudre. 2. The court-baron. 3. The hundred court. 4. The county court. 5. The court of common pleas. 6. The court of king's bench. 7. The court of exchequer. 8. The court of chancery. (Which two laſt are courts of *equity* as well as *law*.) 9. The courts of exchequer-chamber. 10. The houſe of peers. To which may be added, as auxiliaries, 11. The courts of aſſiſe and *niſi prius*.

ix. Sect. V. *Of courts eccleſiaſtical, military, and maritime.*

(1.) Ecclesiastical courts, (which were ſeparated from the *temporal* by William the Conqueror,) or courts *Chriſtian*, are, 1. The court of the archdeacon. 2. The court of the biſhop's conſiſtory. 3. The court of arches. 4. The court of peculiars. 5. The prerogative court. 6. The court of delegates. 7. The court of review.

(2.) The only permanent *military* court is that of chivalry; the courts martial, annually eſtabliſhed by act of parliament, being only temporary.

(3.) *Maritime* courts are, 1. The court of admiralty and vice-admiralty. 2. The court of delegates. 3. The lords of the privy council, and others, authoriſed by the king's commiſſion, for appeals in prize-cauſes.

Sect. VI. *Of courts of a ſpecial juriſdiction.*

Courts of a ſpecial or private juriſdiction are, 1. The foreſt courts; including the courts of attachments, regard, ſwienmote, and juſtice-ſeat. 2. The court of commiſſioners of ſewers. 3. The court of policies of aſſurance. 4. The court of the marſhalſea and the palace court. 5. The courts of the principality of Wales. 6. The court of the duchy-chamber of Lancaſter. 7. The courts of the counties palatine, and other royal franchiſes. 8. The ſtannery courts. 9. The courts of London, and other corporations:—To which may be referred the courts of requeſts, or courts of conſcience; and the modern regulations of certain courts baron and county courts. 10. The courts of the two univerſities.

Sect. VII. *Of the cogniſance of private wrongs.*

(1.) All private wrongs or civil injuries are *cogniſable* either in the courts *eccleſiaſtical*, *military*, *maritime*, or thoſe of *common law*.

(2.) Injuries cogniſable in the *eccleſiaſtical* courts are, 1. *Pecuniary*. 2. *Matrimonial*. 3. *Teſtamentary*.

(3.) *Pecuniary* injuries, here cogniſable, are, 1. *Subtraction* of *tithes*. For which the remedy is by ſuit to compel their payment, or an equivalent; and alſo their double value. 2. *Nonpayment* of eccleſiaſtical *dues*. Remedy: by ſuit for payment. 3. *Spoliation*. Remedy: by ſuit for reſtitution. 4. *Dilapidations*. Remedy: by ſuit for damages. 5. *Non-repair* of the church, &c.; and *nonpayment* of church-rates. Remedy: by ſuit to compel them.

(4.) *Matrimonial* injuries are, 1. *Jactitation* of *marriage*. Remedy: by ſuit for perpetual ſilence. 2. *Subtraction* of *conjugal* rights. Remedy: by ſuit for reſtitution. 3. *Inhability* for the marriage ſtate. Remedy: by ſuit for divorce. 4. *Refuſal* of decent *maintenance* to the wife. Remedy: by ſuit for alimony.

(5.) *Teſtamentary* injuries are, 1. *Diſputing* the validity of *wills*. Remedy: by ſuit to eſtabliſh them. 3. *Obſtructing* of *adminiſtrations*. Remedy: by ſuit for the granting them. 3. *Subtraction* of *legacies*. Remedy: by ſuit for the payment.

(6.) The courſe of proceedings herein is much conformed to the civil and canon law: but their only compulſive proceſs is that of excommunication; which is enforced by the temporal writ of *ſignificavit*, or *de excommunicato capiendo*.

(7.) Civil injuries, cogniſable in the court *military*, or court of chivalry, are, 1. Injuries in point of *honour*. Remedy: by ſuit for honourable amends. 2. *Encroachments* in *coat-armour*, &c. Remedy: by ſuit to remove them. The proceedings are in a ſummary method.

(8.) Civil injuries cogniſable in the courts *maritime*, are injuries, in their nature of common-law cogniſance, but ariſing wholly upon the ſea, and not within the precincts of any county. The proceedings are herein alſo much conformed to the civil law.

(9.) All other injuries are cogniſable only in the courts of *common law*: of which in the remainder of this chapter.

(10.) Two of them are, however, commiſſible by theſe, and other, inferior courts; *viz.* 1. *Refuſal*, or *neglect*, of *juſtice*. Remedies: by writ of *procedendo*, or *mandamus*. 2. *Encroachment* of *juriſdiction*. Remedy: by writ of prohibition.

Sect. VIII. *Of wrongs, and their remedies, reſpecting the rights of perſons,* cii.

(1.) In treating of the cogniſance of injuries by the courts of *common* law, may be conſidered, 1. The *injuries* themſelves, and their reſpective *remedies*. 2. The *purſuit* of thoſe remedies in the ſeveral courts.

(2.) *Injuries* between ſubject and ſubject, cogniſable by the courts of *common* law, are in general *remedied* by putting the party injured into poſſeſſion of that right whereof he is unjuſtly deprived.

(3.) This is effected, 1. By *delivery* of the *thing* detained to the rightful owner. 2. Where that remedy is either impoſſible or inadequate, by giving the party injured a *ſatisfaction* in *damages*.

(4.) The inſtruments, by which theſe remedies may be obtained, are *ſuits* or *actions*; which are defined to be the legal demand of one's right: and theſe are, 1. Perſonal. 2. Real. 3. Mixed.

(5.) Injuries (whereof ſome are with, others without, *force*,) are, 1. Injuries to the rights of *perſons*. 2. Injuries to the rights of *property*. And the former are, 1. Injuries to the *abſolute*, 2. Injuries to the *relative*, rights of perſons.

(6.) The *abſolute* rights of individuals are, 1. *Perſonal ſecurity*. 2. *Perſonal liberty*. 3. *Private property*. (See Chap. I. Sect. 1.) To which the injuries muſt be correſpondent.

(7.) Injuries to *perſonal ſecurity* are, 1. Againſt a man's *life*. 2. Againſt his limbs. 3. Againſt his *body*. 4. Againſt his *health*. 5. Againſt his *reputation*.—The firſt muſt be referred to the next chapter.

(8.) Injuries to the *limbs* and *body* are, 1. *Threats*. 2. *Aſſault*. 3. *Battery*. 4. *Wounding*. 5. *Mayhem*. Remedy: by action of treſpaſs, *vi et armis*; for damages.

(9.) Injuries to *health*, by any unwholſome practices, are remedied by a ſpecial action of treſpaſs, on the caſe; for damages.

(10.) Injuries to *reputation* are, 1. Slanderous and malicious *words*. Remedy: by action on the caſe; for damages. 2, *Libels*. Remedy: the ſame. 3. Malicious *proſecutions*. Remedy: by action of conſpiracy, or on the caſe; for damages.

(11.) The ſole injury to *perſonal liberty* is *falſe impriſonment*. Remedies: 1. By writ of, 1ſt, Mainprize; 2dly, *Odio et atia*; 3dly, *Homine replegiando*. 4thly, *Habeas corpus*; to remove the wrong. 2. By action of treſpaſs; to recover damages.

(12.) For injuries to *private property*, ſee the next ſection.

(13.) Injuries to *relative* rights affect, 1. *Huſbands*. 2. *Parents*. 3. *Guardians*. 4. *Maſters*.

(14.) Injuries to an *huſband* are, 1. *Abduction*, or taking away his wife. Remedy: by action of treſpaſs, *de uxore rapta et abducta*; to recover poſſeſſion of his wife, and damages. 2. *Criminal converſation* with her. Remedy: by action on the caſe; for damages. 3. *Beating* her. Remedy: by action on the caſe, *per quod conſortium amiſit*; for damages.

(15.) The only injury to a *parent*, or *guardian*, is the *abduction* of their children or wards. Remedy: by action of treſpaſs, *de filiis, vel cuſtodiis, raptis vel abductis*; to recover poſſeſſion of them, and damages.

(16.) Injuries to a *maſter* are, 1. *Retaining* his ſervants. Remedy: by action on the caſe; for damages. 2. *Beating* them. Remedy: by action on the caſe, *per quod ſervitium amiſit*; for damages.

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Sect. IX. *Of injuries to perſonal property.*

(1.) Injuries to the rights of *property* are either to thoſe of *perſonal*, or *real*, property.

(2.) *Perſonal* property is either in *poſſeſſion*, or in *action*.

(3.) Injuries to perſonal property in *poſſeſſion* are, 1. By *diſpoſſeſſion*. 2. By *damage*, while the owner remains in poſſeſſion.

(4.) *Diſpoſſeſſion* may be effected, 1. By an unlawful *taking*. 2. By an unlawful *detaining*.

(5.) For the unlawful *taking* of goods and chattels perſonal, the remedy is, 1. Actual reſtitution, which (in caſe of a wrongful diſtreſs) is obtained by action of replevin. 3. Satisfaction in damages: 1*ſt*, in caſe of *reſcous*, by action of *reſcous*, poundbreach, or on the caſe; 2*dly*, in caſe of other unlawful takings, by action of treſpaſs, or trover.

(6.) For the unlawful *detaining* of goods lawfully taken, the remedy is alſo, 1. Actual reſtitution; by action of replevin, or detinue. 2. Satisfaction in damages: by action on the caſe, for trover and converſion.

(7.) For *damage* to perſonal property, while in the owner's poſſeſſion, the remedy is in damages; by action of treſpaſs *vi et armis*, in caſe the act be immediately injurious; or by action of treſpaſs on the caſe, to redreſs conſequential damage.

(8.) Injuries to perſonal property, in *action*, ariſe by breach of *contracts*, 1. *Expreſs*. 2. *Implied*.

(9.) Breaches of *expreſs* contracts are, 1. By *nonpayment* of *debts*. Remedy: 1*ſt*, Specific payment; recoverable by action of debt. 2*dly*, Damages for nonpayment; recoverable by action on the caſe. 2. By *nonperformance* of *covenants*. Remedy: by action of covenant, 1*ſt*, to recover damages, in covenants perſonal; 2*dly*, to compel performance, in covenants real. 3. By *nonperformance* of *promiſes*, or *aſſumpſits*. Remedy: by action on the caſe; for damages.

(10.) *Implied* contracts are ſuch as ariſe, 1. From the nature and conſtitution of *government*. 2. From *reaſon* and the conſtruction of law.

(11.) Breaches of contracts, implied in the nature of *government*, are by the *nonpayment* of money which the laws have directed to be paid. Remedy: by action of debt; (which, in ſuch caſes, is frequently a *popular*, frequently a *qui tam*, action) to compel the ſpecific payment;—or, ſometimes, by action on the caſe; for damages.

(12.) Breaches of contracts, implied in *reaſon* and conſtruction of law, are by the *nonperformance* of legal preſumptive *aſſumpſits*: for which the remedy is in damages; by an action on the caſe, on the implied *aſſumpſits*, 1. Of a *quantum meruit*. 2. Of a *quantum valebat*. 3. Of money expended for another. 4. Of receiving money to another's uſe. 5. Of an *inſimul computaſſent*, on an account ſtated; (the remedy on an account unſtated being by action of account.) 6. Of performing one's duty, in any employment, with integrity, diligence, and ſkill. In ſome of which caſes an action of deceit (or on the caſe, in nature of deceit,) will lie.

Sect. X. *Of injuries to real property; and, firſt, of diſpoſſeſſion, or ouſter, of the freehold.*

(1.) Injuries affecting *real* property are, 1. *Ouſter*. 2. *Treſpaſs*. 3. *Nuſance*. 4. *Waſte*. 5. *Subtraction*. 6. *Diſturbance*.

(2.) *Ouſter* is the amotion of poſſeſſion; and is, 1. From *freeholds*. 2. From *chattels* real.

(3.) Ouſter from *freeholds* is effected by, 1. *Abatement*. 2. *Intruſion*. 3. *Diſſeiſin*. 4. *Diſcontinuance*. 5. *Deforcement*.

(4.) *Abatement* is the entry of a ſtranger, after the death of the anceſtor, before the heir.

(5.) *Intruſion* is the entry of a ſtranger, after a particular eſtate of freehold is determined, before him in remainder or reverſion.

(6.) *Diſſeiſin* is a wrongful putting out of him that is ſeiſed of the freehold.

(7.) *Diſcontinuance* is where tenant in tail, or the huſband of tenant in fee, makes a larger eſtate of the land than the law alloweth.

(8.) *Deforcement* is any other detainer of the freehold from him who hath the property, but who never had the poſſeſſion.

(9.) The univerſal remedy for all theſe is reſtitution or delivery of poſſeſſion; and, ſometimes, damages for the detention. This is effected, 1. By mere *entry*. 2. By action *poſſeſſory*. 3. By writ of *right*.

(10.) Mere *entry* on lands, by him who hath the apparent right of poſſeſſion, will (if *peaceable*) deveſt the mere *poſſeſſion* of a wrongdoer. But *forcible* entries are remedied by immediate reſtitution, to be given by a juſtice of the peace.

(11.) Where the wrongdoer hath not only mere poſſeſſion, but alſo an *apparent* right of poſſeſſion, this may be deveſted by him who hath the *actual* right of poſſeſſion, by means of the *poſſeſſory* actions of *writ* of *entry*, or *aſſiſe*.

(12.) A writ of *entry* is a real action, which diſproves the title of the tenant, by ſhewing the unlawful means under which he gained or continues poſſeſſion. And it may be brought either againſt the wrongdoer himſelf, or in the degrees called the *per*, the *per* and *cui*, and the *poſt*.

(13.) An *aſſiſe* is a real action, which proves the title of the demandant, by ſhewing his own, or his anceſtor's, poſſeſſion. And it may be brought either to remedy abatements; *viz.* the aſſiſe of *mort d'anceſtor*, &c.: Or to remedy recent diſſeiſins; *viz.* the aſſiſe of *novel diſſeiſin*.

(14.) Where the wrongdoer hath gained the actual right of *poſſeſſion*, he who hath the right of *property* can only be remedied by a writ of *right*, or ſome writ of a ſimilar nature. As, 1. Where ſuch right of poſſeſſion is gained by the *diſcontinuance* of tenant in tail. Remedy, for the right of property: by writ of *formedon*. 2. Where gained by *recovery* in a poſſeſſory action, had againſt tenants of particular eſtates by their own default. Remedy: by writ of *quod ei deforceat*. 3. Where gained by *Recovery* in a poſſeſſory action, had upon the merits.—4. Where gained by the *ſtatute* of *limitations*. Remedy, in both caſes: by a mere writ of *right*, the higheſt writ in the law.

Sect. XI. *Of diſpoſſeſſion, or outer, of chattels real.*

(1.) Ouster from *chattels* real is, 1. From eſtates by *ſtatute* and *elegit*. 2. From an eſtate for *years*.

(2.) Ouſter from eſtates by *ſtatute* or *elegit*, is effected by a kind of *diſſeiſſin*. Remedy: reſtitution and damages; by aſſize of *novel diſſeiſin*.

(3.) Ouſter from an eſtate for years, is effected by a like diſſeiſin, or *ejectment*. Remedy: reſtitution, and damages; 1. By writ of *ejectione firmæ*. 2. By writ of *quare ejecit infra terminum*.

(4.) A writ of *ejectione firmæ*, or action of treſpaſs in ejectment, lieth where lands, &c. are let for a term of years, and the leſſee is ouſted or ejected from his term; in which caſe he ſhall recover poſſeſſion of his term, and damages.

(5.) This is now the uſual method of trying titles to land, inſtead of an action real: *viz.* By, 1. The claimant's making an actual (or ſuppoſed) leaſe upon the land to the plaintiff. 2. The plaintiff's actual (or ſuppoſed) entry thereupon. 3. His actual (or ſuppoſed) ouſter and ejectment by the defendant. For which injury this action is brought, either againſt the tenant, or (more uſually) againſt ſome caſual, or fictitious, ejector; in whoſe ſtead the tenant may be admitted defendant, on condition that the leaſe, entry, and ouſter be confeſſed, and that nothing elſe be diſputed but the merits of the title claimed by the leſſor of the plaintiff.

(6.) A writ of *quare ejecit infra terminum* is an action of a ſimilar nature; only not brought againſt the wrongdoer or ejector himſelf, but ſuch as are in poſſeſſion under his title.

Sect. XII. *Of treſpaſs.* cvi.

Trespass is an entry upon, and damage done to, another's lands, by one's ſelf, or one's cattle; without any lawful authority, or cauſe of juſtification: which is called a *breach of his cloſe*. Remedy: damages; by action of treſpaſs, *quare clauſum fregit*: beſides that of diſtreſs, damage feaſant. But, unleſs the title to the land came chiefly in queſtion, or the treſpaſs was wilful or malicious, the plaintiff (if the damages be under forty ſhilling,) ſhall recover no more coſts than damages.

Sect. XIII. *Of nuſance.* cvii.

(1.) Nusance, or annoyance, is any thing that worketh damage or inconvenience: and it is either a *public* and *common* nuſance, of which in the next chapter; or, a *private* nuſance, which is any thing done to the hurt or annoyance of, 1. The corporeal, 2. The incorporeal, hereditaments of another.

(2.) The remedies for a private nuſance, (beſides that of abatement,) are, 1. Damages; by action on the caſe; (which alſo lies for ſpecial prejudice by a public nuſance.) 2. Removal thereof, and damages; by aſſiſe of nuſance. 3. Like removal, and damages; by writ of *Quod permittat proſternere*.

Sect. XIV. *Of waſte.* cviii.

(1.) Waste is a ſpoil and deſtruction in lands and tenements, to the injury of him who hath, 1. An immediate intereſt (as, by right of common) in the lands. 2. The remainder or reverſion of the inheritance.

(2.) The remedies, for a commoner, are reſtitution, and damages; by aſſiſe of common: Or, damages only; by action on the caſe.

(3.) The remedy, for him in remainder, or reverſion, is, 1. Preventive: by writ of *eſtrepement* at law, or injunction out of chancery; to ſtay waſte. 2. Corrective: by action of waſte; to recover the place waſted, and damages.

Sect. XV. *Of ſubtraction.* cix.

(1.) Subtraction is when one, who owes ſervices to another, withdraws or neglects to perform them. This may be, 1. Of rents, and other ſervices, due by *tenure*. 2. Of thoſe due by *cuſtom*.

(2.) For ſubtraction of rents and ſervices, due by *tenure*, the remedy is, 1. By diſtreſs; to compel the payment, or performance. 2. By action of debt; 3. By aſſiſe. 4. By writ *de conſuetudinibus et ſervitiis*;—to compel the payment. 5. By writ of *ceſſavit*;—and, 6. By writ of right *ſur diſclaimer*;—to recover the land itſelf.

(3.) To remedy the oppreſſion of the lord, the law has alſo given, 1. The writ of *Ne injuſte vexes*: 2. The writ of *meſne*.

(4.) For ſubtraction of ſervices, due by *cuſtom*, the remedy is. 1. By writ of *Secta ad molendinum, furnum, torrale, &c.* to compel the performance, and recover damages. 2. By action on the caſe; for damages only.

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Sect. XVI. *Of diſturbance.*

(1.) Disturbance is the hindering, or diſquieting, the owners of an incorporeal hereditament, in their regular and lawful enjoyment of it.

(2.) Diſturbances are, 1. Of *franchiſes*. 2. Of *commons*. 3. Of *ways*. 4. Of *tenure*. 5. Of *patronage*.

(3.) Diſturbance of *franchiſes*, is remedied by a ſpecial action on the caſe; for damages.

(4.) Diſturbance of *common*, is, 1. *Intercommoning* without right. Remedy: Damages; by an action on the caſe, or of treſpaſs: beſides diſtreſs, damage feaſant; to compel ſatisfaction. 2. *Surcharging* the common. Remedies: Diſtreſs, damage feaſant; to compel ſatisfaction: Action on the caſe; for damages: or, Writ of admeaſurement of paſture; to apportion the common;—and writ *de ſecunda ſuperoneratione;* for the ſupernumerary cattle, and damages. 3. *Incloſure*, or obſtruction. Remedies: Reſtitution of the common, and damages; by aſſiſe of *novel diſſeiſin*, and by writ of *quod permittat:* or, Damages only; by action on the caſe.

(5.) Diſturbance of *ways*, is the obſtruction, 1. Of a way in groſs, by the owner of the land. 2. Of a way appendant, by a ſtranger. Remedy, for both: damages; by action on the caſe.

(6.) Diſturbance of *tenure*, by driving away tenants, is remedied by a ſpecial action on the caſe; for damages.

(7.) Diſturbance of *patronage*, is the hindrance of a patron to preſent his clerk to a benefice; whereof *uſurpation*, within ſix months, is now become a ſpecies.

(8.) Diſturbers may be, 1. The pſeudo-patron, by his wrongful preſentation. 2. His clerk, by demanding inſtitution. 3. The ordinary, by refuſing the clerk of the true patron.

(9.) The remedies are, 1. By aſſiſe of *darrein preſentment;* 2. By writ of *quare impedit;*—to compel inſtitution and recover damages: Conſequent to which are the writs of *quare incumbravit*, and *quare non admiſit;* for ſubſequent damages. 3. By writ of right of advowſon; to compel inſtitution, or eſtabliſh the permanent right.

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Sect. XVII. *Of injuries proceeding from, or affecting, the crown.*

(1.) Injuries to which the crown is a party are, 1. Where the crown is the aggreſſor. 2. Where the crown is the ſufferer.

(2.) The crown is the aggreſſor, whenever it is in poſſeſſion of any property to which the ſubject hath a right.

(3.) This is remedied, 1. By *petition* of *right;* where the right is grounded on facts diſcloſed in the petition itſelf. 2. By *monſtrans de droit*; where the claim is grounded on facts, already appearing on record. The effect of both which is to remove the hands (or poſſeſſion) of the king.

(4.) Where the crown is the ſufferer, the king's remedies are, 1. By ſuch common-law actions as are conſiſtent with the royal dignity. 2. By *inqueſt* of *office*, to recover poſſeſſion: which, when found, gives the king his right by ſolemn matter of record; but may afterwards be *traverſed* by the ſubject. 3. By writ of *ſcire facias*, to repeal the king's patent or grant. 4. By *information* of *intruſion*, to give damages for any treſpaſs on the lands of the crown; or of *debt*, to recover moneys due upon contract, or forfeited by the breach of any penal ſtatute; or ſometimes (in the latter caſe) by information *in rem:* all filed in the exchequer *ex officio* by the the king's attorney-general. 5. By writ of *quo warranto*, or information in the nature of ſuch writ; to ſeiſe into the king's hands any franchiſe uſurped by the ſubject, or to ouſt an uſurper from any public office. 6. By writ of *mandamus*, unleſs cauſe; to admit or reſtore any perſon intitled to a franchiſe or office: to which if a falſe cauſe be returned, the remedy is by traverſe, or by action on the caſe for damages; and, in conſequence, a peremptory *mandamus*, or writ of reſtitution.

Sect. XVIII. *Of the purſuit of remedies by action; and, firſt, of the original writ.*

(1.) The *purſuit* of the ſeveral remedies furniſhed by the laws of England, is, 1. By *action* in the courts of *common law*. 2. By *proceedings* in the courts of *equity*.

(2.) Of an *action* in the court of *common pleas* (originally the proper court for proſecuting civil ſuits) the orderly parts are, 1. The *original* writ. 2. The *proceſs*. 3. The *pleadings*. 4. The *iſſue*, or *demurrer*. 5. The *trial*. 6. The *judgment*. 7. The proceedings in nature of *appeal*. 8. The *execution*.

(3.) The *original* writ is the beginning or foundation of a ſuit, and is either *optional* (called a *præcipe*), commanding the defendant to do ſomething in certain, or otherwiſe ſhew cauſe to the contrary; or *peremptory*, (called a *ſi fecerit te ſecurum*), commanding, upon ſecurity given by the plaintiff, the defendant to appear in court, to ſhew wherefore he hath injured the plaintiff: both iſſuing out of chancery under the king's great ſeal, and returnable in bank during term-time.

Sect. XIX. *Of proceſs.*

(1.) Process is the means of compelling the defendant to appear in court.

(2.) This includes, 1. Summons. 2. The writ of attachment, or *pone;* which is ſometimes the firſt or original proceſs. 3. The writ of *diſtringas*, or diſtreſs infinite. 4. The writs of *capias ad reſpondendum*, and *teſtatum capias:* or, inſtead of theſe, in the king's bench, the bill of Middleſex, and writ of *latitat:*—and, in the exchequer, the writ of *quo minus*. 5. The *alias* and *pluries* writs. 6. The exigent, or writ of *exigi facias*, proclamations, and outlawry. 7. Appearance, and common bail. 8. The arreſt. 9. Special bail, firſt to the ſheriff, and then to the action.

Sect. XX. *Of pleadings.*

Pleadings are the mutual altercations of the plaintiff and defendant in writing; under which are compriſed, 1. The declaration or count; (wherein, incidentally, of the viſne, nonſuit, *retraxit*, and diſcontinuance.) 2. The defence, claim of cognizance, imparlance, view, oyer, aid-prayer, voucher, or age; 3. The plea; which is either a *dilatory* plea, (*1ſt*, to the juriſdiction; *2dly*, in diſability of the plaintiff; *3dly*, in abatement:) or it is a plea *to the action;* ſometimes

times confeſſing the action, either in whole, or in part; (wherein of a tender, paying money into court, and ſet-off;) but uſually denying the complaint, by pleading either, 1ſt, the general iſſue; or, 2dly, a ſpecial bar; (wherein of juſtifications, the ſtatutes of limitation, &c.) 4. Replication, rejoinder, ſurrejoinder, rebutter, ſurrebutter, &c. Therein of eſtoppels, colour, duplicity, departure, new aſſignment, proteſtation, averment, and other incidents of pleading.

Sect. XXI. *Of iſſue and demurrer.*

(1.) Issue is where the parties, in a courſe of pleading, come to a point affirmed on one ſide and denied on the other: which, if it be a matter of law, is called a *demurrer*; if it be a matter of fact, ſtill retains the name of an iſſue, of fact.

(2.) *Continuance* is the detaining of the parties in court from time to time, by giving them a day certain to appear upon. And, if any new matter ariſes ſince the laſt continuance or adjournment, the defendant may take advantage of it, even after demurrer or iſſue, by alleging it in a plea *puis darrein continuance*.

(3.) The determination of an iſſue in law, or demurrer, is by the opinion of the judges of the court; which is afterwards entered on *record*.

Sect. XXII. *Of the ſeveral ſpecies of trial.*

(1.) Trial is the examination of the matter of fact put in iſſue.

(2.) The ſpecies of trials are, 1. By the *record*. 2. By *inſpection*. 3. By *certificate*. 4. By *witneſſes*. 5. By *wager* of *battel*. 6. By *wager* of *law*. 7. By *jury*.

(3.) Trial by the *record* is had, when the exiſtence of ſuch record is the point in iſſue.

(4.) Trial by *inſpection* or *examination* is had by the court, principally when the matter in iſſue is the evident object of the ſenſes.

(5.) Trial by *certificate* is had in thoſe caſes, where ſuch certificate muſt have been concluſive to a jury.

(6.) Trial by *witneſſes* (the regular method in the civil law) is only uſed on a writ of dower, when the death of the huſband is in iſſue.

(7.) Trial by *wager* of *battel*, in civil caſes, is only had on a writ of right: but, in lieu thereof, the tenant may have, at his option, the trial by the *grand aſſiſe*.

(8.) Trial by *wager* of *law* is only had, where the matter in iſſue may be ſuppoſed to have been privily tranſacted, between the parties themſelves, without the intervention of other witneſſes.

Sect. XXIII. *Of the trial by jury.*

(1.) Trial by *jury* is, 1. *Extraordinary*; as, by the grand aſſiſe, in writs of right; and by the grand jury, in writs of attaint. 2. *Ordinary*.

(2.) The method and proceſs of the *ordinary* trial by jury is, 1. The writ of *venire facias* to the ſheriff, coroners, or eliſors; with the ſubſequent compulſive proceſs of *habeas corpora*, or *diſtringas*. 2. The carrying down of the record to the court of *niſi prius*. 3. The ſheriff's return; or panel of, 1ſt, ſpecial, 2dly, common jurors. 4. The challenges; 1ſt, to the array; 2dly, to the polls of the jurors; either, *propter honoris reſpectum*, *propter defectum*, *propter affectum* (which is ſometimes a principal challenge, ſometimes to the favour,) or *propter delictum*. 5. The *tales de circumſtantibus*. 6. The oath of the jury. 7. The evidence; which is either by proofs, 1ſt, written; 2dly, parol:—or, by the private knowledge of the jurors. 6. The verdict; which may be, 1ſt, privy; 2dly, public; 3dly, ſpecial.

Sect. XXIV. *Of judgment, and its incidents.* cxviii.

(1.) Whatever is tranſacted at the trial, in the court of *niſi prius*, is added to the record under the name of a *poſtea*: conſequent upon which is the *judgment*.

(2.) Judgment may be *arreſted* or ſtayed for cauſes, 1. Extrinſic, or *dehors* the record; as in the caſe of *new trials*. 2. Intrinſic, or within it; as where the declaration varies from the writ, or the verdict from the pleadings, and iſſue; or where the caſe, laid in the declaration, is not ſufficient to ſupport the action in point of law.

(3.) Where the iſſue is immaterial, or inſufficient, the court may award a *repleader*.

(4.) *Judgment* is the ſentence of the law, pronounced by the court, upon the matter contained in the record.

(5.) Judgments are, 1. Interlocutory; which are incomplete till perfected by a writ of inquiry. 2. Final.

(6.) *Coſts*, or expences of ſuit, are now the neceſſary conſequence of obtaining judgment.

Sect. XXV. *Of proceedings, in the nature of appeals.* cxix.

(1.) Proceedings, in the nature of *appeals* from judgment, are, 1. A writ of *attaint*; to impeach the verdict of a jury; which of late has been ſuperſeded by new trials. 2. A writ of *audita querela*; to diſcharge a judgment by matter that has ſince happened. 3. A writ of *error*, from one court of record to another; to correct judgments, erroneous in point of law, and not helped by the ſtatutes of amendment and jeofails.

(2.) Writs of error lie, 1. To the court of *king's bench*, from all inferior courts of record; from the court of *common-pleas* at Weſtminſter; and from the court of *king's-bench* in Ireland. 2. To the courts of *exchequer-chamber*, from the law ſide of the court of *exchequer*; and from proceedings in the court of *king's-bench* by bill. 3. To the houſe of *peers*, from proceedings in the court of *king's-bench* by original, and on writs of error; and from the ſeveral courts of *exchequer-chamber*.

Sect. XXVI. *Of execution.* cxx.

Execution is the putting in force of the ſentence or judgment of the law. Which is effected, 1. Where poſſeſſion of any hereditament is recovered: by writ of *habere facias ſeiſinam*, *poſſeſſionem*, *&c.* 2. Where any thing is awarded to be done or rendered, by a ſpecial writ for that purpoſe: as, by writ of abatement, in caſe of nuſance; *retorno habendo*, and *capias in withernam*, in replevin; *diſtringas* and *ſcire facias*, in detinue. 3. Where money only is recovered; by writ of, 1ſt, *capias ad ſatisfaciendum*, againſt the *body* of the defendant; or, in default thereof, *ſcire fa-*

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cias againſt his bail. 2dly, *Fieri facias*, againſt his *goods* and chattels. 3dly, *Levari facias*, againſt his *goods* and the *profits* of his *lands*. 4thly, *Elegit*, againſt his *goods*, and the *poſſeſſion* of his *lands*. 5thly, *Extendi facias*, and other proceſs, on ſtatutes, recognizances, &c. againſt his *body*, *lands*, and *goods*.

cxxi. SECT. XXVII. *Of proceedings in the courts of equity.*

(1.) MATTERS of equity which belong to the peculiar juriſdiction of the court of *chancery*, are, 1. The guardianſhip of infants. 2. The cuſtody of idiots and lunatics. 3. The ſuperintendance of charities. 4. Commiſſions of bankrupt.

(2.) The court of *exchequer* and the duchy-court of *Lancaſter*, have alſo ſome peculiar cauſes, in which the intereſt of the king is more immediately concerned.

(3.) *Equity* is the true ſenſe and ſound interpretation of the rules of law; and, as ſuch, is equally attended to by the judges of the courts both of common law and equity.

(4.) The eſſential differences, whereby the Engliſh courts of equity are diſtinguiſhed from the courts of law, are, 1. The mode of *proof*, by a diſcovery on the oath of the party; which gives a juriſdiction in matters of account, and fraud. 2. The mode of *trial;* by depoſitions taken in any part of the world. 3. The mode of *relief;* by giving a more ſpecific and extenſive remedy than can be had in the courts of law; as, by carrying agreements into execution, ſtaying waſte or other injuries by injunction, directing the ſale of incumbered lands, &c. 4. The true conſtruction of *ſecurities* for money, by conſidering them merely as a pledge. 5. The execution of *truſts*, or ſecond uſes, in a manner analogous to the law of legal eſtates.

(5.) The proceedings in the court of chancery, (to which thoſe in the exchequer, &c. very nearly conform,) are, 1. Bill. 2. Writ of *ſubpœna;* and, perhaps, injunction. 3. Proceſs of contempt; viz. (ordinarily) attachment, attachment with proclamations, commiſſion of rebellion, ſerjeant at arms, and ſequeſtration. 4. Appearance. 5. Demurrer. 6. Plea. 7. Anſwer. 8. Exceptions; amendments; croſs, or ſupplemental, bills; bills of revivor, interpleader, &c. 9. Replication. 10. Iſſue. 11. Depoſitions, taken upon interrogatories; and ſubſequent publication thereof. 12. Hearing. 13. Interlocutory decree; feigned iſſue, and trial; reference to the maſter, and report; &c. 14. Final decree. 15. Rehearing, or bill of review. 16. Appeal to parliament.

CHAP. IV.

Of PUBLIC WRONGS.

cxxiii. SECT. I. *Of the nature of crimes, and their puniſhment.*

(1.) IN treating of *public wrongs* may be conſidered, 1. The general *nature* of crimes and puniſhments. 2. The perſons *capable* of committing crimes. 3. Their ſeveral *degrees* of guilt. 4. The ſeveral *ſpecies* of crimes, and their reſpective puniſhments. 5. The means of *prevention*. 6. The method of *puniſhment*.

(2.) A *crime*, or *miſdemeanour*, is an act committed, or omitted, in violation of a public law either forbidding or commanding it.

(3.) Crimes are diſtinguiſhed from civil injuries, in that they are a breach and violation of the *public* rights, due to the whole community, conſidered as a community.

(4.) *Puniſhments* may be conſidered with regard to, 1. The *power;* 2. The *end;* 3. The *meaſure;*—of their infliction.

(5.) The *power*, or right, of inflicting human puniſhments for *natural* crimes, or ſuch as are *mala in ſe*, was by the law of nature veſted in every individual: but, by the fundamental contract of ſociety, is now transferred to the ſovereign power; in which alſo is veſted, by the ſame contract, the right of puniſhing *poſitive* offences, or ſuch as are *mala prohibita*.

(6.) The *end* of human puniſhments is to prevent future offences; 1. By amending the offender himſelf. 2. By deterring others through his example. 3. By depriving him of the power to do future miſchief.

(7.) The *meaſure* of human puniſhments muſt be determined by the wiſdom of the ſovereign power, and not by any uniform univerſal rule: though that wiſdom may be regulated, and aſſiſted, by certain general, equitable, principles.

SECT. II. *Of the perſons capable of committing crimes.*

(1.) ALL perſons are *capable* of committing crimes, unleſs there be in them a *defect* of *will:* for, to conſtitute a legal crime, there muſt be both a vitious will, and a vitious act.

(2.) The will does not concur with the act, 1. Where there is a defect of *underſtanding*. 2. Where no will is *exerted*. 3. Where the act is *conſtrained* by force and violence.

(3.) A vitious will may therefore be wanting, in the caſes of, 1. Infancy. 2. Idiocy, or lunacy. 3. Drunkenneſs; which doth not, however, excuſe. 4. Misfortune. 5. Ignorance, or miſtake of fact. 6. Compulſion, or neceſſity; which is, 1ſt, that of civil ſubjection; 2dly, that of dureſs *per minas;* 3dly, that of chooſing the leaſt pernicious of two evils, where one is unavoidable; 4thly, that of want, or hunger; which is no legitimate excuſe.

(4.) The king, from his excellence and dignity, is alſo incapable of doing wrong.

SECT. III. *Of principals and acceſſories.*

(1.) THE different *degrees* of guilt in criminals are, 1. As *principals*. 2. As *acceſſories*.

(2.) A *principal* in a crime is, 1. He who commits the fact. 2. He who is preſent at, aiding, and abetting, the commiſſion.

(3.) An *acceſſory* is he who doth not commit the fact, nor is preſent at the commiſſion; but is in ſome ſort concerned therein, either *before* or *after*.

(4.) Acceſſories can only be in petit treaſon, and felony: in high treaſon, and miſdemeanours, all are principals.

(5.) An acceſſory, *before* the fact, is one who, being abſent when the crime is committed, hath procured, counſelled, or commanded, another to commit it.

(6.) An acceſſory *after* the fact, is where a perſon, knowing a felony to have been committed, receives, relieves, comforts, or aſſiſts, the felon. Such acceſſory is uſually entitled to the benefit of clergy; where the principal, and acceſſory *before* the fact, are excluded from it.

SECT. IV. *Of offences againſt* GOD *and religion.*

(1.) CRIMES and miſdemeanours cognizable by the laws of England are ſuch as more immediately offend, 1. GOD, and his holy *religion*. 2. The law of *nations*. 3. The *king*, and his *government*. 4. The *public*, or *commonwealth*. 5. *Individuals*.

(2.) Crimes more immediately offending GOD and *religion* are, 1. *Apoſtacy*. For which the penalty is incapacity, and impriſonment. 1. *Hereſy*. Penalty, for one ſpecies thereof: the ſame. 3. Offences againſt the eſtabliſhed *church*:—Either, by *reviling* its ordinances. Penalties: fine; deprivation; impriſonment; forfeiture.—Or, by *nonconformity* to its worſhip: 1ſt, Thro' total *irreligion*. Penalty: fine. 2dly, Thro' proteſtant *diſſenting*. Penalty: ſuſpended by the toleration act. 3dly, Through *popery*, either in profeſſors of the popiſh religion, popiſh recuſants, convict, or popiſh prieſts. Penalties: incapacity; double taxes; impriſonment; fines; forfeitures; abjuration of the realm; judgment of felony, without clergy; and judgment of high treaſon. 4. *Blaſphemy*. Penalty: fine, impriſonment, and corporal puniſhment. 5. Profane *ſwearing* and *curſing*. Penalty: fine, or houſe of correction. 6. *Witchcraft*; or, at leaſt, the pretence thereto. Penalty: impriſonment, and pillory. 7. Religious *impoſtures*. Penalty: fine, impriſonment, and corporal puniſhment. 8. *Simony*. Penalties: forfeiture of double value; incapacity. 9. *Sabbath-breaking*. Penalty: fine. 10. *Drunkenneſs*. Penalty: fine, or ſtocks. 11. *Lewdneſs*. Penalties: fine; impriſonment; houſe of correction.

SECT. V. *Of offences againſt the law of nations.*

(1.) THE *law* of *nations* is a ſyſtem of rules, deducible by natural reaſon, and eſtabliſhed by univerſal conſent, to regulate the intercourſe between independent ſtates.

(2.) In England, the *law* of *nations* is adopted in its full extent, as part of the law of the land.

(3.) Offences againſt this law are principally incident to whole ſtates or nations; but, when committed by private ſubjects, are then the objects of the municipal law.

(4.) Crimes againſt the law of *nations*, animadverted on by the laws of England, are, 1. Violation of *ſafe-conducts*. 2. Infringement of the rights of *embaſſadors*. Penalty, in both: arbitrary. 3. *Piracy*. Penalty: judgment of felony, without clergy.

SECT. VI. *Of high treaſon.*

(1.) CRIMES and miſdemeanours more peculiarly offending the king and his government are, 1. *High treaſon*. 2. *Felonies* injurious to the prerogative. 3. *Præmunire*. 4. Other *miſpriſions* and *contempts*.

(2.) *High treaſon* may, according to the ſtatute of Edward III. be committed, 1. By *compaſſing* or *imagining* the death of the king, or queen-conſort, or their eldeſt ſon and heir; demonſtrated by ſome overt act. 2. By *violating* the king's companion, his eldeſt daughter, or the wife of his eldeſt ſon. 3. By ſome overt act of *levying* war againſt the king in his realm. 4. By *adherence* to the king's enemies. 5. By *counterfeiting* the king's great or privy *ſeal*. 6. By *counterfeiting* the king's *money*, or importing counterfeit money. 7. By *killing* the chancellor, treaſurer, or king's juſtices, in the execution of their offices.

(3.) *High treaſons*, created by ſubſequent ſtatutes, are ſuch as relate, 1. To *papiſts*: as, the repeated defence of the Pope's juriſdiction; the coming from beyond ſea of a natural-born Popiſh prieſt; the renouncing of allegiance, and reconciliation to the Pope or other foreign power. 2. To the *coinage*, or other ſignatures of the king: as, counterfeiting (or, importing and uttering counterfeit) foreign coin, here current; forging the ſign manual, privy ſignet, or privy ſeal; falſifying, &c. the current coin. 3. To the *proteſtant ſucceſſion*: as, correſponding with, or remitting to, the late Pretender's ſons; endeavouring to impede the ſucceſſion; writing or printing, in defence of any Pretender's title, or in derogation of the act of ſettlement, or of the power of parliament to limit the deſcent of the crown.

(4.) The *puniſhment* of high treaſon, in *males*, is (generally) to be, 1. Drawn. 2. Hanged. 3. Embowelled alive. 4. Beheaded. 5. Quartered. 6. The head and quarters to be at the king's diſpoſal. But, in treaſons relating to the coin, only to be drawn, and hanged till dead. *Females*, in both caſes, are to be drawn, and burned alive.

SECT. VII. *Of felonies injurious to the king's prerogative.*

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(1.) FELONY is that offence which occaſions the total forfeiture of lands or goods at common law; now uſually alſo puniſhable with death, by hanging; unleſs through the benefit of clergy.

(2.) *Felonies* injurious to the king's prerogative (of which ſome are within, others without, clergy) are, 1. Such as relate to the *coin*: as, the wilful uttering of counterfeit money, &c.; (to which head ſome inferior miſdemeanours affecting the coinage may be alſo referred). 2. Conſpiring or attempting to kill a *privy counſellor*. 3. Serving *foreign* ſtates, or enliſting ſoldiers for *foreign* ſervice. 4. Embezzling the king's *armour* or *ſtores*. 5. *Deſertion* from the king's *armies*, by land or ſea.

SECT. VIII. *Of præmunire.*

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(1.) PRÆMUNIRE, in its original ſenſe, is the offence of adhering to the temporal power of the Pope, in derogation of the regal authority. Penalty: outlawry, forfeiture, and impriſonment: which hath ſince been extended to ſome offences of a different nature.

(2.) Among theſe are, 1. Importing Popiſh trinkets. 2. Contributing to the maintenance of Popiſh ſeminaries abroad, or Popiſh prieſts in England. 3. Moleſting the poſſeſſors of abbey-lands. 4. Acting as broker in an uſurious contract, for more than ten *per cent*. 5. Obtaining any ſtay of proceedings in ſuits for monopolies. 6. Obtaining an excluſive patent for gunpowder or arms. 7. Exertion of purveyance or pre-emption. 8. Aſſerting a legiſlative authority in both or either houſe of parliament. 9. Sending any ſubject a priſoner beyond ſea. 10. Refuſing the oaths of allegiance and ſupremacy. 11. Preaching, teaching, or adviſed ſpeaking, in defence of the right of any pretender to the crown, or in derogation of the power of parliament to limit the ſucceſſion. 12. Treating of other matters, by the aſſembly of peers of Scotland, convened for electing their repreſentatives in parliament. 15. Unwarrantable undertakings by unlawful ſubſcriptions to public funds.

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Sect. IX. *Of miſpriſions and contempts affecting the king and government.*

(1.) Miſpriſions and *contempts* are all ſuch high offences as are under the degree of capital.

(2.) Theſe are, 1. *Negative*, in concealing what ought to be revealed. 2. *Poſitive*, in committing what ought not to be done.

(3.) *Negative* miſpriſions are, 1. Miſpriſion of *treaſon*. Penalty: forfeiture and impriſonment. 2. Miſpriſion of *felony*. Penalty: fine and impriſonment. 3. Concealment of *treaſure trove*. Penalty: fine and impriſonment.

(4.) *Poſitive* miſpriſions, or high miſdemeanors and contempts, are, 1. *Mal-adminiſtration* of public truſts, which includes the crime of *peculation*. Uſual penalties: baniſhment; fines; impriſonment; diſability. 2. Contempts againſt the king's *prerogative*. Penalty: fine, and impriſonment. 3. Contempt againſt his *perſon* and *government*. Penalty: fine, impriſonment, and infamous corporal puniſhment, 4. Contempts againſt his *title*. Penalties: fine, and impriſonment; or fine, and diſability. 5. Contempts againſt his *palaces*, or *courts* of juſtice. Penalties: fine; impriſonment; corporal puniſhment; loſs of right hand; forfeiture.

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Sect. X. *Of offences againſt public juſtice.*

(1.) Crimes eſpecially affecting the *commonwealth* are offences, 1. Againſt the public *juſtice*. 2. Againſt the public *peace*. 3. Againſt the public *trade*. 4. Againſt the public *health*. 5. Againſt the public *police* or *œconomy*.

(2.) Offences againſt the public *juſtice*, are, 1. *Embezzling* or *vacating* records, and *perſonating* others in courts of juſtice. Penalty: judgment of felony, uſually without clergy. 2. *Compelling* priſoners to become *approvers*. Penalty: judgment of felony.—3. *Obſtructing* the execution of proceſs. 4. *Eſcapes*. 5. *Breach* of priſon. 6. *Reſcue*.—Which four may, (according to the circumſtances), be either felonies, or miſdemeanors puniſhable by fine and impriſonment. 7. *Returning* from *tranſportation*. This is felony, without clergy. 8. Taking *rewards*, to *help* one to his ſtolen goods. Penalty: the ſame as for the theft. 9. *Receiving* ſtolen goods. Penalties: tranſportation; fine; and impriſonment.—10. *Theſtbote*. 11. Common *barretry*, and ſuing in a feigned name. 12. *Maintenance*. 13. *Champerty*. Penalty, in theſe four: fine, and impriſonment. 14. *Compounding* proſecutions on penal ſtatutes. Penalty: fine, pillory, and diſability. 15. *Conſpiracy*; and threats of accuſation in order to extort money, &c. Penalties: the villenous judgment; fine; impriſonment; pillory; whipping; tranſportation. 16. *Perjury*, and ſubornation thereof. Penalties: infamy; impriſonment; fine, or pillory; and, ſometimes, tranſportation or houſe of correction. 17. *Bribery*. Penalty: fine, and impriſonment. 18. *Embracery*. Penalty: infamy, fine, and impriſonment. 19. *Falſe verdict*. Penalty: the judgment in attaint. 20. *Negligence* of public officers, &c. Penalty: fine, and forfeiture of the office. 21. *Oppreſſion* by magiſtrates. 22. *Extortion* of officers. Penalty, in both: impriſonment, fine, and ſometimes forfeiture of the office.

Sect. XI. *Of offences againſt the public peace.*

Offences againſt the public *peace* are, 1. *Riotous aſſemblies* to the number of *twelve*. 2. Appearing armed, or hunting in *diſguiſe*. 3. *Threatening*, or *demanding* any valuable thing, by letter.—All theſe are felonies, without clergy. 4. Deſtroying of *turnpikes*, &c. Penalties: whipping; impriſonment; judgment of felony, with and without clergy.—5. *Affrays*. 6. *Riots*, *routs*, and *unlawful aſſemblies*. 7. Tumultuous *petitioning*. 8. Forcibly *entry*, and *detainer*. Penalty, in all four: fine, and impriſonment. 9. Going unuſually *armed*. Penalty: forfeiture of arms, and impriſonment. 10. Spreading *falſe news*. Penalty: fine, and impriſonment. 11. Pretended *prophecies*. Penalties: fine; impriſonment; and forfeiture. 12. *Challenges* to fight. Penalty: fine, impriſonment, and ſometimes forfeiture. 13. *Libels*. Penalty: fine, impriſonment, and corporal puniſhment.

Sect. XII. *Of offences againſt public trade.*

Offences againſt the public *trade*, are, 1. *Owling*. Penalties: fines; forfeiture; impriſonment; loſs of left hand; tranſportation; judgment of felony. 2. *Smuggling*. Penalties: fines; loſs of goods; judgment of felony, without clergy. 3. *Fraudulent bankruptcy*. Penalty: judgment of felony without clergy. 5. *Uſury*. Penalty: fine, and impriſonment. 5. *Cheating*. Penalties: fine; impriſonment; pillory; tumbrel; whipping, or other corporal puniſhment; tranſportation.—6. *Foreſtalling*. 7. *Regrating*. 8. *Engroſſing*. Penalties, for all three: loſs of goods; fine; impriſonment; pillory. 9. *Monopolies*, and *combinations* to raiſe the price of commodities. Penalties: fines; impriſonment; pillory; loſs of ear; infamy; and, ſometimes, the pains of *præmunire*. 10. Exerciſing a *trade*, not having ſerved as an apprentice. Penalty; fine. 11. Tranſporting, or reſiding abroad, of *artificers*. Penalties: fine; impriſonment; forfeiture; incapacity; becoming aliens.

Sect. XIII. *Of offences againſt the public health, and the public police or œconomy.*

(1.) Offences againſt the public *health* are, 1. *Irregularity*, in the time of the *plague*, or of *quarentine*. Penalties: whipping; judgment of felony, with and without clergy. 2. Selling *unwholeſome proviſions*. Penalties: amercement; pillory; fine; impriſonment; abjuration of the town.

(2.) Offences againſt the public *police* and *œconomy* or domeſtic order of the kingdom, are, 1. Thoſe relating to *clandeſtine* and *irregular marriages*. Penalties: judgment of felony, with and without clergy. 2. *Bigamy*, or (more properly) *polygamy*. Penalty: judgment of felony.—3. *Wandering*, by *ſoldiers* or *mariners*. 4. *Remaining* in England, by *Egyptians*; or being in their *fellowſhip* one month. Both theſe are felonies, without clergy. 5. *Common nuſances*, 1*ſt*, by annoyances or purpreſtures in highways, bridges, and rivers; *2dly*, by offenſive trades and manufactures; *3dly*, by diſorderly houſes; *4thly*, by lotteries; *5thly*, by cottages; *6thly*, by fireworks; *7thly*, by eveſdropping. Penalty, in all; fine.—*8thly*, By common ſcolding. Penalty: the cucking ſtool. 6. *Idleneſs*, *diſorder*, *vagrancy*, and *incorrigible roguery*. Penalties: impriſonment; whipping; judgment of felony. 7. *Luxury*, in diet. Penalty, diſcretionary. 8. *Gaming*. Penalties: to gentlemen, fines; to others, fine and impriſonment; to cheating gameſters, fine, infamy, and the corporal pains of perjury. 9. *Deſtroying* the *game*. Penalties: fines, and coporal puniſhment.

SECT. XIV. *Of homicide.*

(1.) CRIMES eſpecially affecting *individuals* are, 1. Againſt their *perſons*. 2. Againſt their *habitations*. 3. Againſt their *property*.

(2.) Crimes againſt the *perſons* of individuals, are, 1. By *homicide*, or deſtroying life. 2. By other *corporal* injuries.

(3.) *Homicide* is, 1. *Juſtifiable*. 2. *Excuſable*. 3. *Felonious*.

(4.) Homicide is *juſtifiable*, 1. By neceſſity, and command of law. 2. By permiſſion of law; *1ſt*, for the furtherance of public juſtice; *2dly*, for prevention of ſome forcible felony.

(5.) Homicide is *excuſable*, 1. *Per infortunium*, or by miſ-adventure. 3. *Se defendendo*, or in ſelf-defence, by chance-medley. Penalty, in both: forfeiture of goods; which however is pardoned of courſe.

(6.) *Felonious* homicide is the killing of a human creature without juſtification or excuſe. This is, 1. Killing *one's ſelf*. 2. Killing *another*.

(7.) Killing *one's ſelf*, or *ſelf-murder*, is where one deliberately, or by any unlawful malicious act, puts an end to his own life. This is felony; puniſhed by ignominious burial, and forfeiture of goods and chattels.

(8.) Killing *another* is, 1. *Manſlaughter*. 2. *Murder*.

(9.) *Manſlaughter* is the unlawful killing of another; without malice, expreſs or implied. This is either, 1 Voluntary, upon a ſudden heat. 2. Involuntary, in the commiſſion of ſome unlawful act. Both are felony, but within clergy; except in the caſe of *ſtabbing*.

(10.) *Murder* is when a perſon, of ſound memory and diſcretion, unlawfully killeth any reaſonable creature, in being, and under the king's peace; with malice aforethought, either expreſs or implied. This is felony, without clergy; puniſhed with ſpeedy death, and hanging in chains, or diſſection.

(11.) *Petit treaſon* (being an aggravated degree of *murder*) is where the ſervant kills his maſter, the wife her huſband, or the eccleſiaſtic his ſuperior. Penalty: in men, to be drawn and hanged; in women, to be drawn and burned.

SECT. XV. *Of offences againſt the perſons of individuals.*

CRIMES affecting the *perſons* of individuals, by other corporal injuries not amounting to homicide, are, 1. *Mayhem*; and alſo *ſhooting* at another. Penalties: fine; impriſonment; judgment of felony, without clergy. 2. Forcible *abduction*, and *marriage* or *defilement*, of an heireſs; which is felony: alſo, *ſtealing*, and *deflowering* or *marrying*, any woman-child under the age of *ſixteen* years; for which the penalty is impriſonment, fine, and temporary forfeiture of her lands.—3. *Rape*, and alſo *carnal knowledge*, of a woman-child under the age of *ten* years. 4. *Buggery*, with man or beaſt. Both theſe are felonies, without clergy.—5. *Aſſault*. 6. *Battery*; eſpecially of clergymen. 7. *Wounding*. Penalties, in all three: fine; impriſonment; and other corporal puniſhment. 8. *Falſe impriſonment*. Penalties: fine; impriſonment; and (in ſome atrocious caſes) the pains of *præmunire*, and incapacity of office or pardon. 9. *Kidnapping*, or forcibly ſtealing away the king's ſubjects. Penalty: fine; impriſonment; and pillory.

SECT. XVI. *Of offences againſt the habitations of individuals.* cxxxviii.

(1.) CRIMES, affecting the *habitation* of individuals, are, 1. *Arſon*. 2. *Burglary*.

(2.) *Arſon* is the malicious and wilful burning of the houſe, or out-houſe, of another man. This is felony; in ſome caſes within, in others without, clergy.

(3.) *Burglary* is the breaking and entering, by night, into a manſion-houſe; with intent to commit a felony. This is felony, without clergy.

SECT. XVII. *Of offences againſt private property.* cxxxix.

(1.) CRIMES affecting the private *property* of individuals are, 1. *Larciny*. 2. Malicious *miſchief*. 3. *Forgery*.

(2.) *Larciny* is, 1. *Simple*. 2. *Mixed*, or *compound*.

(3.) *Simple* larciny is the felonious taking, and carrying away, of the perſonal goods of another. And it is, 1. *Grand* larciny; being above the value of twelve pence. Which is felony; in ſome caſes within, in others without, clergy. 2. *Petit* larciny; to the value of twelve pence or under. Which is alſo felony, but not capital; being puniſhed with whipping, or tranſportation.

(4.) *Mixed*, or *compound*, larciny is that wherein the taking is accompanied with the aggravation of being, 1. From the *houſe*. 2. From the *perſon*.

(5.) Larcinies from the *houſe*, by day or night, are felonies without clergy, when they are, 1. Larcinies, above *twelve pence*, from a church;—or by breaking a tent or booth in a market or fair, by day or night, the owner or his family being therein;—or by breaking a dwelling-houſe by day, any perſon being therein;—or from a dwelling-houſe by day, without breaking, any perſon therein being put in fear;—or from a dwelling-houſe by night, without breaking, the owner or his family being therein and put in fear. 2. Larcinies, of *five ſhillings*, by breaking the dwelling-houſe, ſhop, or warehouſe, by day, though no perſon be therein;—or, by privately ſtealing in any ſhop, warehouſe, coach-houſe, or ſtable, by day or night, without breaking, and though no perſon be therein. 3. Larcinies, of *forty ſhillings*, from a dwelling-houſe or its out-houſes, without breaking, and though no perſon be therein.

(6.) Larciny from the *perſon* is, 1. By *privately ſtealing*, from the perſon of another, above the value of twelve pence. 2. By *robbery*; or the felonious and forcible

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forcible taking, from the perſon of another, in or near the highway, goods or money of any value, by putting him in fear. Theſe are both felonies without clergy. An attempt to rob is alſo felony.

(7.) Malicious *miſchief*, by deſtroying dikes, goods, cattle, ſhips, garments, fiſhponds, trees, woods, churches, chapels, meeting-houſes, houſes, out-houſes, corn, hay, ſtraw, ſea or river banks, hopbinds, coal-mines (or engines thereunto belonging), or any fences for incloſures by act of parliament, is felony; and, in moſt caſes, without benefit of clergy.

(8.) *Forgery* is the fraudulent making or alteration of a writing, in prejudice of another's right. Penalties: fine; impriſonment; pillory; loſs of noſe and ears; forfeiture; judgment of felony, without clergy.

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SECT. XVIII. *Of the means of preventing offences.*

(1.) CRIMES and miſdemeanours may be *prevented*, by compelling ſuſpected perſons to give *ſecurity*: which is effected by binding them in a conditional recognizance to the king, taken in court, or by a magiſtrate.

(2.) Theſe recognizances may be conditioned, 1. To keep the *peace*. 2. To be of the *good behaviour*.

(3.) They may be taken by any juſtice or conſervator of the peace, at his own diſcretion; or, at the requeſt of ſuch as are intitled to demand the ſame.

(4.) All perſons, who have given ſufficient cauſe to apprehend an intended breach of the peace, may be bound over to keep the *peace*; and all thoſe, that be not of good fame, may be bound to the *good behaviour*; and may, upon refuſal in either caſe, be committed to gaol.

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SECT. XIX. *Of courts of a criminal juriſdiction.*

(1.) IN the method of *puniſhment* may be conſidered, 1. The ſeveral *courts* of criminal juriſdiction. 2. The ſeveral *proceedings* therein.

(2.) The criminal *courts* are, 1. Thoſe of a *public* and general juriſdiction throughout the realm. 2. Thoſe of a *private* and ſpecial juriſdiction.

(3.) *Public* criminal courts are, 1. The high court of parliament; which proceeds by impeachment. 2. The court of the lord high ſteward; and the court of the king in full parliament: for the trial of capitally indicted peers. 3. The court of king's bench. 4. The court of chivalry. 5. The court of admiralty, under the king's commiſſion. 6. The courts of oyer and terminer, and general goal-delivery. 7. The court of quarter-ſeſſions of the peace. 8. The ſheriff's tourn. 9. The court leet. 10. The court of the coroner. 11. The court of the clerk of the market.

(4.) *Private* criminal courts are, 1. The court of the lord ſteward, &c. by ſtatute of Henry VII. 2. The court of the lord ſteward, &c. by ſtatute of Henry VIII. 3. The univerſity courts.

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SECT. XX. *Of ſummary convictions.*

(1.) PROCEEDINGS in criminal courts are, 1. *Summary*. 2. *Regular*.

(2.) *Summary* proceedings are ſuch, whereby a man may be convicted of divers offences, without any formal proceſs or jury, at the diſcretion of the judge or judges appointed by act of parliament, or common law.

(3.) Such are, 1. Trials of offences and frauds againſt the laws of *exciſe* and other branches of the king's *revenue*. 2. Convictions before *juſtices* of the *peace* upon a variety of minute offences, chiefly againſt the public police. 3. *Attachments* for contempts to the ſuperior courts of juſtice.

SECT. XXI. *Of arreſts.*

(1.) REGULAR proceedings in the courts of common law, are, 1. *Arreſt*. 2. *Commitment* and *bail*. 3. *Proſecution*. 4. *Proceſs*. 5. *Arraignment*, and its incidents. 6. *Plea* and *iſſue*. 7. *Trial* and *conviction*. 8. *Clergy*. 9. *Judgment*, and its conſequences. 10. *Reverſal* of judgment. 11. *Reprieve* or *pardon*. 12. *Execution*.

(2.) An *arreſt* is the apprehending, or reſtraining, of one's perſon; in order to be forthcoming to anſwer a crime whereof one is accuſed or ſuſpected.

(3.) This may be done, 1. By warrant. 2. By an officer, without warrant. 3. By a private perſon, without warrant. 4. By hue and cry.

SECT. XXII. *Of commitment and bail.*

(1.) COMMITMENT is the confinement of one's perſon in priſon, for ſafe cuſtody, by warrant from proper authority; unleſs, in bailable offences, he puts in ſufficient *bail*, or ſecurity for his future appearance.

(2.) The magiſtrate is bound to take reaſonable bail, if offered; unleſs the offender be not bailable.

(3.) Such are, 1. Perſons accuſed of treaſon; or, 2. Of murder; or, 3. Of manſlaughter, by indictment; or if the priſoner was clearly the ſlayer. 4. Priſon-breakers, when committed for felony. 5. Outlaws. 6. Thoſe who have abjured the realm. 7. Approvers, and appellees. 8. Perſons taken with the mainour. 9. Perſons accuſed of arſon. 10. Excommunicated perſons.

(4.) The magiſtrate may, at his diſcretion, admit to bail, or otherwiſe, perſons not of good fame, charged with other felonies, whether as principals or as acceſſories.

(5.) If they be of good fame, he is bound to admit them to bail.

(6.) The court of king's bench, or its judges in time of vacation, may bail in any caſe whatſoever.

SECT. XXIII. *Of the ſeveral modes of proſecution.*

(1.) PROSECUTION, or the manner of accuſing offenders, is either by a previous finding of a grand jury; as, 1. By *preſentment*. 2. By *indictment*. Or, without ſuch finding, 3. By *information*. 4. By *appeal*.

(2.) A *preſentment* is the notice taken by a grand jury of any offence, from their own knowledge or obſervation.

(3.) An *indictment* is a written accuſation of one or more perſons of a crime or miſdemeanour, preferred to, and preſented on oath by, a grand jury; expreſſing, with ſufficient certainty, the perſon, time, place, and offence.

(4.) An *information* is, 1. At the ſuit of th king and a ſubject, upon penal ſtatutes. 4. At the ſuit of the king only. Either, 1. Filed by the attorney-general *ex officio*, for ſuch miſdemeanours as affect the king's perſon or government: or, 2. Filed by the maſter of the crown-office (with leave of the court of king's bench) at the relation of ſome private ſubject, for other groſs and notorious miſdemeanours. All differing from indictments in this; that they are exhibited by the informer, or the king's officer; and not on the oath of a grand jury.

(5.) An *appeal* is an accuſation or ſuit, brought by one private ſubject againſt another, for larciny, rape, mayhem, arſon, or homicide; which the king cannot diſcharge or pardon, but the party alone can releaſe.

Sect. XXIV. *Of proceſs upon an indictment.*

(1.) Process to bring in an offender, when indicted in his abſence, is, in miſdemeanours, by *venire facias*, diſtreſs infinite, and *capias*: in capital crimes, by *capias* only: and, in both, by outlawry.

(2.) During this ſtage of proceedings, the indictment may be removed into the court of king's bench from any inferior juriſdiction, by writ of *certiorari facias*: and cognizance muſt be claimed in places of excluſive juriſdiction.

Sect. XXV. *Of arraignment, and its incidents.*

(1.) Arraignment is the calling of the priſoner to the bar of the court, to anſwer the matter of the indictment.

(2.) Incident hereunto are, 1. The ſtanding mute of the priſoner; for which, in petit treaſon, and felonies of death, he ſhall undergo the *peine fort & dure*. 2. His confeſſion; which is either *ſimple*, or by way of *approvement*.

Sect. XXVI. *Of plea, and iſſue.*

(1.) The *plea*, or defenſive matter alleged by the priſoner, may be, 1. A plea to the juriſdiction. 2. A demurrer in point of law. 3. A plea in abatement. 4. A ſpecial plea in bar; which is, 1ſt, *Auterfoits acquit*; 2dly, *Auterfoits convict*; 3dly, *Auterfoits attaint*; 4thly, a pardon. 5. The general iſſue, not guilty.

2. Hereupon *iſſue* is joined by the clerk of the arraigns, on behalf of the king.

Sect. XXVII. *Of trial, and conviction.*

(1.) Trials of offences, by the laws of England, were and are, 1. By *ordeal*, of either fire or water. 2. By the *corſned*. Both theſe have been long aboliſhed. 3. By *battel*, in appeals and approvements. 4. By the *peers* of Great Britain. 5. By *jury*.

(2.) The method and proceſs of trial by *jury* is, 1. The impanelling of the jury. 2. Challenges; 1ſt, for cauſe; 2dly, peremtory. 3. *Tales de circumſtantibus*. 4. The oath of the jury. 5. The evidence. 6. The verdict, either general or ſpecial.

(3.) *Conviction* is when the priſoner pleads, or is found, guilty: whereupon, in felonies, the proſecutor is intitled to, 1. His expenſes. 2. Reſtitution of his goods.

Sect. XXVIII. *Of the benefit of clergy.*

(1.) Clergy, or the benefit thereof, was originally derived from the uſurped juriſdiction of the Popiſh eccleſiaſtics; but hath ſince been new-modelled by ſeveral ſtatutes.

(2.) It is an exemption of the clergy from any other ſecular puniſhment for felony, than impriſonment for a year, at the court's diſcretion; and it is extended likewiſe, abſolutely, to lay peers, for the firſt offence; and to all lay-commoners, for the firſt offence alſo, upon condition of branding, impriſonment, or tranſportation.

(3.) All felonies are intitled to the benefit of clergy, except ſuch as are now ouſted by particular ſtatutes.

(4.) Felons, on receiving the benefit of clergy, (tho' they forfeit their goods to the crown,) are diſcharged of all clergyable felonies before committed, and reſtored in all capacities and credits.

Sect. XXIX. *Of judgment, and its conſequences.* cli.

(1.) Judgment (unleſs any matter be offered in arreſt thereof) follows upon conviction; being the pronouncing of that puniſhment which is expreſsly ordained by law.

(2.) *Attainder* of a criminal is the immediate conſequence, 1. Of having judgment of death pronounced upon him. 2. Of outlawry for a capital offence.

(3.) The conſequences of attainder are, 1. *Forfeiture* to the king. 2. *Corruption* of *blood*.

(4.) *Forfeiture* to the king, is, 1. Of real eſtates, upon attainder;—in high treaſon, abſolutely, till the death of the late Pretender's ſons;—in felonies, for the king's year, day, and waſte;—in miſpriſion of treaſon, aſſaults on a judge, or battery ſitting the courts; during the life of the offender. 2. Of perſonal eſtates, upon conviction; in all treaſon, miſpriſion of treaſon, felony, excuſable homicide, petit larciny, ſtanding mute upon arraignment, the abovenamed contempts of the king's courts, and flight.

(5.) *Corruption* of *blood* is an utter extinction of all inheritable quality therein: ſo that, after the king's forfeiture is firſt ſatisfied, the criminal's lands eſcheat to the lord of the fee; and he can never afterwards inherit, be inherited, or have any inheritance derived through him.

Sect. XXX. *Of reverſal of judgment.* clii.

(1.) Judgments, and their conſequences, may be *avoided*, 1. By *falſifying*, or *reverſing*, the attainder. 2. By *reprieve*, or *pardon*.

(2.) Attainders may be *falſified*, or *reverſed*, 1. Without a writ of error; for matter *dehors* the record. 2. By writ of error; for miſtakes in the judgment, or record. 3. By act of parliament; for favour.

(3.) When an *outlawry* is reverſed, the party is reſtored to the ſame plight as if he had appeared upon the *capias*. When a *judgment*, on conviction, is reverſed, the party ſtands as if never accuſed.

Sect. XXXI. *Of reprieve and pardon.* cliii.

(1.) A reprieve is a temporary ſuſpenſion of the judgment, 1. *Ex arbitrio judicis*. 2. *Ex neceſſitate legis*; for pregnancy, inſanity, or the trial of identity of perſon, which muſt always be tried *inſtanter*.

(2.) A pardon is a permanent avoider of the judgment by the king's majeſty, in offences againſt his crown and dignity; drawn in due form of law, allowed in

Law of Scotland. in open court, and thereby making the offender a new man.

(3.) The king cannot pardon, 1. Impriſonment of the ſubject beyond the ſeas. 2. Offences proſecuted by appeal. 3. Common nuſances. 4. Offences againſt popular or penal ſtatutes, after information brought by a ſubject. Nor is his pardon pleadable to an impeachment by the commons in parliament.

Sect. XXXII. *Of execution.*

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cliv. (1.) Execution is the completion of human puniſhment, and muſt be ſtrictly performed in the manner which the law directs.

(2.) The warrant for execution is ſometimes under the hand and ſeal of the judge; ſometimes by writ from the king; ſometimes by rule of court; but commonly by the judge's ſigning the calendar of priſoners, with their ſeparate judgments in the margin.

PART III. THE LAW OF SCOTLAND.

clv.

GENERAL OBSERVATIONS.

Municipal law. 1. The municipal law of Scotland, as of moſt other countries, conſiſts partly of ſtatutory or written law, which has the expreſs authority of the legiſlative power; partly of cuſtomary or unwritten law, which derives force from its preſumed or tacit conſent.

Statutory law. Acts of parliament. 2. Under our ſtatutory or written law is comprehended, (1.) Our acts of parliament: not only thoſe which were made in the reign of James I. of Scotland, and from thence down to our union with England in 1707, but ſuch of the Britiſh ſtatutes enacted ſince the union as concerned this part of the united kingdom.

Regiam Majeſtatem 3. The remains of our ancient written law were publiſhed by Sir John Skene clerk-regiſter, in the beginning of the laſt century, by licence of parliament. The books of *Regiam Majeſtatem*, to which the whole collection owes its title, ſeem to be a ſyſtem of Scots law, written by a private lawyer at the command of David I.; and though no expreſs confirmation of that treatiſe by the legiſlature appears, yet it is admitted to have been the ancient law of our kingdom by expreſs ſtatutes. The borough-laws, which were alſo enacted by the ſame king David, and the ſtatutes of William, Alexander II. David II. and the three Roberts, are univerſally allowed to be genuine. Our parliaments have once and again appointed commiſſions to reviſe and amend the *Regiam Majeſtatem*, and the other ancient books of our law, and to make their report: but, as no report appears to have been made, nor conſequently any ratification by parliament, none of theſe remains are received, as of proper authority, in our courts; yet they are of excellent uſe in proving and illuſtrating our moſt ancient cuſtoms.

Acts of ſederunt. 4. Our written law comprehends, (2.) The acts of ſederunt, which are ordinances for regulating the forms of proceeding before the court of ſeſſion in the adminiſtration of juſtice, made by the judges, who have a delegated power from the legiſlature for that purpoſe. Some of theſe acts dip upon matter of right, which declare what the judges apprehend to be the law of Scotland, and what they are to obſerve afterwards as a rule of judgment.

Authority of the civil and canon laws. 5. The civil or Roman and cannon laws, though they are not perhaps to be deemed proper parts of our written law, have undoubtedly had the greateſt influence in Scotland. The powers exerciſed by our ſovereigns and judges have been juſtified upon no other ground, than that they were conformable to the civil or canon laws; and a ſpecial ſtatute was judged neceſſary, upon the reformation, to reſcind ſuch of their conſtitutions as were repugnant to the Proteſtant doctrine. From that period, the canon law has been little reſpected, except in queſtions of tithes, patronages, and ſome few more articles of eccleſiaſtical right: but the Roman continues to have great authority in all caſes where it is not derogated from by ſtatute or cuſtom, and where the genius of our law ſuffers us to apply it.

6. Our unwritten or cuſtomary law, is that which, without being expreſsly enacted by ſtatute, derives its force from the tacit conſent of king and people; which conſent is preſumed from the ancient cuſtom of the community. Cuſtom, as it is equally founded in the will of the lawgiver with written law, has therefore the ſame effects: hence, as one ſtatute may be explained or repealed by another, ſo a ſtatute may be explained by the uniform practice of the community, and even go into diſuſe by a poſterior contrary cuſtom. But this power of cuſtom to derogate from prior ſtatutes, is generally confined by lawyers to ſtatutes concerning private right, and does not extend to thoſe which regard public policy. Cuſtom or com law.

7. An uniform tract of the judgments or deciſions of the court of ſeſſion, is commonly conſidered as part of our cuſtomary law; and without doubt, where a particular cuſtom is thereby fixed or proved, ſuch cuſtom of itſelf conſtitutes law: but deciſions, though they bind the parties litigating, have not, in their own nature, the authority of law in ſimilar caſes; yet, where they continue uniform, great weight is juſtly laid on them. Deciſio the ſeſſ Neither can the judgments of the houſe of peers of Great Britain reach farther than to the parties in the appeal, ſince in theſe the peers act as judges, not as lawgivers. Judgm of the of peer

8. Though the laws of nature are ſufficiently publiſhed by the internal ſuggeſtion of natural light, civil laws cannot be conſidered as a rule for the conduct of life, till they are notified to thoſe whoſe conduct they are to regulate. Promu tion of The *Scots* acts of parliament were, by our moſt ancient cuſtom, proclaimed in all the different ſhires, boroughs, and baron-courts, of the kingdom. But after our ſtatutes came to be printed, that cuſtom was gradually neglected; and at laſt, the publication of our laws, at the market-croſs of Edinburgh, was declared ſufficient; and they became obligatory forty days thereafter. Britiſh ſtatutes are deemed ſufficiently notified, without formal promulgation; either becauſe the printing is truly a publication; or becauſe every ſubject is, by a maxim of the Engliſh law, party to

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to them, as being preſent in parliament, either by himſelf or his repreſentative. After a law is publiſhed, no pretence of ignorance can excuſe the breach of it.

9. As laws are given for the rule of our conduct, they can regulate future caſes only; for paſt actions, being out of our power, can admit of no rule. Declaratory laws form no exception to this; for a ſtatute, where it is declaratory of a former law, does no more than interpret its meaning; and it is included in the notion of interpretation, that it muſt draw back to the date of the law interpreted.

rpreta- f laws.

10. By the rules of interpreting ſtatute-law received in Scotland, an argument may be uſed from the title to the act itſelf, *a rubro ad nigrum;* at leaſt, where the rubric has been either originally framed, or afterwards adopted by the legiſlature. The preamble or narrative, which recites the inconveniencies that had ariſen from the former law; and the cauſes inducing the enactment, may alſo lead a judge to the general meaning of the ſtatute. But the chief weight is to be laid on the ſtatutory words.

11. Laws, being directed to the unlearned as well as the learned, ought to be conſtrued in their moſt obvious meaning, and not explained away by ſubtle diſtinctions; and no law is to ſuffer a figurative interpretation, where the proper ſenſe of the words is as commodious, and equally fitted to the ſubject of the ſtatute. Laws ought to be explained ſo as to exclude abſurdities, and in the ſenſe which appears moſt agreeable to former laws, to the intention of the lawgiver, and to the general frame and ſtructure of the conſtitution. In prohibitory laws, where the right of acting is taken from a perſon, ſolely for the private advantage of another, the conſent of him, in whoſe behalf the law was made, ſhall ſupport the act done in breach of it; but the conſent of parties immediately intereſted has no effect in matters which regard the public utility of a ſtate. Where the words of a ſtatute are capable but of one meaning, the ſtatute muſt be obſerved, however hard it may bear on particular perſons. Nevertheleſs, as no human ſyſtem of laws can comprehend all poſſible caſes, more may be ſometimes meant by the lawgiver than is expreſſed; and hence certain ſtatutes, where extenſion is not plainly excluded, may be extended beyond the letter, to ſimilar and omitted caſes: others are to be confined to the ſtatutory words.

12. A ſtrict interpretation is to be applied, (1.) To correctory ſtatutes, which repeal or reſtrict former laws; and to ſtatutes which enact heavy penalties, or reſtrain the natural liberties of mankind. (2.) Laws, made on occaſion of preſent exigencies in a ſtate, ought not to be drawn to ſimilar caſes, after the preſſure is over. (3.) Where ſtatutes eſtabliſh certain ſolemnities as requiſite to deeds, ſuch ſolemnities are not ſuppliable by equivalents; for ſolemnities loſe their nature, when they are not performed ſpecifically. (4.) A ſtatute, which enumerates ſpecial caſes, is, with difficulty, to be extended to caſes not expreſſed; but, where a law does not deſcend to particulars, there is greater reaſon to extend it to ſimilar caſes. (5.) Statutes, which carry a diſpenſation or privilege to particular perſons or ſocieties, ſuffer a ſtrict interpretation; becauſe they derogate from the general law, and imply a burden upon the reſt of the community. But at no rate can a privilege be explained to the prejedice of thoſe in whoſe behalf it was granted. As the only foundation of cuſtomary law is uſage, which conſiſts in fact, ſuch law can go no farther than the particular uſage has gone.

Ample.

13. All ſtatutes, concerning matters ſpecially favoured by law, receive an ample interpretation; as laws for the encouragement of commerce, or of any uſeful public undertaking, for making effectual the wills of dying perſons, for reſtraining fraud, for the ſecurity of creditors, &c. A ſtatute, tho' its ſubject-matter ſhould not be a favourite of the law, may be extended to ſimilar caſes, which did not exiſt when the ſtatute was made; and for which, therefore, it was not in the lawgiver's power to provide.

14. Every ſtatute, however unfavourable, muſt receive the interpretation neceſſary to give it effect: and, on the other hand, in the extenſion of favourable laws, ſcope muſt not be given to the imagination, in diſcovering remote reſemblances; the extenſion muſt be limited to the caſes immediately ſimilar. Where there is ground to conclude that the legiſlature has omitted a caſe out of the ſtatute purpoſely, the ſtatute cannot be extended to that caſe, let it be ever ſo ſimilar to the caſes expreſſed.

15. The objects of the laws of Scotland, according to Mr Erſkine, are, Perſons, Things, and Actions.

CHAP. I.

Of PERSONS.

AMONG perſons, judges, who are inveſted with juriſdiction, deſerve the firſt conſideration.

clvi. Juriſdiction

SECT. I. *Of juriſdiction and judges in general.*

JURISDICTION is a power conferred upon a judge or magiſtrate, to take cogniſance of and decide cauſes according to law, and to carry his ſentences into execution. That tract of ground, or diſtrict, within which a judge has the right of juriſdiction, is called his *territory:* and every act of juriſdiction exerciſed by a judge without his territory, either by pronouncing ſentence, or carrying it into execution, is null.

King the fountain of juriſdiction.

2. The ſupreme power, which has the right of enacting laws, falls naturally to have the right of erecting courts, and appointing judges, who may apply theſe laws to particular caſes: but, in Scotland, this right has been always intruſted with the crown, as having the executive power of the ſtate.

Diſtinctions of juriſdiction.

3. Juriſdiction is either ſupreme, inferior, or mixed. That juriſdiction is ſupreme, from which there lies no appeal to a higher court. Inferior courts are thoſe whoſe ſentences are ſubject to the review of the ſupreme courts, and whoſe juriſdiction is confined to a particular territory. Mixed juriſdiction participates of the nature both of the ſupreme and inferior: thus, the judge of the high court of admiralty, and the commiſſaries of Edinburgh, have an univerſal juriſdiction over Scotland, and they can review the decrees of inferior admirals and commiſſaries; but ſince their own decrees are ſubject to the review of the courts of ſeſſion or juſticiary, they are, in that reſpect, inferior courts.

4. Juriſdiction is either civil or criminal: by the firſt, queſtions of private right are decided; by the other, crimes are puniſhed. But, in all juriſdiction, though merely civil, there is a power inherent in the judge to

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puniſh, either corporally, or by a pecuniary fine, thoſe who offend during the proceedings of the court, or who ſhall afterwards obſtruct the execution of the ſentence.

5. Juriſdiction is either privative or cumulative. Privative juriſdiction, is that which belongs only to one court, to the excluſion of all others. Cumulative, otherwiſe called *concurrent*, is that which may be exerciſed by any one of two or more courts, in the ſame cauſe. In civil cumulative juriſdiction, the private purſuer has the right of election before which of the courts he ſhall ſue; but as, in criminal queſtions which are proſecuted by a public officer of court, a colliſion of juriſdiction might happen, through each of the judges claiming the exerciſe of their right, that judge, by whoſe warrant the delinquent is firſt cited or apprehended, (which is the firſt ſtep of juriſdiction), acquires thereby *(jure præventionis)* the excluſive right of judging in the cauſe.

6. All rights of juriſdiction, being originally granted in conſideration of the fitneſs of the grantee, were therefore perſonal, and died with himſelf. But, upon the introduction of the feudal ſyſtem, certain juriſdictions were annexed to lands, and deſcended to heirs, as well as the lands to which they were annexed; but now all heritable juriſdictions, except thoſe of admiralty and a ſmall pittance reſerved to barons, are either aboliſhed, or reſumed and annexed to the crown.

7. Juriſdiction is either proper or delegated. Proper juriſdiction, is that which belongs to a judge or magiſtrate himſelf, in virtue of his office. Delegated, is that which is communicated by the judge to another who acts in his name, called a *depute* or *deputy*. Where a deputy appoints one under him, he is called a *ſubſtitute*. No grant of juriſdiction, which is an office requiring perſonal qualifications, can be delegated by the grantee to another, without an expreſs power in the grant.

Civil juriſdiction, wherein founded.

8. Civil juriſdiction is founded, 1. *Ratione domicilii*, if the defender has his domicile within the judge's territory. A domicile is the dwelling-place where a perſon lives with an intention to remain; and cuſtom has fixed it as a rule, that reſidence for 40 days founds juriſdiction. If one has no fixed dwelling-place, *e.g.* a ſoldier, or a travelling-merchant, a perſonal citation againſt him within the territory is ſufficient to found the judge's juriſdiction over him, even in civil queſtions. As the defender is not obliged to appear before a court to which he is not ſubject, the purſuer muſt follow the defender's domicile.

9. It is founded, 2. *Ratione rei ſitæ*, if the ſubject in queſtion lie within the territory. If that ſubject be immoveable, the judge, whoſe juriſdiction is founded in this way, is the ſole judge competent, excluding the judge of the domicile.

Letters of ſupplement

10. Where one, who has not his domicile within the territory, is to be ſued before an inferior court *ratione rei ſitæ*, the court of ſeſſion muſt be applied to, whoſe juriſdiction is univerſal, and who, of courſe, grants letters of ſupplement to cite the defender to appear before the inferior judge. Where the party to be ſued reſides in another kingdom, and has an eſtate in this, the court of ſeſſion is the only proper court, as the *commune forum* to all perſons reſiding abroad; and the defender, if his eſtate be heritable, is conſidered as lawfully ſummoned to that court, by a citation at the market-croſs of Edinburgh, and pier and ſhore of Leith: but where a ſtranger, not a native of Scotland, has only a moveable eſtate in this kingdom, he is deemed to be ſo little ſubject to the juriſdiction of our courts, that action cannot be brought againſt him till his effects be firſt attached by an arreſtment *juriſdictionis fundandæ cauſa;* which is laid on by a warrant iſſuing from the ſupreme courts of ſeſſion, or admiralty, or from that within whoſe territory the ſubject is ſituated, at the ſuit of the creditor.

11. A judge may, in ſpecial caſes, arreſt or ſecure the perſons of ſuch as have neither domicile nor eſtate within his territory, even for civil debts. Thus, on the border between Scotland and England, warrants are granted of courſe by the judge-ordinary of either ſide, againſt thoſe who have their domicile upon the oppoſite ſide, for arreſting their perſons, till they give caution *judicio ſiſti:* and even the perſons of citizens or natives may be ſo ſecured, where there is juſt reaſon to ſuſpect that they are *in meditatione fugæ*, i. e. that they intend ſuddenly to withdraw from the kingdom; upon which ſuſpicion, the creditor who applies for the warrant muſt make oath. An inhabitant of a borough-royal, who has furniſhed one who lives without the borough in meat, clothes, or other merchandize, and who has no ſecurity for it but his own account-book, may arreſt his debtor, till he give ſecurity *judicio ſiſti*.

12. A judge may be declined, *i. e.* his juriſdiction diſowned judicially, 1. *Ratione cauſæ*, from his incompetency to the ſpecial cauſe brought before him. 2. *Ratione ſuſpecti judicis;* where either the judge himſelf, or his near kinſman, has an intereſt in the ſuit. No judge can vote in the cauſe of his father, brother, or ſon, either by conſanguinity or affinity; nor in the cauſe of his uncle or nephew by conſanguinity. 3. *Ratione privilegii;* where the party is by privilege exempted from their juriſdiction.

13. Prorogated juriſdiction *(juriſdictio in conſentientes)* is that which is, by the conſent of parties, conferred upon a judge, who, without ſuch conſent, would be incompetent. Where a judge is incompetent, every ſtep he takes muſt be null, till his juriſdiction be made competent by the parties actual ſubmiſſion to it. It is otherwiſe where the judge is competent, but may be declined by the party upon privilege.

14. In order to prorogation, the judge muſt have juriſdiction, ſuch as may be prorogated. Hence, prorogation cannot be admitted where the judge's juriſdiction is excluded by ſtatute. Yet where the cauſe is of the ſame nature with thoſe to which the judge is competent, though law may have confined his juriſdiction within a certain ſum, parties may prorogate it above that ſum unleſs where prorogation is prohibited. Prorogation is not admitted in the king's cauſes; for the intereſt of the crown cannot be hurt by the negligence of its officers.

15. All judges muſt at their admiſſion ſwear, 1. The oath of allegiance, and ſubſcribe the aſſurance; 2. The oath of abjuration; 3. The oath of ſupremacy; laſtly, The oath *de fideli adminiſtratione*.

16. A party who has either properly declined the juriſdiction of the judge before whom he had been cited, or who thinks himſelf aggrieved by any proceedings in the cauſe, may, before decree, apply to the court

of ſeſſion to iſſue letters of advocation for calling the action from before the inferior court to themſelves. The grounds therefore, upon which a party may pray for letters of advocation, are incompetency and iniquity. Under incompetency, is comprehended not only defect of juriſdiction, but all the grounds of declining a juriſdiction, in itſelf competent, ariſing either from ſuſpicion of the judge, or privilege in the parties. A judge is ſaid to commit iniquity, when he either delays juſtice, or pronounces ſentence, in the exerciſe of his juriſdiction, contrary to law.

17. That the court of ſeſſion may not waſte their time in trifles, no cauſe for a ſum below twelve pound Sterling can be advocated to the court of ſeſſion from the inferior judge competent: but if an inferior judge ſhall proceed upon a cauſe to which he is incompetent, the cauſe may be carried from him by advocation, let the ſubject be ever ſo inconſiderable.

SECT. II. *Of the ſupreme judges and courts of Scotland.*

1. THE king, who is the fountain of juriſdiction, might by our conſtitution have judged in all cauſes, either in his own perſon, or by thoſe whom he was pleaſed to veſt with juriſdiction.

2. The parliament of Scotland, as our court of the laſt reſort, had the right of reviewing the ſentences of all our ſupreme courts.

3. By the treaty of union, 1707, the parliaments of Scotland and England are united into one parliament of Great Britain. From this period, the Britiſh houſe of peers, as coming in place of the Scots parliament, is become our court of the laſt reſort, to which appeals lie from all the ſupreme courts of Scotland: but that court has no original juriſdiction in civil matters, in which they judge only upon appeal. By *art.* 22. of that treaty, the Scots ſhare of the repreſentation in the houſe of peers is fixed to 16 Scots peers elective; and in the houſe of commons, to 45 commoners, of which 30 are elected by the freeholders of counties, and 15 by the royal boroughs. The Scots privy council was alſo thereupon aboliſhed, and ſunk into that of Great Britain, which for the future is declared to have no other powers than the Engliſh privy council had at the time of the union.

4. A court was erected in 1425, conſiſting of certain perſons to be named by the king, out of the three eſtates of parliament, which was veſted with the juriſdiction formerly lodged in the council, and got the name of the *ſeſſion*, becauſe it was ordained to hold annually a certain number of ſeſſions at the places to be ſpecially appointed by the king. This court had a juriſdiction, cumulative with the judge ordinary, in ſpuilzies, and other poſſeſſory actions, and in debts; but they had no cogniſance in queſtions of property of heritable ſubjects. No appeal lay from its judgments to the parliament. The judges of this court ſerved by rotation, and were changed from time to time, after having ſat 40 days; and became ſo negligent in the adminiſtration of juſtice, that it was at laſt thought neceſſary to transfer the juriſdiction of this court to a council to be named by the king, called the *daily council.*

5. The preſent model of the court of ſeſſion, or college of juſtice, was formed in the reign of James V. The judges thereof, who are veſted with an univerſal civil juriſdiction, conſiſted originally of ſeven churchmen, ſeven laymen, and a preſident, whom it behoved to be a prelate; but ſpiritual judges were in 1584 partly, and in 1640 totally, prohibited. The judges of ſeſſion have been always received by warrants from the crown. Anciently his majeſty ſeems to have transferred to the court itſelf the right of chuſing their own preſident; and in a ſederunt recorded June 26. 1593, the king condeſcended to preſent to the lords, upon every vacancy in the bench, a liſt of three perſons, out of which they were to chuſe one. But his majeſty ſoon reſumed the exerciſe of both rights, which continued with the crown till the uſurpation; when it was ordained, that the king ſhould name the judges of the ſeſſion, by the advice of parliament. After the reſtoration, the nomination was again declared to be ſolely in the ſovereign.

Law of Scotland.

Judges, by whom named.

6. Though judges may, in the general caſe, be named at the age of 21 years, the lords of ſeſſion muſt be at leaſt 25. No perſon can be named lord of ſeſſion, who has not ſerved as an advocate or principal clerk of ſeſſion for five years, or as a writer to the ſignet for ten: and in the caſe of a writer to the ſignet, he muſt undergo the ordinary trials upon the Roman law, and be found qualified two years before he can be named. Upon a vacancy in the bench, the king preſents the ſucceſſor by a letter addreſſed to the lords, wherein he requires them to try and admit the perſon preſented. The powers given to them to reject the preſentee upon trial are taken away, and a bare liberty to remonſtrate ſubſtituted in its place.

Their qualifications and trial.

7. Beſides the 15 ordinary judges, the king was allowed to name three or four lords of his great council, who might ſit and vote with them. Theſe extraordinary lords were ſuppreſſed in the reign of Geo. I.

8. The appellation of the *college of juſtice* is not confined to the judges, who are diſtinguiſhed by the name of *ſenators*; but comprehends advocates, clerks of ſeſſion, writers to the ſignet, and others, as deſcribed, *Act S.* 23d Feb. 1687. Where, therefore, the college of juſtice is intitled to any privilege, it extends to all the members of the college. They are exempted from watching, warding, and other ſervices within borough; and from the payment of miniſter's ſtipends, and of all cuſtoms, &c. impoſed upon goods carried to or from the city of Edinburgh.

Privileges of the college of juſtice.

9. Though the juriſdiction of the ſeſſion be properly limited to civil cauſes, the judges have always ſuſtained themſelves as competent to the crime of falſehood. Where the falſehood deſerves death or demembration, they, after finding the crime proved, remit the criminal to the court of juſticiary. Special ſtatute has given to the court of ſeſſion juriſdiction in contraventions of law-burrows, deforcements, and breach of arreſtment; and they have been in uſe to judge in battery *pendente lite*, and in uſury.

Juriſdiction of the ſeſſion.

9. In certain civil cauſes, the juriſdiction of the ſeſſion is excluſive of all inferior juriſdictions; as in declarators of property, and other competitions of heritable rights, provings of the tenor, *ceſſiones bonorum*, reſtitution of minors, reductions of decrees or of writings, ſales of the eſtates of minors or bankrupts, *&c.* In a ſecond claſs of cauſes, their juriſdiction can be only exerciſed in the way of review, after the cauſe is brought

from the inferior court; as in maritime and conſiſtorial cauſes, which muſt be purſued in the firſt inſtance before the admiral or commiſſary; and in actions below twelve pounds Sterling, which muſt be commenced before the judge-ordinary. In all civil actions, which fall under neither of theſe claſſes, the juriſdiction of the ſeſſion is concurrent, even in the firſt inſtance, with that of the judge-ordinary. The ſeſſion may proceed as a court of equity by the rules of conſcience, in abating the rigour of law, and giving aid in proper caſes to ſuch as in a court of law can have no remedy: and this power is inherent in the ſupreme court of every country, where ſeparate courts are not eſtabliſhed for law and for equity.

Juſticiary court.

10. The ſupreme criminal judge was ſtyled the Juſticiar; and he had anciently an univerſal civil juriſdiction, even in matters of heritage. He was obliged to hold two juſtice courts or ayres yearly at Edinburgh or Peebles, where all the free-holders of the kingdom were obliged to attend. Beſides this univerſal court, ſpecial juſtice-ayres were held in all the different ſhires of the kingdom twice in the year. Theſe laſt having gone into diſuſe, eight deputies were appointed, two for every quarter of the kingdom, who ſhould make their circuits over the whole in April and October.

11. The office of deputies was ſuppreſſed in 1672; and five lords of ſeſſion were added, as commiſſioners of Juſticiary, to the juſtice-general and juſtice-clerk. The juſtice-general, if preſent, is conſtant preſident of the court, and in his abſence the juſtice-clerk. The kingdom is divided into three diſtricts, and two of the judges are appointed to hold circuits in certain boroughs of each diſtrict twice in the year; one judge may proceed to buſineſs in the abſence of his collegue.

12. By an old ſtatute, the crimes of robbery, rape, murder, and wilful fire-raiſing, (the four pleas of the Crown), are ſaid to be reſerved to the King's court of Juſticiary; but the only crime in which, *de praxi*, the juriſdiction of Juſticiary became at laſt excluſive of all inferior criminal juriſdiction, was that of high treaſon. The court of Juſticiary, when ſitting at Edinburgh, has a power of advocating cauſes from all inferior criminal judges, and of ſuſpending their ſentences.

13. The circuit-court can alſo judge in all criminal cauſes which do not infer death or demembration, upon appeal from any inferior court within their diſtrict; and has a ſupreme civil juriſdiction, by way of appeal, in all cauſes not exceeding twelve pounds Sterling, in which their decrees are not ſubject to review; but no appeal is to lie to the circuit, till the cauſe be finally determined in the inferior court.

Court of exchequer.

14. The court of Exchequer, as the King's chamberlain court, judged in all queſtions of the revenue. In purſuance of the treaty of Union, that court was aboliſhed, and a new court erected, conſiſting of the Lord High Treaſurer of Great Britain, and a chief Baron, with four other Barons of Exchequer; which Barons are to be made of ſerjeants at law, Engliſh barriſters, or Scots advocates of five years ſtanding. This court has a privative juriſdiction conferred upon it, as to the duties of cuſtoms, exciſe, or other revenues appertaining to the king or prince of Scotland, and as to all honours and eſtates that may accrue to the crown; in which matters, they are to judge by the forms of proceeding uſed in the Engliſh court of exchequer, under the following limitations; that no debt due to the crown ſhall affect the debtor's real eſtate in any other manner than ſuch eſtate may be affected by the laws of Scotland, and that the validity of the crown's titles to any honours or lands ſhall continue to be tried by the court of ſeſſion. The barons have the powers of the Scots court transferred to them, of paſſing the accounts of ſheriffs, or other officers who have the execution of writs iſſuing from or returnable to the court of exchequer, and of receiving reſignations, and paſſing ſignatures of charters, gifts of caſualties, &c. But tho' all theſe muſt paſs in exchequer, it is the court of ſeſſion only who can judge of their preference after they are completed.

Admiral court.

15. The juriſdiction of the admiral in maritime cauſes was of old concurrent with that of the ſeſſion. The high-admiral is declared the king's juſtice-general upon the ſeas, on freſh water within flood-mark, and in all harbours and creeks. His civil juriſdiction extends to all maritime cauſes; and ſo comprehends queſtions of charter-parties, freights, ſalvages, bottomries, &c. He exerciſes this ſupreme juriſdiction by a delegate, the judge of the high-court of admiralty; and he may alſo name inferior deputies, whoſe juriſdiction is limited to particular diſtricts, and whoſe ſentences are ſubject to the review of the high court. In cauſes which are declared to fall under the admiral's cognizance, his juriſdiction is ſole; in ſo much that the ſeſſion itſelf, though it may review his decrees by ſuſpenſion or reduction, cannot carry a maritime queſtion from him by advocation. The admiral has acquired, by uſage, a juriſdiction in mercantile cauſes, even where they are not ſtrictly maritime, cumulative with that of the judge-ordinary.

Signet.

16. All our ſupreme courts have ſeals or ſignets, proper to their ſeveral juriſdictions. The courts of ſeſſion and juſticiary uſed formerly the ſame ſignet, which was called the king's, becauſe the writs iſſuing from thence run in the king's name; and though the juſticiary got at laſt a ſeparate ſignet for itſelf, yet that of the ſeſſion ſtill retains the appellation of the *king's ſignet*. In this office are ſealed ſummonſes for citation, letters of executorial diligence, or for ſtaying or prohibiting of diligence, and generally whatever paſſes by the warrant of the ſeſſion, and is to be executed by the officers of the court. All theſe muſt, before ſealing, be ſigned by the writers or clerks of the ſignet: But letters of diligence, where they are granted in a depending proceſs, merely for probation, though they paſs by the ſignet, muſt be ſubſcribed by a clerk of ſeſſion. The clerks of the ſignet alſo prepare and ſubſcribe all ſignatures of charters, or other royal grants, which paſs in exchequer.

SECT. III. *Of the inferior judges and courts of Scotland*

SHERIFF, from *reeve*, governor, and *ſheer*, to cut or divide, is the judge-ordinary conſtituted by the crown over a particular diviſion or county. The ſheriff's juriſdiction, both civil and criminal, was, in ancient times, nearly as ample within his own territory as that of the ſupreme courts of ſeſſion and juſticiary was over the whole kingdom.

2. His civil juriſdiction now extends to all actions upon contracts, or other perſonal obligations; forthcomings,

comings, poindings of the ground, mails and duties; and to all poſſeſſory actions, as removings, ejections, ſpuilzies, &c.; to all brieves iſſuing from the chancery, as of inqueſt, terce, diviſion, tutory, &c.; and even to adjudications of land-eſtates, when proceeding on the renunciation of the apparent heir. His preſent criminal juriſdiction extends to certain capital crimes, as theft, and even murder, though it be one of the pleas of the crown; and he is competent to moſt queſtions of public police, and has a cumulative juriſdiction with juſtices of the peace in all riots and breaches of the peace.

3. Sheriffs have a miniſterial power, in virtue of which they return juries, in order to the trial of cauſes that require juries. The writs for electing members of parliament have been, ſince the union, directed to the ſheriffs, who, after they are executed, return them to the crown-office from whence they iſſued. They alſo execute writs iſſuing from the court of exchequer; and in general, take care of all eſtates, duties, or caſualties that fall to the crown within their territory, for which they muſt account to the exchequer.

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4. A lord of regality was a magiſtrate who had a grant of lands from the ſovereign, with royal juriſdiction annexed thereto. His civil juriſdiction was equal to that of a ſheriff; his criminal extended to the four pleas of the crown. He had a right to repledge or reclaim all criminals, ſubject to his juriſdiction, from any other competent court, though it were the juſticiary itſelf, to his own. He had alſo right, according to the moſt common opinion, to the ſingle eſcheat of all denounced perſons reſiding within his juriſdiction, even though ſuch privilege had not been expreſſed in the grant of regality.

rt.

5. The ſtewart was the magiſtrate appointed by the king over ſuch regality lands as happened to fall to the crown by forfeiture, &c. and therefore the ſtewart's juriſdiction was equal to that of a regality. The two ſtewartries of Kircudbright, and of Orkney and Zetland, make ſhires or counties by themſelves, and ſend each a repreſentative to parliament.

6. Where lands not erected into a regality fell into the king's hands, he appointed a bailie over them, whoſe juriſdiction was equal to that of a ſheriff.

7. By the late juriſdiction-act, 20 *Geo.* II. all heritable regalities and bailieries, and all ſuch heritable ſheriffships and ſtewartries as were only parts of a ſhire, are diſſolved; and the powers formerly veſted in them are made to devolve upon ſuch of the king's courts as theſe powers would have belonged to if the juriſdictions diſſolved had never been granted. All ſheriffships and ſtewartries that were no part of a ſhire, where they had been granted, either heritably or for life, are reſumed and annexed to the crown. No high ſheriff or ſtewart can hereafter judge perſonally in any cauſe. One ſheriff or ſtewart-depute is to be appointed by the king in every ſhire, who muſt be an advocate of three years ſtanding; and after a certain term not yet expired, all commiſſions to theſe deputies are to be granted for life.

e of nd.

8. The appanage, or patrimony, of the prince of Scotland, has been long erected into a regality-juriſdiction, called the Principality. It is perſonal to the king's eldeſt ſon, upon whoſe death or ſucceſſion it returns to the crown. The prince has, or may have, his own chancery, from which his writs iſſue, and may name his own chamberlain and other officers for receiving and managing his revenue. The vaſſals of the prince are intitled to elect, or to be elected, members of parliament for counties, equally with thoſe who hold of the crown.

9. Juſtices of the peace are magiſtrates named by the ſovereign over the ſeveral counties of the kingdom, for the ſpecial purpoſe of preſerving the public peace. Anciently their power reached little farther than to bind over diſorderly perſons for their appearance before the privy council or juſticiary; afterwards they were authoriſed to judge in breaches of the peace, and in moſt of the laws concerning public policy. They may compel workmen or labourers to ſerve for a reaſonable fee, and they can condemn maſters in the wages due to their ſervants. They have power to judge in queſtions of highways, and to call out the tenants with their cottars and ſervants to perform ſix days work yearly for upholding them.

10. Since the Union, our juſtices of the peace, over and above the powers committed to them by the laws of Scotland, are authoriſed to exerciſe whatever belonged to the office of an Engliſh juſtice of the peace, in relation to the public peace. From that time, the Scots and the Engliſh commiſſions have run in the ſame ſtyle, which contain powers to inquire into and judge in all capital crimes, witchcrafts, felonies, and ſeveral others ſpecially enumerated; with this limitation ſubjoined, *of which juſtices of the peace may lawfully inquire.* Two juſtices can conſtitute a court. Special ſtatute has given the cogniſance of ſeveral matters of exciſe to the juſtices, in which their ſentences are final.

Boroughs.

11. A borough is a body-corporate, made up of the inhabitants of a certain tract of ground erected by the ſovereign, with juriſdiction annexed to it. Boroughs are erected, either to be holden of the ſovereign himſelf, which is the general caſe of royal boroughs; or of the ſuperior of the lands erected, as boroughs of regality and barony. Boroughs royal have power, by their charters, to chuſe annually certain office-bearers or magiſtrates; and in boroughs of regality and barony, the nomination of magiſtrates is, by their charter, lodged ſometimes in the inhabitants, ſometimes in the ſuperior. Bailies of boroughs have juriſdiction in matters of debt, ſervices, and queſtions of poſſeſſion betwixt the inhabitants. Their criminal juriſdiction extends to petty riots, and reckleſs fire-railing. The dean of guild is that magiſtrate of a royal-borough who is head of the merchant-company: he has the cogniſance of mercantile cauſes within borough; and the inſpection of buildings, that they encroach neither on private property, nor on the public ſtreets; and he may direct inſufficient houſes to be pulled down. His juriſdiction has no dependence on the court of the borough, or bailie-court.

Barons.

12. A baron, in the large ſenſe of that word, is one who holds his lands immediately of the crown; and, as ſuch, had, by our ancient conſtitution, right to a ſeat in parliament, however ſmall his freehold might have been. The leſſer barons were exempted from the burden of attending the ſervice of parliament. This exemption grew inſenſibly into an utter diſability in all the leſſer barons from ſitting in parliament, without election

lection by the county; though no ſtatute is to be found expreſsly excluding them.

13. To conſtitute a baron in the ſtrict law-ſenſe, his lands muſt have been erected, or at leaſt confirmed, by the king, *in liberam baroniam*; and ſuch baron had a certain juriſdiction, both civil and criminal, which he might have exerciſed, either in his own perſon, or by his bailie.

14. By the late juriſdiction-act, the civil juriſdiction of a baron is reduced to the power of recovering, from his vaſſals and tenants, the rents of his lands, and of condemning them in mill-ſervices; and of judging in cauſes where the debt and damages do not exceed 40 s. Sterling. His criminal juriſdiction is, by the ſame ſtatute, limited to aſſaults, batteries, and other ſmaller offences, which may be puniſhed by a fine not exceeding 20 s. Sterling, or by ſetting the offender in the ſtocks in the day-time not above three hours; the fine to be levied by poinding, or one month's impriſonment. The juriſdiction formerly competent to proprietors of mines, and coal or ſalt-works, over their workmen, is reſerved; and alſo that which was competent to proprietors who had the right of fairs or markets, for correcting the diſorders that might happen during their continuance; provided they ſhall exerciſe no juriſdiction inferring the loſs of life or demembration.

Conſtabularies.

15. The high conſtable of Scotland had no fixed territorial juriſdiction, but followed the court; and had, jointly with the mariſchal, the cogniſance of all crimes committed within two leagues of it. All other conſtabularies were dependent on him: theſe had caſtles, and ſometimes boroughs, ſubject to their juriſdiction, as Dundee, Montroſe, &c. and among other powers, now little known, they had the right of exerciſing criminal juriſdiction within their reſpective territories during the continuance of fairs. By the late juriſdiction-act, all juriſdictions of conſtabulary are diſſolved, except that of high-conſtable.

Lyon king at arms.

16. The office of the Lyon King of arms was chiefly miniſterial, to denounce war, proclaim peace, carry public meſſages, &c. But he has alſo a right of juriſdiction, whereby he can puniſh all who uſurp arms contrary to the law of arms, and deprive or ſuſpend meſſengers, heralds, or purſuivants, (who are officers named by himſelf); but he has no cogniſance of the damage ariſing to the private party through the meſſenger's fault. Meſſengers are ſubſervient to the ſupreme courts of ſeſſion and juſticiary; and their proper buſineſs is to execute all the king's letters either in civil or criminal cauſes.

Sentence-money.

17. Our judges had, for a long time, no other ſalaries or appointments than what aroſe from the ſentences they pronounced. Our criminal judges applied to their own uſe the fines or iſſues of their ſeveral courts; and regalities had a right to the ſingle eſcheat of all perſons denounced, who reſided within their juriſdiction; and our civil judges got a certain proportion of the ſum contained in the decree pronounced. But theſe were all prohibited upon regular ſalaries being ſettled upon them.

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SECT. V. *Of eccleſiaſtical perſons.*

The pope.

THE Pope, or biſhop of Rome, was long acknowledged, over the weſtern part of Chriſtendom, for the head of the Chriſtian church. The papal juriſdiction was aboliſhed in Scotland *anno* 1560. The king was, by act 1669, declared to have ſupreme authority over all perſons, and in all cauſes eccleſiaſtical; but this act was repealed by 1690, as inconſiſtent with Preſbyterian church-government, which was then upon the point of being eſtabliſhed.

Clergy.

2. Before the reformation from Popery, the clergy was divided into ſecular and regular. The ſecular had a particular tract of ground given them in charge, within which they exerciſed the paſtoral office of biſhop, preſbyter, or other church-officer. The regular clergy had no cure of ſouls; but were tied down to reſidence in their abbacies, priories, or other monaſteries: and they got the name of *regular*, from the rules of mortification to which they were bound, according to the inſtitution of their ſeveral orders. Upon the vacancy of any benefice, whether ſecular or regular, commendators were frequently appointed to levy the fruits, as factors or ſtewards during the vacancy. The Pope alone could give the higher benefices *in commendam*; and at laſt, from the plenitude of his power, he came to name commendators for life, and without any obligation to account. After the reformation, ſeveral abbacies and priories were given by James VI. *in perpetuam commendam*, to laics.

3. Upon aboliſhing the Pope's authority, the regular clergy were totally ſuppreſſed; and, in place of all the different degrees which diſtinguiſhed the ſecular clergy, we had at firſt only parochial preſbyters or miniſters, and ſuperintendants, who had the overſight of the church within a certain diſtrict: ſoon thereafter the church-government became epiſcopal by archbiſhops, biſhops, &c.; and after ſome intermediate turns, is now preſbyterian by kirk-ſeſſions, preſbyteries, ſynods, and general aſſemblies.

4. Prelate, in our ſtatutes, ſignifies a biſhop, abbot, or other dignified clergyman, who in virtue of his office had a ſeat in parliament. Every biſhop had his chapter, which conſiſted of a certain number of the miniſters of the dioceſe, by whoſe aſſiſtance he managed the affairs of the church within that diſtrict. The nomination of biſhops to vacant ſees has been in the crown ſince 1540, though under the appearance of continuing the ancient right of election, which was in the chapter. The confirmation by the crown under the great ſeal, of the chapter's election, conferred a right to the ſpirituality of the benefice; and a ſecond grant, upon the conſecration of the biſhop-elect, gave a title to the temporality; but this ſecond grant fell ſoon into diſuſe.

Patron

5. He who founded or endowed a church was intitled to the right of patronage thereof, or *advocatio eccleſiæ*; whereby, among other privileges, he might preſent a churchman to the cure, in caſe of a vacancy. The preſentee, after he was received into the church, had a right to the benefice *proprio jure*; and if the church was parochial, he was called a *parſon*. The Pope claimed the right of patronage of every kirk to which no third party could ſhew a ſpecial title; and, ſince the reformation, the crown, as coming in place of the Pope, is conſidered as univerſal patron, where no right of patronage appears in a ſubject. Where two churches are united, which had different patrons, each patron preſents by turns.

6. Gentlemen of eſtates frequently founded colleges or collegiate churches; the head of which got the name of *provoſt*, under whom were certain prebendaries, or canons, who had their ſeveral ſtalls in the church, where they ſung maſſes. Others of leſſer fortunes founded chaplainries, which were donations granted for the ſinging of maſſes for deceaſed friends at particular altars in a church. Though all theſe were ſuppreſſed upon the reformation, their founders continued patrons of the endowments; out of which they were allowed to provide burſars, to be educated in any of the univerſities.

7. Where a fund is gifted for the eſtabliſhment of a ſecond miniſter in a pariſh where the cure is thought too heavy for one, the patronage of ſuch benefice does not belong to the donor, but to him who was patron of the church, unleſs either where the donor has reſerved to himſelf the right of patronage in the donation, or where he and his ſucceſſors have been in the conſtant uſe of preſenting the ſecond miniſter, without challenge from the patron. The right of preſenting incumbents was by 1690, *c.* 23. taken from patrons, and veſted in the heritors and elders of the pariſh, upon payment to be made by the heritors to the patron of 600 merks; but it was again reſtored to patrons, 10 *An. c.* 12. with the exception of the preſentations ſold in purſuance of the former act.

8. Patrons were not ſimply adminiſtrators of the church; for they held the fruits of the vacant benefice as their own, for ſome time after the reformation. But that right is now no more than a truſt in the patron, who muſt apply them to pious uſes within the pariſh, at the ſight of the heritors, yearly as they fall due. If he fail, he loſes his right of adminiſtring the vacant ſtipend for that and the next vacancy. The king, who is exempted from this rule, may apply the vacant ſtipend of his churches to any pious uſe, though not within the pariſh. If one ſhould be ordained to a church, in oppoſition to the preſentee, the patron, whoſe civil right cannot be affected by any ſentence of a church-court, may retain the ſtipend as vacant. Patrons are to this day intitled to a ſeat and burial-place in the churches of which they are patrons, and to the right of all the teinds of the pariſh not heritably diſponed.

9. That kirks may not continue too long vacant, the patron muſt preſent to the preſbytery, (formerly to the biſhop), a fit perſon for ſupplying the cure, within ſix months from his knowledge of the vacancy, otherwiſe the right of preſentation accrues to the preſbytery *jure devoluto*. Upon preſentation by the patron, the biſhop collated or conferred the benefice upon the preſentee by a writing, in which he appointed certain miniſters of the dioceſe to induce or inſtitute him into the church; which induction completed his right, and was performed by their placing him in the pulpit, and delivering him the bible and keys of the church. The biſhop collated to the churches of which himſelf was patron, *pleno jure*, or without preſentation; which he alſo did in menſal churches, whoſe patronages were ſunk, by the churches being appropriated to him, as part of his patrimony. Since the revolution, a judicial act of admiſſion by the preſbytery, proceeding either upon a preſentation, or upon a call from the heritors and elders, or upon their own *jus devolutum*, completes the miniſter's right to the benefice.

Proviſion for the reformed clergy.

10. Soon after the reformation, the Popiſh churchmen were prevailed upon to reſign in the ſovereign's hands, a third of their benefices; which was appropriated, in the firſt place, for the ſubſiſtence of the reformed clergy. To make this fund effectual, particular localities were aſſigned in every benefice, to the extent of a third, called the *aſſumption of thirds*; and for the farther ſupport of miniſters, Queen Mary made a grant in their favour of all the ſmall benefices not exceeding 300 merks. Biſhops, by the act which reſtored them to the whole of their benefices, were obliged to maintain the miniſters within their dioceſes, out of the thirds; and in like manner, the laic titulars, who got grants of the teinds, became bound, by their acceptation thereof, to provide the kirks within their erections in competent ſtipends.

Commiſſion for planting kirks, valuing teinds, &c.

11. But all theſe expedients for the maintenance of the clergy having proved ineffectual, a commiſſion of parliament was appointed in the reign of James VI. for planting kirks, and modifying ſtipends to miniſters out of the teinds; and afterwards ſeveral other commiſſions were appointed, with the more ample powers of dividing large pariſhes, erecting new ones, &c. all of which were, in 1707, transferred to the court of ſeſſion, with this limitation, that no pariſh ſhould be disjoined, nor new church erected, nor old one removed to a new place, without the conſent of three-fourths of the heritors, computing the votes, not by their numbers, but by the valuation of their rents within the pariſh. The judges of ſeſſion, when ſitting in that court, are conſidered as a commiſſion of parliament, and have their proper clerks, macers, and other officers of court, as ſuch.

Stipends.

12. The loweſt ſtipend that could be modified to a miniſter by the firſt commiſſion, was 500 merks, or five chalders of victual, unleſs where the whole teinds of the pariſh did not extend ſo far: and the higheſt was 1000 merks, or ten chalders. The parliament 1633 raiſed the *minimum* to eight chalders of victual, and proportionably in ſilver; but as neither the commiſſion appointed by that act, nor any of the ſubſequent ones, was limited as to the *maximum*, the commiſſioners have been in uſe to augment ſtipends conſiderably above the old *maximum*, where there is ſufficiency of free teinds, and the cure is burdenſome, or living expenſive.

13. Where a certain quantity of ſtipend is modified to a miniſter out of the teinds of a pariſh, without proportioning that ſtipend among the ſeveral heritors, the decree is called *a decree of modification*: but where the commiſſioners alſo fix the particular proportions payable by each heritor, it is a decree of *modification and locality*. Where a ſtipend is only modified, it is ſecured on the whole teinds of the pariſh, ſo that the miniſter can inſiſt againſt any one heritor to the full extent of his teinds; ſuch heritor being always entitled to relief againſt the reſt, for what he ſhall have paid above his juſt ſhare: but where the ſtipend is alſo localled, each heritor is liable in no more than his own proportion.

Manſe.

14. Few of the reformed miniſters were, at firſt, provided with dwelling-houſes; moſt of the Popiſh clergy having, upon the firſt appearance of the reformation, let their manſes in feu, or in long tacks: mi-

niſters therefore got a right, in 1563, to as much of theſe manſes as would ſerve them, notwithſtanding ſuch feus or tacks. Where there was no parſon's nor vicar's manſe, one was to be built by the heritors, at the ſight of the biſhop, (now the preſbytery), the charge not exceeding L. 1000 Scots, nor below 500 merks. Under a manſe are comprehended ſtable, barn, and byre, with a garden; for all which, it is uſual to allow half an acre of ground.

15. Every incumbent is intitled at his entry to have his manſe put into good condition; for which purpoſe, the preſbytery may appoint a viſitation by tradeſmen, and order eſtimates to be laid before them of the ſums neceſſary for the repairing, which they may proportion among the heritors according to their valuations. The preſbytery, after the manſe is made ſufficient, ought, upon application of the heritors, to declare it a free manſe; which lays the incumbent under an obligation to uphold it in good condition during his incumbency, otherwiſe he or his executors ſhall be liable in damages, but they are not bound to make up the loſs ariſing from the neceſſary decay of the building by the waſte of time.

Glebe, and

16. All miniſters, where there is any landward or country-pariſh, are, over and above their ſtipend, intitled to a glebe, which comprehends four acres of arable land, or ſixteen ſowms of paſture-ground where there is no arable land, (a ſowm is what will graze ten ſheep or one cow); and is to be deſigned or marked by the biſhop or preſbytery out of ſuch kirk-lands within the pariſh as lie neareſt to the kirk, and, in default of kirk-lands, out of temporal lands.

17. A right of relief is competent to the heritors, whoſe lands are ſet off for the manſe or glebe, againſt the other heritors of the pariſh. Manſes and glebes, being once regularly deſigned, cannot be feued or ſold by the incumbent in prejudice of his ſucceſſors, which is in practice extended even to the caſe where ſuch alienation evidently appears profitable to the benefice.

Graſs.

18. Miniſters, beſide their glebe, are intitled to graſs for a horſe and two cows. And, if the lands, out of which the graſs may be deſigned, either lie at a diſtance, or are not fit for paſture, the heritors are to pay to the miniſter L. 20 Scots yearly as an equivalent. Miniſters have alſo freedom of foggage, paſturage, fewel, feal, divot, loaning, and free iſh and entry, according to uſe and wont: what theſe privileges are, muſt be determined by the local cuſtom of the ſeveral pariſhes.

Terms of payment of ſtipends.

19. The legal terms at which ſtipends become due to miniſters are Whitſunday and Michaelmas. If the incumbent be admitted to his church before Whitſunday, till which term the corns are not preſumed to be fully ſown, he has right to that whole year's ſtipend; and, if he is received after Whitſunday, and before Michaelmas, he is intitled to the half of that year; becauſe, though the corns were ſown before his entry, he was admitted before the term at which they are preſumed to be reaped. By the ſame reaſon, if he dies or is tranſported before Whitſunday, he has right to no part of that year; if before Michaelmas, to the half; and if not till after Michaelmas, to the whole.

Annat or ann.

20. After the miniſter's death, his executors have right to the annat; which, in the ſenſe of the canon law, was a right reſerved to the Pope, of the firſt year's fruits of every benefice. Upon a threatened invaſion from England *anno* 1547, the annat was given by our parliament, notwithſtanding this right in the Pope, to the executors of ſuch churchmen as ſhould fall in battle in defence of their country: but the word *annat* or *ann*, as it is now underſtood, is the right which law gives to the executors of miniſters, of half a year's benefice over and above what was due to the miniſter himſelf for his incumbency.

21. The executors of a miniſter need make up no title to the ann by confirmation: neither is the right aſſignable by the miniſter, or affectable with his debts; for it never belonged to him, but is a mere gratuity given by law to thoſe whom it it is preſumed the deceaſed could not ſufficiently provide; and law has given it expreſsly to *executors:* and if it were to be governed by the rules of ſucceſſion in executory, the widow, in caſe of no children, would get one half, the other would go to the next of kin; and where there are children, ſhe would be entitled to a third, and the other two thirds would fall equally among the children. But the court of ſeſſion, probably led by the general practice, have in this laſt caſe divided the ann into two equal parts, of which one goes to the widow, and the other among the children *in capita*.

Juriſdic of biſho

22. From the great confidence that was, in the firſt ages of Chriſtianity, repoſed in churchmen, dying perſons frequently committed to them the care of their eſtates, and of their orphan children; but theſe were ſimply rights of truſt, not of juriſdiction. The clergy ſoon had the addreſs to eſtabliſh to themſelves a proper juriſdiction, not confined to points of eccleſiaſtical right, but extending to queſtions that had no concern with the church. They judged not only in teinds, patronages, teſtaments, breach of vow, ſcandal, &c.; but in queſtions of marriage and divorce, becauſe marriage was a ſacrament; in tochers, becauſe theſe were given in conſideration of marriage; in all queſtions where an oath intervened, on pretence that oaths were a part of religious worſhip, &c. As churchmen came, by the means of this extenſive juriſdiction, to be diverted from their proper functions, they committed the exerciſe of it to their officials or commiſſaries: hence the commiſſary-court was called the *Biſhops Court*, and *Curia Chriſtianitatis:* it was alſo ſtyled the *Conſiſtorial Court;* from *conſiſtory*, a name firſt given to the court of appeals of the Roman emperors, and afterwards to the courts of judicature held by churchmen.

Comm ry.

23. At the reformation, all epiſcopal juriſdiction, exerciſed under the authority of the biſhop of Rome, was aboliſhed. As the courſe of juſtice in conſiſtorial cauſes was thereby ſtopped, Q. Mary, beſides naming a commiſſary for every dioceſe, did, by a ſpecial grant, eſtabliſh a new commiſſary-court at Edinburgh, conſiſting of four judges or commiſſaries. This court is veſted with a double juriſdiction; one dioceſan, which is exerciſed in the ſpecial territory contained in the grant, *viz.* the counties of Edinburgh, Haddington, Linlithgow, Peebles, and a great part of Stirlingſhire; and another univerſal, by which the judges confirm the teſtaments of all who die in foreign parts, and may reduce the decrees of all inferior commiſſaries, provided the reduction be purſued within a year after the decree:

cree: biſhops, upon their re-eſtabliſhment in the reign of James VI. were reſtored to the right of naming their ſeveral commiſſaries.

24. As the clergy, in times of Popery, aſſumed a juriſdiction independent of the civil power or any ſecular court, their ſentences could be reviewed only by the Pope, or judges delegated by him; ſo that, with regard to the courts of Scotland, their juriſdiction was ſupreme. But, by an act 1560, the appeals from our biſhops courts, that were then depending before the Roman conſiſtories, were ordained to be decided by the court of ſeſſion: and by a poſterior act, 1609, the ſeſſion is declared the king's great conſiſtory, with power to review all ſentences pronounced by the commiſſaries. Nevertheleſs, ſince that court had no inherent juriſdiction in conſiſtorial cauſes prior to this ſtatute, and ſince the ſtatute gives them a power of judging only by way of advocation, they have not, to this day, any proper conſiſtorial juriſdiction in the firſt inſtance; neither do they pronounce ſentence in any conſiſtorial cauſe brought from the commiſſaries, but remit it back to them with inſtructions. By the practice immediately ſubſequent to the act before quoted, they did not admit advocations from the inferior commiſſaries, till the cauſe was firſt brought before the commiſſaries of Edinburgh; but that practice is now in diſuſe.

25. The commiſſaries retain to this day an excluſive power of judging in declarators of marriage, and of the nullity of marriage; in actions of divorce and of non-adherence, of adultery, baſtardy, and confirmation of teſtaments; becauſe all theſe matters are ſtill conſidered to be properly conſiſtorial. Inferior commiſſaries are not competent to queſtions of divorce, under which are comprehended queſtions of baſtardy and adherence, when they have a connection with the lawfulneſs of marriage, or with adultery.

26. Commiſſaries have now no power to pronounce decrees in abſence for any ſum above L. 40 Scots, except in cauſes properly conſiſtorial: but they may authenticate tutorial and curatorial inventories; and all bonds, contracts, &c. which contain a clauſe for regiſtration in the books of any judge competent, and proteſts on bills, may be regiſtered in their books.

SECT. VI. *Of marriage.*

PERSONS, when conſidered in a private capacity, are chiefly diſtinguiſhed by their mutual relations; as huſband and wife, tutor and minor, father and child, maſter and ſervant. The relation of huſband and wife is conſtituted by marriage; which is the conjunction of man and wife, vowing to live inſeparably till death.

2. Marriage is truly a contract, and ſo requires the conſent of parties. Idiots, therefore, and furious perſons, cannot marry. As no perſon is preſumed capable of conſent within the years of pupillarity, which, by our law, laſts till the age of 14 in males, and 12 in females, marriage cannot be contracted by pupils; but if the married pair ſhould cohabit after puberty, ſuch acquieſcence gives force to the marriage. Marriage is fully perfected by conſent; which, without conſummation, founds all the conjugal rights and duties. The conſent requiſite to marriage muſt be *de præſenti*. A promiſe of marriage, (*ſtipulatio ſponſalitia*), may be reſiled from, as long as matters are entire; but if any thing be done by one of the parties, whereby a prejudice ariſes from the non-performance, the party reſiling is liable in damages to the other. The canoniſts, and after them our courts of juſtice, explain a *copula* ſubſequent to a promiſe of marriage into actual marriage.

Form of celebration.

3. It is not neceſſary, that marriage ſhould be celebrated by a clergyman. The conſent of parties may be declared before any magiſtrate, or ſimply before witneſſes: and though no formal conſent ſhould appear, marriage is preſumed from the cohabitation, or living together at bed and board, of a man and woman who are generally reputed huſband and wife. One's acknowledgment of his marriage to the midwife whom he called to his wife, and to the miniſter who baptized his child, was found ſufficient preſumptive evidence of marriage, without the aid either of cohabitation, or of *habite and repute*. The father's conſent was, by the Roman law, eſſential to the marriage of children *in familia*: but, by our law, children may enter into marriage, without the knowledge, and even againſt the remonſtrances, of a father.

Forbidden degrees.

4. Marriage is forbidden within certain degrees of blood. By the law of Moſes, *Leviticus* xviii. which is made ours, ſeconds in blood, and all remoter degrees, may all lawfully marry. By ſeconds in blood are meant firſt couſins. Marriage in the direct line is forbidden *in infinitum*; as it is alſo in the collateral line in the ſpecial caſe where one of the parties is *loco parentis* to the other, as grand-uncle, great grand-uncle, &c. with reſpect to his grand-niece, &c. The ſame degrees that are prohibited in conſanguinity, are prohibited in affinity; which is the tie ariſing from marriage, betwixt one of the married pair, and the blood-relations of the other. Marriage alſo, where either of the parties is naturally unfit for generation, or ſtands already married to a third perſon, is *ipſo jure* null.

Other grounds of nullity.

Proclamation of banns.

5. To prevent bigamy and inceſtuous marriages, the church has introduced proclamation of banns; which is the ceremony of publiſhing the names and deſignations of thoſe who intend to intermarry, in the churches where the bride and bridegroom reſide, after the congregation is aſſembled for divine ſervice; that all perſons who know any objection to the marriage, may offer it. When the order of the church is obſerved, the marriage is called *regular*; when otherwiſe, *clandeſtine*.

Communion of goods.

6. By marriage, a ſociety is created between the married pair, which draws after it a mutual communication of their civil intereſts, in as far as is neceſſary for maintaining it. As the ſociety laſts only for the joint lives of the *ſocii*; therefore rights that have the nature of a perpetuity, which our law ſtyles *heritable*, are not brought under the partnerſhip or communion of goods; as a land-eſtate, or bonds bearing a yearly intereſt: it is only moveable ſubjects, or the fruits produced by heritable ſubjects during the marriage, that become common to man and wife.

Jus mariti.

7. The huſband, as the head of the wife, has the ſole right of managing the goods in communion, which is called *jus mariti*. This right is ſo abſolute, that it bears but little reſemblance to a right of adminiſtering a common ſubject. For the huſband can, in virtue

thereof, ſell, or even gift, at his pleaſure, the whole goods falling under communion; and his creditors may affect them for the payment of his proper debts: ſo that the *jus mariti* carries all the characters of an aſſignation, by the wife to her huſband, of her moveable eſtate. It ariſes *ipſo jure* from the marriage; and therefore needs no other conſtitution. But a ſtranger may convey an eſtate to a wife, ſo as it ſhall not be ſubject to the huſband's adminiſtration; or the huſband himſelf may, in the marriage-contract, renounce his *jus mariti* in all or any part of his wife's moveable eſtate.

Paraphernalia.

8. From this right are excepted paraphernal goods, which, as the word is underſtood in our law, comprehends the wife's wearing apparel, and the ornaments proper to her perſon, as necklaces, ear-rings, breaſt or arm jewels, buckles, &c. Theſe are neither alienable by the huſband, nor affectable by his creditors. Things of promiſcuous uſe to huſband and wife, as plate, medals, &c. may become paraphernal, by the huſband's giving them to the wife, at or before marriage; but they are paraphernal only in regard to that huſband who gave them as ſuch, and are eſteemed common moveables, if the wife, whoſe *paraphernalia* they were, be afterwards married to a ſecond huſband; unleſs he ſhall in the ſame manner appropriate them to her.

Burdens affecting the *jus mariti*.

9. The right of the huſband to the wife's moveable eſtate, is burdened by the moveable debts contracted by her before marriage: and as his right is univerſal, ſo is his burden; for it reaches to her whole moveable debts, though they ſhould far exceed her moveable eſtate. Yet the huſband is not conſidered as the true debtor in his wife's debts. In all actions for payment, ſhe is the proper defender: the huſband is only cited for his intereſt, that is, as curator to her, and adminiſtrator of the ſociety-goods. As ſoon therefore as the marriage is diſſolved, and the ſociety-goods thereby ſuffer a diviſion, the huſband is no farther concerned in the ſhare belonging to his deceaſed wife; and conſequently is no longer liable to pay her debts, which muſt be recovered from her repreſentatives, or her ſeparate ſtate.

How extended againſt the huſband.

10. This obligation upon the huſband is perpetuated againſt him, (1.) Where his proper eſtate, real or perſonal, has been affected, during the marriage, by complete legal diligence; in which caſe, the huſband muſt, by the common rules of law, relieve his property from the burden with which it ſtands charged: but the utmoſt diligence againſt his perſon, is not ſufficient to perpetuate the obligation; nor even incomplete diligence againſt his eſtate. (2.) The huſband continues liable, even after the wife's death, in ſo far as he is *lucratus* or profited by her eſtate. As he was at no time the proper debtor in his wife's moveable debts; therefore, though he ſhould be *lucratus*, he is, after the diſſolution, only liable for them *ſubſidiariè*, i. e. if her own ſeparate eſtate is not ſufficient to pay them off.

11. Where the wife is debtor in that ſort of debt, which, if it had been due to her, would have excluded the *jus mariti*, *e. g.* in bonds bearing intereſt, the huſband is liable only for the bygone intereſts, and thoſe that may grow upon the debt during the marriage; becauſe his obligation for her debts muſt be commenſurated to the intereſt he has in her eſtate. It is the huſband alone who is liable in perſonal dilgence for his wife's debts, while the marriage ſubſiſts: the wife, who is the proper debtor, is free from all perſonal execution upon them while ſhe is *veſtita viro*.

The huſ band is wife's cu tor.

12. The huſband by marriage becomes the perpetual curator of the wife. From this right it ariſes, 1. That no ſuit can proceed againſt the wife, till the huſband be cited for his intereſt. 2. All deeds, done by a wife without the huſband's conſent, are null; neither can ſhe ſue in any action without the huſband's concurrence. Where the huſband refuſes, or by reaſon of forfeiture, &c. cannot concur; or where the action is to be brought againſt the huſband himſelf, for performing his part of the marriage-articles; the judge will authoriſe her to ſue in her own name. The effects ariſing from this curatorial power diſcover themſelves even before marriage, upon the publication of banns; after which the bride, being no longer *ſui juris*, can contract no debt, nor do any deed, either to the prejudice of her future huſband, nor even to her own.

Separat limony

13. If the huſband ſhould either withdraw from his wife, or turn her out of doors; or if, continuing in family with her, he ſhould by ſevere treatment endanger her life; the commiſſaries will authoriſe a ſeparation *a menſa et thoro*, and give a ſeparate alimony to the wife, ſuitable to her huſband's eſtate, from the time of ſuch ſeparation, until either a reconciliation or a ſentence of divorce.

What gation the w lid.

14. Certain obligations of the wife are valid, notwithſtanding her being *ſub cura mariti*; *ex. gr.* obligations ariſing from delict; for wives have no privilege to commit crimes. But if the puniſhment reſolves into a pecuniary mulct, the execution of it muſt, from her incapacity to fulfil, be ſuſpended till the diſſolution of the marriage, unleſs the wife has a ſeparate eſtate exempted from the *jus mariti*.

15. Obligations ariſing from contract, affect either the perſon or the eſtate. The law has been ſo careful to protect wives while *ſub cura mariti*, that all perſonal obligations granted by a wife, though with the huſband's conſent, as bonds, bills, &c. are null; with the following exceptions: (1.) Where the wife gets a ſeparate *peculium* or ſtock, either from her father or a ſtranger, for her own or her children's alimony, ſhe may grant perſonal obligations in relation to ſuch ſtock: and by ſtronger reaſon, perſonal obligations granted by a wife are good, when her perſon is actually withdrawn from the huſband's power by a judicial ſeparation. (2.) A wife's perſonal obligation, granted in the form of a deed *inter vivos*, is valid, if it is not to take effect till her death. (3.) Where the wife is by the huſband *præpoſita negotiis*, intruſted with the management, either of a particular branch of buſineſs, or of his whole affairs, all the contracts ſhe enters into in the exerciſe of her *præpoſitura* are effectual, even though they be not reduced to writing, but ſhould ariſe merely *ex re*, from furniſhings made to her: but ſuch obligations have no force againſt the wife; it is the huſband only, by whoſe commiſſion ſhe acts, who is thereby obliged.

16. A wife, while ſhe remains in family with her huſband, is conſidered as *præpoſita negotiis domeſticis*: and conſequently may provide things proper for the family;

Law of cotland.

mily; for the price whereof the huſband is liable, tho' they ſhould be miſapplied, or though the huſband ſhould have given her money to provide them elſewhere.

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A huſband who ſuſpects that his wife may hurt his fortune by high living, may uſe the remedy of inhibition againſt her; by which all perſons are interpelled from contracting with her, or giving her credit. After the completing of this diligence, whereby the *præpoſitura* falls, the wife cannot bind the huſband, unleſs for ſuch reaſonable furniſhings as he cannot inſtruct that he provided her with *aliunde*. As every man, and conſequently every huſband, has a right to remove his managers at pleaſure, inhibition may paſs at the ſuit of the huſband againſt the wife, though he ſhould not offer to juſtify that meaſure by an actual proof of the extravagance or profuſion of her temper.

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17. As to rights granted by the wife affecting her eſtate; ſhe has no moveable eſtate, except her *paraphernalia;* and theſe ſhe may alien or impignorate, with conſent of the huſband. She can, without the huſband, bequeath by teſtament her ſhare of the goods in communion; but ſhe cannot diſpoſe of them *inter vivos*. A wife can lawfully oblige herſelf, in relation to her heritable eſtate, with conſent of her huſband: for though her perſon is in ſome ſenſe ſunk by the marriage, ſhe continues capable of holding a real eſtate; and in ſuch obligations, her eſtate is conſidered, and not her perſon. A huſband, though he be curator to his wife, can, by his acceptance or intervention, authoriſe rights granted by her in his own favour: for a huſband's curatory is not intended only for the wife's advantage, but is conſidered as a mutual benefit to both.

tions, ble revo-

18. All donations, whether by the wife to the huſband, or by the huſband to the wife, are revocable by the donor; but if the donor dies without revocation, the right becomes abſolute. Where the donation is not pure, it is not ſubject to revocation: thus, a grant made by the huſband, in conſequence of the natural obligation that lies upon him to provide for his wife, is not revocable, unleſs in ſo far as it exceeds the meaſure of a rational ſettlement; neither are remuneratory grants revocable, where mutual grants are made in conſideration of each other, except where an onerous cauſe is ſimulated, or where what is given *hinc inde* bears no proportion to each other. All voluntary contracts of ſeparation, by which the wife is provided in an yearly alimony, are effectual as to the time paſt, but revocable either by the huſband or wife.

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19. As wives are in the ſtrongeſt degree ſubject to the influence of their huſbands, third parties, in whoſe favours they had made grants, were frequently vexed with actions of reduction, as if the grant had been extorted from the wife through the force or fear of the huſband. To ſecure the grantees againſt this danger, ratifications were introduced, whereby the wife, appearing before a judge, declares upon oath, her huſband not preſent, that ſhe was not induced to grant the deed *ex vi aut metu*. A wife's ratification is not abſolutely neceſſary for ſecuring the grantee: law indeed allows the wife to bring reduction of any deed ſhe has not ratified, upon the head of force or fear; of which, if ſhe brings ſufficient evidence, the deed will be ſet aſide; but if ſhe fails in the proof, it will remain effectual to the receiver.

Law of Scotland.

Diſſolution of marriage.

20. Marriage, like other contracts, might, by the Roman law, be diſſolved by the contrary conſent of parties; but, by the law of Scotland, it cannot be diſſolved till death, except by divorce, proceeding either upon the head of adultery, or of wilful deſertion.

21. Marriage is diſſolved by death, either within year and day from its being contracted, or after year and day. If it is diſſolved within year and day, all rights granted in conſideration of the marriage (unleſs guarded againſt in the contract) become void, and things return to the ſame condition in which they ſtood before the marriage: with this reſtriction, that the huſband is conſidered as a *bona fide* poſſeſſor, in relation to what he has conſumed upon the faith of his right; but he is liable to repay the tocher, without any deduction in conſideration of his family-expence during the marriage. If things cannot be reſtored on both ſides, equity hinders the reſtoring of one party, and not the other.

22. Upon the diſſolution of a marriage, after year and day, the ſurviving huſband becomes the irrevocable proprietor of the tocher; and the wife, where ſhe ſurvives, is intitled to her jointure, or to her legal proviſions. She has alſo right to mournings, ſuitable to the huſband's quality; and to alimony from the day of his death, till the term at which her liferent proviſion, either legal or conventional, commences. If a living child be procreated of the marriage, the marriage has the ſame effect as if it had ſubſiſted beyond the year. A day is adjected to the year, *in majorem evidentiam*, that it may clearly appear that the year itſelf is elapſed; and therefore, the running of any part of the day, after the year, has the ſame effect as if the whole were elapſed. The legal right of courteſy competent to the ſurviving huſband is explained below, N° clxx. 28.

Divorce.

23. Divorce is ſuch a ſeparation of married perſons, during their lives, as looſes them from the nuptial tie, and leaves them at freedom to intermarry with others. But neither adultery, nor wilful deſertion, are grounds which muſt neceſſarily diſſolve marriage; they are only handles, which the injured party may take hold of to be free. Cohabitation, therefore, by the injured party, after being in the knowledge of the acts of adultery, implies a paſſing from the injury; and no divorce can proceed, which is carried on by colluſion betwixt the parties, leſt, contrary to the firſt inſtitution of marriage, they might diſengage themſelves by their own conſent: and though, after divorce, the guilty perſon, as well as the innocent, may contract ſecond marriages; yet, in the caſe of divorce upon adultery, marriage is by ſpecial ſtatute prohibited betwixt the two adulterers.

24. Where either party has deſerted from the other for four years together, that other may ſue for adherence. If this has no effect, the church is to proceed, firſt by admonition, then by excommunication; all which previous ſteps are declared to be a ſufficient ground for purſuing a divorce. *De praxi*, the commiſſaries pronounce ſentence in the adherence, after one year's deſertion; but four years muſt intervene between the firſt deſertion and the decree of divorce.

25. The legal effects of divorce on the head of deſertion are, that the offending huſband ſhall reſtore the tocher, and forfeit to the wife all her proviſions, legal

and, conventional; and on the other hand, the offending wife ſhall forfeit to the huſband her tocher, and all the rights that would have belonged to her in the caſe of her ſurvivance. This was alſo eſteemed the rule in divorces upon adultery. But by a deciſion of the court of ſeſſion 1662, founded on a tract of ancient deciſions recovered from the records, the offending huſband was allowed to retain the tocher.

clxi. Sect. VII. *Of Minors, and their tutors and curators.*

Pupillarity, &c.

1. The ſtages of life principally diſtinguiſhed in law are, *pupillarity*, *puberty* or *minority*, and *majority*. A child is under pupillarity, from the birth to 14 years of age if a male, and till 12 if a female. Minority begins where pupillarity ends, and continues till majority; which, by the law of Scotland, is the age of 21 years complete, both in males and females: but minority, in a large ſenſe, includes all under age, whether pupils or *puberes*. Becauſe pupils cannot in any degree act for themſelves, and minors ſeldom with diſcretion, pupils are put by law under the power of tutors, and minors may put themſelves under the direction of curators. Tutory is a power and faculty to govern the perſon, and adminiſter the eſtate, of a pupil. Tutors are either nominate, of law, or dative.

Tutors.

2. A tutor nominate is he who is named by a father, in his teſtament or other writing, to a lawful child. Such tutor is not obliged to give caution for the faithful diſcharge of his office; becauſe his fidelity is preſumed to have been ſufficiently known to the father.

3. If there be no nomination by the father, or if the tutors nominate do not accept, or if the nomination falls by death or otherwiſe, there is place for a tutor of law. This ſort of tutory devolves upon the next agnate; by which we underſtand he who is neareſt related by the father, though females intervene.

Agnates.

4. Where there are two or more agnates equally near to the pupil, he who is intitled to the pupil's legal ſucceſſion falls to be preferred to the others. But as the law ſuſpects, that he may not be over careful to preſerve a life which ſtands in the way of his own intereſt, this ſort of tutor is excluded from the cuſtody of the pupil's perſon; which is commonly committed to the mother, while a widow, until the pupil be ſeven years old; and, in default of the mother, to the next cognate, *i. e.* the nigheſt relation by the mother. The tutor of law muſt be at leaſt 25 years of age. He is ſerved or declared by a jury of ſworn men, who are called upon a brief iſſuing from the chancery, which is directed to any judge having juriſdiction. He muſt give ſecurity before he enters upon the management.

5. If no tutor of law demands the office, any perſon, even a ſtranger, may apply for a tutory-dative. But becauſe a tutor in law ought to be allowed a competent time to deliberate whether he will ſerve or not, no tutory-dative can be given till the elapſing of a year from the time at which the tutor of law had firſt a right to ſerve. It is the king alone, as the father of his country, who gives tutors-dative, by his court of exchequer; and no gift of tutory can paſs in exchequer, without the citation or conſent of the next of kin to the pupil, both by the father and mother, nor till the tutor give ſecurity, recorded in the books of exchequer. There is no room for a tutor of law, or tutor-dative, while a tutor-nominate can be hoped for: and tutors of law, or dative, even after they have begun to act, may be excluded by the tutor-nominate, as ſoon as he offers to accept, unleſs he has expreſsly renounced the office. If a pupil be without tutors of any kind, the court of ſeſſion will, at the ſuit of any kinſman, name a factor (ſteward) for the management of the pupil's eſtate.

Judicial factor.

Curators.

6. After the years of pupillarity are over, the minor is conſidered as capable of acting by himſelf, if he has confidence enough of his own capacity and prudence. The only two caſes in which curators are impoſed upon minors are, (1.) Where they are named by the father, in a ſtate of health. (2.) Where the father is himſelf alive; for a father is *ipſo jure*, without any ſervice, adminiſtrator, that is, both tutor and curator of law, to his children, in relation to whatever eſtate may fall to them during their minority. This right in the father does not extend to grandchildren, nor to ſuch even of his immediate children as are foriſfamiliated. Neither has it place in ſubjects which are left by a ſtranger to the minor, excluſive of the father's adminiſtration. If the minor chuſes to be under the direction of the curators, he muſt raiſe and execute a ſummons, citing at leaſt two of his next of kin to appear before his own judge-ordinary, upon nine days warning. At the day and place of appearance, he offers to the judge a liſt of thoſe whom he intends for his curators: ſuch of them as reſolve to undertake the office, muſt ſign their acceptance, and give caution; upon which an act of curatory is extracted.

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7. Theſe curators are ſtyled *ad negotia*; to diſtinguiſh them from another ſort called curators *ad lites*, who are authoriſed by the judge to concur with a pupil or minor in actions of law, either where he is without tutors and curators, or where his tutors and curators are parties to the ſuit. This ſort is obliged to give caution, becauſe they have no intermeddling with the minor's eſtate: they are appointed for a ſpecial purpoſe; and when that is over, their office is at an end. Women are capable of being tutors and curators, under the following reſtrictions: (1.) The office of a female tutor or curator falls by her marriage, even though the nomination ſhould provide otherwiſe; (2.) No woman can be tutor of law. Papiſts are declared incapable of tutory or curatory. Where the minor has more tutors and curators than one, who are called in the nomination to the joint management, they muſt all concur in every act of adminiſtration: where a certain number is named for a quorum, that number muſt concur: where any one is named *ſine quo non*, no act is valid without that one's ſpecial concurrence. But if they are named without any of theſe limitations, the concurrence of the majority of the nominees then alive is ſufficient.

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8. In this, tutory differs from curatory, that as pupils are incapable of conſent, they have no perſon capable of acting; which defect the tutor ſupplies: but a minor *pubes* can act for himſelf. Hence, the tutor ſubſcribes alone all deeds of adminiſtration: but in curatory, it is the minor who ſubſcribes as the proper party; the curator does no more than conſent. Hence alſo, the perſons of pupils are under the power either of their tutors or of their neareſt cognates; but the minor, after pupillarity, has the diſpoſal of his own perſon, and may reſide where he pleaſes. In moſt other

particulars, the nature, the powers, and the duties of the two offices coincide. Both tutors and curators muſt, previous to their adminiſtration, make a judicial inventory, ſubſcribed by them and the next of kin, before the minor's judge-ordinary, of his whole eſtate perſonal and real; of which, one ſubſcribed duplicate is to be kept by the tutors or curators themſelves; another, by the next of kin on the father's ſide; and a third, by the next of kin on the mother's. If any eſtate belonging to the minor ſhall afterwards come to their knowledge, they muſt add it to the inventory within two months after their attaining poſſeſſion thereof. Should they neglect this, the minor's debtors are not obliged to make payment to them: they may be removed from their offices as ſuſpected; and they are entitled to no allowance for the ſums diſburſed by them in the minor's affairs, except the expence laid out upon the minor's entertainment, upon his lands and houſes, and upon completing his titles.

9. Tutors and curators cannot grant leaſes of the minor's lands, to endure longer than their own office; nor under the former rental, without either a warrant from the court of ſeſſion, or ſome apparent neceſſity.

10. They have power to ſell the minor's moveables; but cannot ſell their pupil's land-eſtate, without the authority of a judge. But the alienation of heritage by a minor, with conſent of his curators, is valid.

11. Tutors and curators cannot, contrary to the nature of their truſt, authoriſe the minor to do any deed for their own benefit; nor can they acquire any debt affecting the minor's eſtate: and, where a tutor or curator makes ſuch acquiſition, in his own name, for a leſs ſum than the right is intitled to draw, the benefit thereof accrues to the minor.

12. By the Roman law, tutory and curatory, being *munera publica*, might be forced upon every one who has not a relevant ground of excuſe; but, with us, the perſons named to theſe offices may either accept or decline: and where a father, in *liege pouſte*, names certain perſons both as tutors and curators to his children, though they have acted as tutors, they may decline the office of curatory. Tutors and curators having once accepted, are liable *in diligence*, that is, are accountable for the conſequences of their neglect in any part of their duty from the time of their acceptance. They are accountable *ſinguli in ſolidum*, i. e. every one of them is anſwerable, not only for his own diligence, but for that of his co-tutors; and any one may be ſued without citing the reſt: but he who is condemned in the whole, has action of relief againſt his co-tutors.

13. From this obligation to diligence, we may except, (1.) Fathers or adminiſtrators in law, who, from the preſumption that they act to the beſt of their power for their children, are liable only for actual intromiſſions. (2.) Tutors and curators named by the father, with the ſpecial proviſos, that they ſhall be liable barely for intromiſſions, not for omiſſions; and that each of them ſhall be liable only for himſelf, and not *in ſolidum* for the co-tutor's: but this power of exemption from diligence, is limited to the eſtate deſcending from the father himſelf. Tutors or curators are not intitled to any ſalary or allowance for pains, unleſs a ſalary has been expreſsly contained in the teſtator's nomination; for their office is preſumed gratuitous.

How tutory and curatory expire.

14. Though no perſon is obliged to accept the office of tutor or curator; yet having once accepted, he cannot throw it up or renounce it without ſufficient cauſe; but, if he ſhould be guilty of miſapplying the minor's money, or fail in any other part of his duty, he may be removed at the ſuit of the minor's next in kin, or by a co-tutor or co-curator. Where the miſconduct proceeds merely from indolence or inattention, the court, in place of removing the tutor, either join a curator with him, or, if he be a tutor-nominate, they oblige him to give caution for his paſt and future management.

15. The offices of tutory and curatory expire alſo by the pupil's attaining the age of puberty, or the minor's attaining the age of 21 years complete; and by the death either of the minor, or of his tutor and curator.

Effect of deeds by minors.

16. Deeds either by pupils, or by minors having curators without their conſent, are null; but they oblige the granters, in as far as relates to ſums profitably applied to their uſe. A minor under curators can indeed make a teſtament by himſelf; but whatever is executed in the form of a deed *inter vivos*, requires the curator's conſent. Deeds by a minor who has no curators, are as effectual as if he had had curators, and ſigned them with their conſent; he may even alien his heritage, without the interpoſition of a judge.

Reſtitution.

17. Minors may be reſtored againſt all deeds granted in their minority, that are hurtful to them. Deeds, in themſelves void, need not the remedy of reſtitution; but where hurtful deeds are granted by a tutor in his pupil's affairs, or by a minor who has no curators, as theſe deeds ſubſiſt in law, reſtitution is neceſſary: and even where a minor, having curators, executes a deed hurtful to himſelf with their conſent, he has not only action againſt the curators, but he has the benefit of reſtitution againſt the deed itſelf. The minor cannot be reſtored, if he does not raiſe and execute a ſummons for reducing the deed, *ex capite minorennitatis et læſionis*, before he be 25 years old. Theſe four years, between the age of 21 and 25, called *quadriennium utile*, are indulged to the minor, that he may have a reaſonable time, from that period, when he is firſt preſumed to have the perfect uſe of his reaſon, to conſider with himſelf what deeds done in his minority have been truly prejudicial to him.

Its requiſites.

18. Queſtions of reſtitution are proper to the court of ſeſſion. Two things muſt be proved by the minor, in order to the reduction of the deed: (1.) That he was minor when it was ſigned; (2.) That he is hurt or leſed by the deed. This leſion muſt not proceed merely from accident; for the privilege of reſtitution was not intended to exempt minors from the common misfortunes of life; it muſt be owing to the imprudence or negligence of the minor, or his curator.

How excluded.

19. A minor cannot be reſtored againſt his own delict or fraud. (2.) Reſtitution is excluded, if the minor, at any time after majority, has approved of the deed, either by a formal ratification, or tacitly by payment of intereſt, or by other acts inferring approbation. (3.) A minor, who has taken himſelf to buſineſs, as a merchant-ſhopkeeper, &c. cannot be reſtored againſt any deed granted by him in the courſe of that buſineſs, eſpecially if he was *proximus majorennitate* at ſigning the deed. (4.) According to the more common opinion, a minor cannot be reſtored in a queſtion againſt a minor, unleſs ſome groſs unfairneſs ſhall be

qualified in the bargain.

How tranſmitted to the heir.

20. The privilege of reſtitution does not always die with the minor himſelf. (1.) If a minor ſucceeds to a minor, the time allowed for reſtitution is governed by the minority of the heir, not of the anceſtor. (2.) If a minor ſucceeds to a major, who was not full 25, the privilege continues with the heir during his minority; but he cannot avail himſelf of the *anni utiles*, except in ſo far as they were unexpired at the anceſtor's death. (3.) If a major ſucceeds to a minor, he has only the *quadriennium utile* after the minor's death; and if he ſucceeds to a major dying within the *quadriennium*, no more of it can be profitable to him than what remained when the anceſtor died.

Minor non tenetur placitare.

21. No minor can be compelled to ſtate himſelf as a defender, in any action, whereby his heritable eſtate flowing from aſcendants may be evicted from him, by one pretending a preferable right.

22. This privilege is intended merely to ſave minors from the neceſſity of diſputing upon queſtions of preference. It does not therefore take place, (1.) Where the action is purſued on the father's falſehood or delict. (2.) Upon his obligation to convey heritage. (3.) On his liquid bond for a ſum of money, though ſuch action ſhould have the effect to carry off the minor's eſtate by adjudication. (4.) Nor in actions purſued by the minor's ſuperior, upon feudal caſualties. (5.) This privilege cannot be pleaded in bar of an action which had been firſt brought againſt the father, and is only continued againſt the minor; nor where the father was not in the peaceable poſſeſſion of the heritable ſubject at his death. Before the minor can plead it, he muſt be ſerved heir to his father. The perſons of pupils are protected from impriſonment on civil debts.

Curators of idots and furious perſons.

23. Curators are given, not only to minors, but in general to every one who, either through defect of judgment, or unfitneſs of diſpoſition, is incapable of rightly managing his own affairs. Of the firſt ſort, are idiots and furious perſons. Idiots, or *fatui*, are entirely deprived of the faculty of reaſon. The diſtemper of the furious perſon does not conſiſt in the defect of reaſon; but in an overheated imagination, which obſtructs the application of reaſon to the purpoſes of life. Curators may be alſo granted to lunatics; and even to perſons dumb and deaf, though they are of ſound judgment, where it appears that they cannot exert it in the management of buſineſs. Every perſon, who is come of age, and is capable of acting rationally, has a natural right to conduct his own affairs. The only regular way, therefore, of appointing this ſort of curators, is by a jury ſummoned upon a brief from the chancery; which is not, like the brief of common tutory, directed to any judge-ordinary, but to the judge of the ſpecial territory where the perſon alleged to be fatuous or furious reſides; that, if he is truly of ſound judgment, he may have an opportunity to oppoſe it: and, for this reaſon, he ought to be made a party to the brief. The curatory of idiots and furious perſons belongs to the neareſt agnate; but a father is preferred to the curatory of his fatuous ſon, and the huſband to that of his fatuous wife, before the agnate.

24. A clauſe is inſerted in the brief, for inquiring how long the fatuous or furious perſon has been in that condition; and the verdict to be pronounced by the inqueſt, is declared a ſufficient ground, without farther evidence, for reducing all deeds granted after the period at which it appeared by the proof that the fatuity or furioſity began. But, as fatuous and furious perſons are, by their very ſtate, incapable of being obliged, all deeds done by them may be declared void, upon proper evidence of their fatuity at the time of ſigning, though they ſhould never have been cognoſced idiots by an inqueſt.

25. We have ſome few inſtances of the ſovereign's giving curators to idiots, where the next agnate did not claim; but ſuch gifts are truly deviations from our law, ſince they paſs without any inquiry into the ſtate of the perſon upon whom the curatory is impoſed. Hence the curator of law to an idiot, ſerving *quandocunque*, is preferred, as ſoon as he offers himſelf, before the curator-dative. This ſort of curatory does not determine by the lucid intervals of the perſon *ſub cura*; but it expires by his death, or perfect return to a ſound judgment; which laſt ought regularly to be declared by the ſentence of a judge.

Interdiction.

26. Perſons, let them be ever ſo profuſe, or liable to be impoſed upon, if they have the exerciſe of reaſon, can effectually oblige themſelves, till they are fettered by law. Interdiction is a legal reſtraint laid upon ſuch perſons from ſigning any deed to their own prejudice, without the conſent of their curators or interdictors.

27. There could be no interdiction, by our ancient practice, without a previous inquiry into the perſon's condition. But as there were few who could bear the ſhame that attends judicial interdiction, however neceſſary the reſtraint might have been, voluntary interdiction has received the countenance of law; which is generally executed in the form of a bond, whereby the granter obliges himſelf to do no deed that may affect his eſtate, without the conſent of certain friends therein mentioned. Though the reaſons inductive of the bond ſhould be but gently touched in the recital, the interdiction ſtands good. Voluntary interdiction, tho' it be impoſed by the ſole act of the perſon interdicted, cannot be recalled at his pleaſure: but it may be taken off, (1.) By a ſentence of the court of ſeſſion, declaring, either that there was, from the beginning, no ſufficient ground for the reſtraint; or that the party is, ſince the date of the bond, become *rei ſui providus*. (2.) It falls, even without the authority of the lords, by the joint act of the perſon interdicted, and his interdictors, concurring to take it off. (3.) Where the bond of interdiction requires a certain number as a quorum, the reſtraint ceaſes, if the interdictors ſhall be by death reduced to a leſſer number.

28. Judicial interdiction is impoſed by a ſentence of the court of ſeſſion. It commonly proceeds on an action brought by a near kinſman to the party; and ſometimes from the *nobile officium* of the court, when they perceive, during the pendency of a ſuit, that any of the litigants is, from the facility of his temper, ſubject to impoſition. This ſort muſt be taken off by the authority of the ſame court that impoſed it.

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29. An interdiction need not be ſerved againſt the perſon interdicted; but it muſt be executed, or publiſhed by a meſſenger, at the market-croſs of the juriſdiction where he reſides, by publicly reading the interdiction there, after three oyeſſes made for convocating the lieges. A copy of this execution muſt be affixed to the croſs; and thereafter, the interdiction, with

its execution, muſt be regiſtrated in the books, both of the juriſdiction where the perſon interdicted reſides and where his lands lie, or in the general regiſter of the ſeſſion, within 40 days from the publication. An interdiction, before it is regiſtered, has no effect againſt third parties, tho' they ſhould be in the private knowledge of it; but it operates againſt the interdictors themſelves, as ſoon as it is delivered to them.

30. An interdiction, duly regiſtered, has this effect, that all deeds done thereafter, by the perſons interdicted, without the conſent of his interdictors, affecting his heritable eſtate, are ſubject to reduction. Regiſtration in the general regiſter ſecures all his lands from alienation, wherever they lie; but where the interdiction is recorded in the regiſter of a particular ſhire, it covers no lands except thoſe ſituated in that ſhire. But perſons interdicted have full power to diſpoſe of their moveables, not only by teſtament, but by preſent deeds of alienation: And creditors, in perſonal bonds granted after interdiction, may uſe all execution againſt their debtor's perſon and moveable eſtate: ſuch bonds being only ſubject to reduction in ſo far as diligence againſt the heritable eſtate may proceed upon them.

31. All onerous or rational deeds granted by the perſon interdicted, are as effectual, even without the conſent of the interdictors, as if the granter had been laid under no reſtraint; but he cannot alter the ſucceſſion of his heritable eſtate, by any ſettlement, let it be ever ſo rational. No deed, granted with conſent of the interdictors, is reducible, though the ſtrongeſt leſion or prejudice to the granter ſhould appear: the only remedy competent, in ſuch caſe, is an action by the granter againſt his interdictors, for making up to him what he has loſt through their undue conſent. It is no part of the duty of interdictors, to receive ſums or manage any eſtate; they are given merely *ad auctoritatem præſtandam*, to interpoſe their authority to reaſonable deeds: and ſo are accountable for nothing but their fraud or fault, in conſenting to deeds hurtful to the perſon under their care.

32. The law concerning the ſtate of children falls next to be explained. Children are either born in wedlock, or out of it. All children, born in lawful marriage or wedlock, are preſumed to be begotten by the perſon to whom the mother is married; and conſequently to be lawful children. This preſumption is ſo ſtrongly founded, that it cannot be defeated but by direct evidence that the mother's huſband could not be the father of the child, *e. g.* where he is impotent, or was abſent from the wife till within ſix lunar months of the birth. The canoniſts indeed maintain, that the concurring teſtimony of the huſband and wife that the child was not procreated by the huſband, is ſufficient to elide this legal preſumption for legitimacy: but it is an agreed point, that no regard is to be paid to ſuch teſtimony, if it be made after they have owned the child to be theirs. A father has the abſolute right of diſpoſing of his childrens perſon, of directing their education, and of moderate chaſtiſement; and even after they become *puberes*, he may compel them to live in family with him, and to contribute their labour and induſtry, while they continue there, towards his ſervice. A child who gets a ſeparate ſtock from the father for carrying on any trade or employment, even though he ſhould continue in the father's houſe, may be ſaid to be emancipated or foriſfamiliated, in ſo far as concerns that ſtock; for the profits ariſing from it are his own. Foriſfamiliation, when taken in this ſenſe, is alſo inferred by the child's marriage, or by his living in a ſeparate houſe, with his father's permiſſion or good-will. Children, after their full age of twenty-one years, become, according to the general opinion, their own maſters; and from that period are bound to the father only by the natural ties of duty, affection, and gratitude. The mutual obligations between parents and children to maintain each other, are explained afterwards, N° clxxiii. 4.

Baſtards.

33. Children born out of wedlock, are ſtyled natural children, or baſtards. Baſtards may be legitimated or made lawful, either, (1.) By the ſubſequent intermarriage of the mother of the child with the father. And this ſort of legitimation intitles the child to all the rights of lawful children. The ſubſequent marriage, which produces legitimation, is conſidered by the law to have been entered into when the child legitimated was begotten; and hence, if he be a male, he excludes, by his right of primogeniture, the ſons procreated after the marriage, from the ſucceſſion of the father's heritage, though theſe ſons were lawful children from the birth. Hence, alſo, thoſe children only can be thus legitimated, who are begotten of a woman whom the father might at that period have lawfully married. (2.) Baſtards are legitimated by letters of legitimation from the ſovereign. N° clxxxii. 3.

Servants.

34. As to the power of maſters over their ſervants: All ſervants now enjoy the ſame rights and privileges with other ſubjects, unleſs in ſo far as they are tied down by their engagements of ſervice. Servants are either neceſſary or voluntary. Neceſſary are thoſe whom law obliges to work without wages, of whom immediately. Voluntary ſervants engage without compulſion, either for mere ſubſiſtence, or alſo for wages. Thoſe who earn their bread in this way, if they ſhould ſtand off from engaging, may be compelled to it by the juſtices of the peace, who have power to fix the rate of their wages.

Colliers and ſalters.

35. Colliers, coal-bearers, and ſalters, and other perſons neceſſary to collieries and ſaltworks, as they are particularly deſcribed by act 1661, were formerly tied down to perpetual ſervice at the works to which they had once entered. Upon a ſale of the works, the right of their ſervice was transferred to the new proprietor. All perſons were prohibited to receive them into their ſervice, without a teſtimonial from their laſt maſter; and if they deſerted to another work, and were redemanded within a year thereafter, he who had received them was obliged to return them within twenty-four hours, under a penalty. But though the proprietor ſhould neglect to require the deſerter within the year, he did not, by that ſhort preſcription, loſe his property in him. Colliers, *&c.* where the colliery to which they were reſtricted was either given up, or not ſufficient for their maintenance, might lawfully engage with others; but if that work ſhould be again ſet a-going, the proprietor might reclaim them back to it.

Reſtraints lately taken off.

36. By 15 *Geo.* III. *c.* 28. theſe reſtraints, the only remaining veſtiges of ſlavery in the law of Scotland, are abrogated; and, after the 1ſt July 1775, all colliers, coal-bearers, and ſalters, are declared to be upon

the ſame footing with other ſervants or labourers. The act ſubjects thoſe who were bound prior to the 1ſt July 1775, to a certain number of years ſervice for their freedom, according to the age of the perſon.

The poor. 37. The poor make the loweſt claſs or order of perſons. Indigent children may be compelled to ſerve any of the king's ſubjects without wages, till their age of thirty years. Vagrants and ſturdy beggars may be alſo compelled to ſerve any manufacturer. And becauſe few perſons were willing to receive them into their ſervice, public work-houſes are ordained to be built for ſetting them to work. The poor who cannot work, muſt be maintained by the pariſhes in which they were born; and where the place of their nativity is not known, that burden falls upon the pariſhes where they have had their moſt common reſort, for the three years immediately preceding their being apprehended or their applying for the public charity. Where the contributions collected at the churches to which they belong, are not ſufficient for their maintenance, they are to receive badges from the miniſter and kirk-ſeſſion, in virtue of which they may aſk alms at the dwelling-houſes of the inhabitants of the pariſh.

CHAP. II.

Of THINGS.

THE things, or ſubjects, to which perſons have right, are the ſecond object of law.

clxii. SECT. I. *Of the diviſion of rights, and the ſeveral ways by which a right may be acquired.*

Property. THE right of enjoying and diſpoſing of a ſubject at one's pleaſure, is called property. Proprietors are reſtrained by law from uſing their property emulouſly to their neighbour's prejudice. Every ſtate or ſovereign has a power over private property, called, by ſome lawyers, *dominium eminens*, in virtue of which, the proprietor may be compelled to ſell his property for an adequate price, where an evident utility on the part of the public demands it.

Things incapable of appropriation. 2. Certain things are by nature itſelf incapable of appropriation; as the air, the light, the ocean, &c.: none of which can be brought under the power of any one perſon, though their uſe be common to all. Others are by law exempted from private commerce, in reſpect of the uſes to which they are deſtined. Of this laſt kind are, (1.) *Res publicæ*, as navigable rivers, highways, bridges, &c.: the right of theſe is veſted in the king, chiefly for the benefit of his people, and they are called *regalia*. (2.) *Res univerſitatis*, things which belong in property to a particular corporation or ſociety, and whoſe uſe is common to every individual in it, but both property and uſe are ſubject to the regulations of the ſociety; as town-houſes, corporation-halls, market-places, church-yards, &c. The lands or other revenue belonging to a corporation do not fall under this claſs, but are *juris privati*.

Ways of acquiring property. 3. Property may be acquired, either by occupation or acceſſion; and transferred by tradition or preſcription: but preſcription, being alſo a way of loſing property, falls to be explained under a ſeparate title. OCCUPATION, or occupancy, is the appropriating of things which have no owner, by apprehending them, or ſeizing their poſſeſſion. This was the original method of acquiring property; and continued, under certain reſtrictions, the doctrine of the Roman law, *Quod nullius eſt, fit occupantis*: but it can have no room in the feudal plan, by which the king is looked on as the original proprietor of all the lands within his dominions.

4. Even in that ſort of moveable goods which are preſumed to have once had an owner, this rule obtains by the law of Scotland, *Quod nullius eſt, fit domini regis*. Thus, the right of treaſures hid under ground, is not acquired by occupation, but accrues to the king. Thus alſo, where one finds ſtrayed cattle or other moveables, which have been loſt by the former owner, the finder acquires no right in them, but muſt give public notice thereof; and if, within year and day after ſuch notice, the proprietor does not claim his goods, they fall to the king, ſheriff, or other perſon to whom the king has made a grant of ſuch eſcheats.

5. In that ſort of moveables which never had an owner, as wild-beaſts, fowls, fiſhes, or pearls found on the ſhore, the original law takes place, that he who firſt apprehends, becomes proprietor; in ſo much, that though the right of hunting, fowling, and fiſhing, be reſtrained by ſtatute, under certain penalties, yet all game, even what is catched in contravention of the law, becomes the property of the catcher, unleſs where the confiſcation thereof is made part of the penalty: but whales thrown in or killed on our coaſts, belong neither to thoſe who kill them, nor to the proprietor of the grounds on which they are caſt; but to the king, providing they are ſo large as that they cannot be drawn by a wane with ſix oxen.

Acceſſ 6. ACCESSION is that way of acquiring property, by which, in two things which have a connection with or dependence on one another, the property of the principal thing draws after it the property of its acceſſory. Thus the owner of a cow becomes the owner of the calf; a houſe belongs to the owner of the ground on which it ſtands, though built with materials belonging to and at the charge of another; trees taking root in our ground, though planted by another, become ours. Thus alſo, the inſenſible addition made to one's ground by what a river waſhes from other grounds, which is called *alluvio*, accrues to the maſter of the ground which receives the addition. The Romans excepted from this rule the caſe of paintings drawn on another man's board or canvas, in conſideration of the excellency of the art; which exception our practice has for a like reaſon extended to ſimilar caſes.

Specifi- tion. 7. Under acceſſion is comprehended SPECIFICATION; by which is meant, a perſon's making a new ſpecies or ſubject, from materials belonging to another. Where the new ſpecies can be again reduced to the matter of which it was made, law conſiders the former maſs as ſtill exiſting; and therefore, the new ſpecies, as an acceſſory to the former ſubject, belongs to the proprietor of that ſubject: but where the thing made cannot be ſo reduced, as in the caſe of wine, which cannot be again turned into grapes, there is no place for the *fictio juris*; and therefore the workmanſhip draws after it the property of the materials.

Comm- tion. 8. Though the new ſpecies ſhould be produced from the COMMIXTION or confuſion of different ſubſtances belonging to different proprietors, the ſame rule holds; but where the mixture is made by the common conſent of the owners, ſuch conſent makes the whole a common property, according to the ſhares that each proprietor had formerly in the ſeveral ſubjects. Where things of the ſame ſort are mixed without the conſent of the proprietors, which cannot again be ſeparated, *e. g.* two hogſheads of wine, the whole likewiſe becomes a common property; but, in the after-diviſion, regard ought to be had to the different quality of the wines: if the things ſo mixed admit of a ſeparation, *e. g.* two flocks of ſheep, the property continues diſtinct.

9. Property is carried from one to another by TRADITION; which is the delivery of poſſeſſion by the proprietor, with an intention to transfer the property to the receiver. Two things are therefore requiſite, in order to the tranſmitting of property in this way: 1. The intention or conſent of the former owner to transfer it on ſome proper title of alienation, as ſale, exchange, gift, &c. (2.) The actual delivery in purſuance of that intention. The firſt is called the *cauſa*, the other the *modus transferendi dominii*: which laſt is ſo neceſſary to the acquiring of property, that he who gets the laſt right, with the firſt tradition, is preferred, according to the rule, *Traditionibus, non nudis pactis, tranſferuntur rerum dominia.*

10. Tradition is either real, where the *ipſa corpora* of moveables are put into the hands of the receiver; or ſymbolical, which is uſed where the thing is incapable of real delivery, or even when actual delivery is only inconvenient. Where the poſſeſſion or cuſtody of the ſubject has been before with him to whom the property is to be transferred, there is no room for tradition.

11. Poſſeſſion, which is eſſential both to the acquiſition and enjoyment of property, is defined, the detention of a thing, with a deſign or *animus* in the detainer of holding it as his own. It cannot be acquired by the ſole act of the mind, without real detention; but, being once acquired, it may be continued *ſolo animo*. Poſſeſſion is either natural, or civil. Natural poſſeſſion is, when one poſſeſſes by himſelf: thus, we poſſeſs lands by cultivating them and reaping their fruits, houſes by inhabiting them, moveables by detaining them in our hands. Civil poſſeſſion is our holding the thing, either by the ſole act of the mind, or by the hands of another who holds it in our name: thus, the owner of a thing lent poſſeſſes it by the borrower; the proprietor of lands, by his tackſman, truſtee, or ſteward; &c. The ſame ſubject cannot be poſſeſſed entirely, or *in ſolidum*, by two different perſons at one and the ſame time; and therefore poſſeſſion by an act of the mind ceaſes, as ſoon as the natural poſſeſſion is ſo taken up by another, that the former poſſeſſor is not ſuffered to re-enter. Yet two perſons may, in the judgment of law, poſſeſs the ſame ſubject, at the ſame time, on different rights: thus, in the caſe of a pledge, the creditor poſſeſſes it in his own name, in virtue of the right of impignoration; while the proprietor is conſidered as poſſeſſing, in and through the creditor, in ſo far is neceſſary for ſupporting his right of property. The ſame doctrine holds in liferenters, takſmen, and, generally, in every caſe where there are rights affecting a ſubject, diſtinct from the property.

12. A *bona fide* poſſeſſor is he, who, though he is not really proprietor of the ſubject, yet believes himſelf proprietor on probable grounds. A *mala fide* poſſeſſor knows, or is preſumed to know, that what he poſſeſſes is the property of another. A poſſeſſor *bona fide* acquired right, by the Roman law, to the fruits of the ſubject poſſeſſed, that had been reaped and conſumed by himſelf, while he believed the ſubjects his own. By our cuſtoms, perception alone, without conſumption, ſecures the poſſeſſor: nay, if he has ſown the ground, while his *bona fides* continued, he is intitled to reap the crop, *propter curam et culturam*. But this doctrine does not reach to civil fruits, *e. g.* the intereſt of money, which the *bona fide* receiver muſt reſtore, together with the principal, to the owner.

13. *Bona fides* neceſſarily ceaſeth by the *conſcientia rei alienæ* in the poſſeſſor, whether ſuch conſciouſneſs ſhould proceed from legal interpellation, or private knowledge. *Mala fides* is ſometimes induced, by the true owner's bringing his action againſt the poſſeſſor, ſometimes not till litiſconteſtation, and, in caſes uncommonly favourable, not till ſentence be pronounced againſt the poſſeſſor.

Effects of poſſeſſion.

14. The property of moveable ſubjects is preſumed by the bare effect of poſſeſſion, until the contrary be proved; but poſſeſſion of an immoveable ſubject, tho' for a century of years together, if there is no ſeiſin, does not create even a preſumptive right to it: *Nulla ſaſina, nulla terra.* Such ſubject is conſidered as caduciary, and ſo accrues to the ſovereign. Where the property of a ſubject is conteſted, the lawful poſſeſſor is intitled to continue his poſſeſſion, till the point of right be diſcuſſed; and, if he has loſt it by force or ſtealth, the judge will, upon ſummary application, immediately reſtore it to him.

15. Where a poſſeſſor has ſeveral rights in his perſon, affecting the ſubject poſſeſſed, the general rule is, that he may aſcribe his poſſeſſion to which of them he pleaſes; but one cannot aſcribe his poſſeſſion to a title other than that on which it commenced, in prejudice of him from whom his title flowed.

SECT. II. *Of heritable and moveable rights.*

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FOR the better underſtanding the doctrine of this title, it muſt be known, that by the law of Scotland, and indeed of moſt nations of Europe ſince the introduction of feus, where-ever there are two or more in the ſame degree of conſanguinity to one who dies inteſtate, and who are not all females, ſuch rights belonging to the deceaſed as are either properly feudal, or have any reſemblance to feudal rights, deſcend wholly to one of them, who is conſidered as his proper heir; the others, who have the name of next of kin or executors, muſt be contented with that portion of the eſtate which is of a more periſhable nature. Hence has ariſen the diviſion of rights to be explained under this title: the ſubjects deſcending to the heir, are ſtyled heritable; and thoſe that fall to the next of kin, moveable.

Diviſion of rights into heritable and moveable.

2. All rights of, or affecting lands, under which are comprehended houſes, mills, fiſhings, teinds; and all rights of ſubjects that are *fundo annexa*, whether completed by ſeiſin or not; are heritable *ex ſua natura*. On the other hand, every thing that moves itſelf or can be moved, and in general whatever is not united to land, is moveable: as houſehold-furniture, corns, cattle, caſh, arrears of rent and of intereſt, even tho' they ſhould be due on a right of annualrent: for though the arrears laſt mentioned are ſecured on land, yet being preſently payable, they are conſidered as caſh.

3. Debts, *(nomina debitorum)*, when due by bill, promiſſory note, or account, are moveable. When conſtituted by bond, they do not all fall under any one head; but are divided into heritable and moveable, by the following rules. All debts conſtituted by bond bearing an obligation to infeft the creditor in any heritable ſubject in ſecurity of the principal ſum and annualrent, or annualrent only, are heritable; for they not only carry a yearly profit, but are ſecured upon land.

4. Bonds merely perſonal, though bearing a clauſe of intereſt, are moveable as to ſucceſſion; i. e. they go not to the heir, but to the next of kin or executors: but they are heritable with reſpect to the fiſk, and to the rights of huſband and wife; that is, though, by the general rule, moveable rights fall under the communion of goods conſequent upon marriage, and the moveables of denounced perſons fall to the crown or fiſk, by ſingle eſcheat, yet ſuch bonds do neither, but are heritable in both reſpects.

5. Bonds taken payable to heirs and aſſignees, ſecluding executors, are heritable in all reſpects, from the deſtination of the creditor. But a bond, which is made payable to heirs, without mention of executors, deſcends, not to the proper heir in heritage, though heirs are mentioned in the bond, but to the executor; for the word *heir*, which is a generic term, points out him who is to ſucceed by law in the right; and the executor, being the heir *in mobilibus*, is conſidered as the perſon to whom ſuch bond is taken payable. But where a bond is taken to heirs-male, or to a ſeries of heirs, one after another, ſuch bond is heritable, becauſe its deſtination neceſſarily excludes executors.

How moveable rights become heritable.

6. Subjects originally moveable become heritable, (1.) By the proprietor's deſtination. Thus, a jewel, or any other moveable ſubject, may be provided to the heir, from the right competent to every proprietor to ſettle his property on whom he pleaſes. (2.) Moveable rights may become heritable, by the ſupervening of an heritable ſecurity: Thus, a ſum due by a perſonal bond becomes heritable, by the creditor's accepting an heritable right for ſecuring it, or by adjudging upon it.

7. Heritable rights do not become moveable by acceſſory moveable ſecurities; the heritable right being in ſuch caſe the *jus nobilius*, which draws the other after it.

Rights partly heritable, partly moveable.

8. Certain ſubjects partake, in different reſpects, of the nature both of heritable and moveable. Perſonal bonds are moveable in reſpect of ſucceſſion; but heritable as to the fiſk, and huſband and wife. All bonds, whether merely perſonal, or even heritable, on which no ſeiſin has followed, may be affected at the ſuit of creditors, either by adjudication, which is a diligence proper to heritage; or by arreſtment, which is peculiar to moveables. Bonds ſecluding executors, though they deſcend to the creditor's heir, are payable by the debtor's executors, without relief againſt the heir; ſince the debtor's ſucceſſion cannot be affected by the deſtination of the creditor.

What period makes a ſubject heritable or moveable.

9. All queſtions, whether a right be heritable or moveable, muſt be determined according to the condition of the ſubject at the time of the anceſtor's death. If it was heritable at that period, it muſt belong to the heir; if moveable, it muſt fall to the executor, without regard to any alterations that may have affected the ſubject in the intermediate period between the anceſtor's death and the competition.

I. HERITABLE RIGHTS.

Sect. III. *Of the conſtitution of heritable rights by charter and ſeiſin.*

Heritable rights are governed by the feudal law, which owed its origin, or at leaſt its firſt improvements, to the Longobards; whoſe kings, upon having penetrated into Italy, the better to preſerve their conqueſts, made grants to their principal commanders of great part of the conquered provinces, to be again ſubdivided by them among the lower officers, under the conditions of fidelity and military ſervice.

2. The feudal conſtitutions and uſages were firſt reduced into writing, about the year 1150, by two lawyers of Milan, under the title of *Conſuetudines Feudorum*. None of the German Emperors appear to have expreſsly confirmed this collection by their authority; but it is generally agreed, that it had their tacit approbation, and was conſidered as the cuſtomary feudal law of all the countries ſubject to the empire. No other country has ever acknowledged theſe books for their law; but each ſtate has formed to itſelf ſuch a ſyſtem of feudal rules, as beſt agreed with the genius of its own conſtitution. In feudal queſtions, therefore, we are governed, in the firſt place, by our own ſtatutes and cuſtoms; where theſe fail us, we have regard to the practice of neighbouring countries, if the genius of their law appears to be the ſame with ours; and ſhould the queſtion ſtill remain doubtful, we may have recourſe to thoſe written books of the feus, as to the original plan on which all feudal ſyſtems have proceeded.

3. This military grant got the name, firſt of *beneficium*, and afterwards of *feudum*; and was defined a gratuitous right to the property of lands, made under the conditions of fealty and military ſervice, to be performed to the granter by the receiver; the radical right of the lands ſtill remaining in the granter. Under lands, in this definition, are comprehended all rights or ſubjects ſo connected with land, that they are deemed a part thereof; as houſes, mills, fiſhings, juriſdictions, patronages, &c. Though feus in their original nature were gratuitous, they ſoon became the ſubject of commerce; ſervices of a civil or religious kind were frequently ſubſtituted in place of military; and now, of a long time, ſervices of every kind have been entirely diſpenſed with, in certain feudal tenures. He who makes the grant is called the *ſuperior*, and he who receives it the *vaſſal*. The ſubject of the *grant* is commonly called the *feu*; though that word is at other times, in our law, uſed to ſignify one particular tenure. See Sect. iv. 2. The intereſt retained by the ſuperior in the feu is ſtyled *dominium directum*, or the ſuperiority; and the intereſt acquired by the vaſſal, *dominium utile*, or the property. The word *fee* is promiſcuouſly applied to both.

4. Allodial goods are oppoſed to feus; by which are underſtood, goods enjoyed by the owner, independent of a ſuperior. All moveable goods are allodial; lands only are ſo when they are given without the condition of fealty or homage. By the feudal ſyſtem, the ſovereign, who is the fountain of feudal rights, reſerves to

himſelf the ſuperiority of all the lands of which he makes the grant; ſo that, with us, no lands are allodial, except thoſe of the king's own property, the ſuperiorities which the king reſerves in the property-lands of his ſubjects, and manſes and glebes, the right of which is completed by the preſbytery's deſignation, without any feudal grant.

5. Every perſon who is in the right of an immoveable ſubject, provided he has the free adminiſtration of his eſtate, and is not debarred by ſtatute, or by the nature of his right, may diſpoſe of it to another. Nay, a vaſſal, though he has only the *dominium utile*, can ſubfeu his property to a ſubvaſſal by a ſubaltern right, and thereby raiſe a new *dominium directum* in himſelf, ſubordinate to that which is in his ſuperior; and ſo *in infinitum*. The vaſſal who thus ſubfeus is called the ſubvaſſal's immediate ſuperior, and the vaſſal's ſuperior is the ſubvaſſal's mediate ſuperior.

6. All perſons who are not diſabled by law, may acquire and enjoy feudal rights. Papiſts cannot purchaſe a land eſtate by any voluntary deed. Aliens, who owe allegiance to a foreign prince, cannot hold a feudal right without naturalization: and therefore, where ſuch privilege was intended to be given to favoured nations or perſons, ſtatutes of naturalization were neceſſary, either general or ſpecial; or at leaſt, letters of naturalization by the ſovereign.

7. Every heritable ſubject, capable of commerce, may be granted in feu. From this general rule is excepted, 1. The annexed property of the Crown, which is not alienable without a previous diſſolution in parliament. 2. Tailzied lands, which are deviſed under condition that they ſhall not be aliened. 3. An eſtate *in hæreditate jacente* cannot be effectually aliened by the heir-apparent (*i. e.* not entered); but ſuch alienation becomes effectual upon his entry, the ſupervening right accruing in that caſe to the purchaſer; which is a rule applicable to the alienation of all ſubjects not belonging to the vender at the time of the ſale.

8. The feudal right, or, as it is called, *inveſtiture*, is conſtituted by charter and ſeiſin. By the charter, we underſtand that writing which contains the grant of the feudal ſubject to the vaſſal, whether it be executed in the proper form of a charter, or of a diſpoſition. Charters by ſubject-ſuperiors are granted, either, 1. *A me de ſuperiore meo*, when they are to be holden, not of the granter himſelf, but of his ſuperior. This ſort is called *a public holding*, becauſe vaſſals were in ancient times publicly received in the ſuperior's court before the *pares curiæ* or co-vaſſals. Or, 2. *De me*, where the lands are to be holden of the granter. Theſe were called ſometimes *baſe rights*, from *bas*, *lower:* and ſometimes *private*, becauſe, before the eſtabliſhment of our records, they were eaſily concealed from third parties; the nature of all which will be more fully explained, Sect. vii. An original charter is that by which the fee is firſt granted: A charter by progreſs is a renewed diſpoſition of that fee to the heir or aſſigney of the vaſſal. All doubtful clauſes in charters by progreſs ought to be conſtrued agreeably to the original grant; and all clauſes in the original charter are underſtood to be implied in the charters by progreſs, if there be no expreſs alteration.

9. The firſt clauſe in an original charter, which follows immediately after the name and deſignation of the granter, is the narrative or recital, which expreſſes the cauſes inductive of the grant. If the grant be made for a valuable conſideration, it is ſaid to be onerous; if for love and favour, gratuitous. In the diſpoſitive clauſe of a charter, the ſubjects made over are deſcribed either by ſpecial boundaries or march-ſtones, (which is called a *bounding charter*), or by ſuch other characters as may ſufficiently diſtinguiſh them. A charter regularly carries right to no ſubjects but what are contained in this clauſe, though they ſhould be mentioned in ſome other clauſe of the charter.

10. The clauſe of *tenendas* (from its firſt words *tenendas prædictas terras*) expreſſes the particular tenure by which the lands are to be holden. The clauſe of *reddendo* (from the words, *reddendo inde annuatim*) ſpecifies the particular duty or ſervice which the vaſſal is to pay or perform to the ſuperior.

Warrandice.

11. The clauſe of warrandice is that by which the granter obliges himſelf that the right conveyed ſhall be effectual to the receiver. Warrandice is either perſonal or real. Perſonal warrandice, where the granter is only bound perſonally, is either, 1. Simple, that he ſhall grant no deed in prejudice of the right; and this ſort, which is confined to future deeds, is implied even in donations. 2. Warrandice from fact and deed, by which the granter warrants that the right neither has been, nor ſhall be, hurt by any fact of his. Or, 3. Abſolute warrandice *contra omnes mortales*, whereby the right is warranted againſt all legal defects in it which may carry it off from the receiver either wholly or in part. Where a ſale of lands proceeds upon an onerous cauſe, the granter is liable in abſolute warrandice, though no warrandice be expreſſed; but in aſſignations to debts or decrees, no higher warrandice than from fact and deed is implied.

12. Gratuitous grants by the Crown imply no warrandice; and though warrandice ſhould be expreſſed, the clauſe is ineffectual, from a preſumption that it has crept in by the negligence of the Crown's officers. But where the Crown makes a grant, not *jure coronæ*, but for an adequate price, the ſovereign is in the ſame caſe with his ſubjects.

Effects of warrandice.

13. Abſolute warrandice, in caſe of eviction, affords an action to the grantee, againſt the granter, for making up to him all that he ſhall have ſuffered through the defect of the right; and not ſimply for his indemnification, by the granter's repayment of the price to him. But as warrandice is penal, and conſequently *ſtricti juris*, it is not eaſily preſumed, nor is it incurred from every light ſervitude that may affect the ſubject, far leſs does it extend to burdens which may affect the ſubject poſterior to the grant, nor to thoſe impoſed by public ſtatute, whether before or after, unleſs ſpecially warranted againſt.

Real warrandice.

14. Real warrandice is either, 1. Expreſs, whereby, in ſecurity of the lands principally conveyed, other lands called *warrandice-lands*, are alſo made over, to which the receiver may have recourſe in caſe the principal lands be evicted. Or, 2. Tacit, which is conſtituted by the exchange or excambion of one piece of ground with another; for, if the lands exchanged are carried off from either of the parties, the law itſelf, without any paction, gives that party immediate recourſe upon his own firſt lands, given in exchange for the lands evicted.

Excambion.

Precept of ſeiſin.

15. The charter concludes with a precept of ſeiſin, which is the command of the ſuperior granter of the right to his bailie, for giving ſeiſin or poſſeſſion to the vaſſal, or his attorney, by delivering to him the proper ſymbols. Any perſon, whoſe name may be inſerted in the blank, left in the precept for that purpoſe, can execute the precept as bailie; and whoever has the precept of ſeiſin in his hands, is preſumed to have a power of attorney from the vaſſal for receiving poſſeſſion in his name.

Inſtrument of ſeiſin.

16 A ſeiſin is the inſtrument or atteſtation of a notary, that poſſeſſion was actually given by the ſuperior or his bailie, to the vaſſal or his attorney; which is conſidered as ſo neceſſary a ſolemnity, as not to be ſuppliable, either by a proof of natural poſſeſſion, or even of the ſpecial fact that the vaſſal was duly entered to the poſſeſſion by the ſuperior's bailie.

Symbols uſed in ſeiſins.

17. The ſymbols by which the delivery of poſſeſſion is expreſſed, are, for lands, earth and ſtone; for rights of annualrent payable forth of land, it is alſo earth and ſtone with the addition of a penny money; for parſonage teinds, a ſheaf of corn; for juriſdictions, the book of the court; for patronages, a pſalm-book, and the keys of the church; for fiſhings, net and coble; for mills, clap and happer, &c. The ſeiſin muſt be taken upon the ground of the lands, except where there is a ſpecial diſpenſation in the charter from the Crown.

Regiſtration of ſeiſins.

18. All ſeiſins muſt be regiſtered within ſixty days after their date, either in the general regiſter of ſeiſins at Edinburgh, or in the regiſter of the particular ſhire appointed by the act 1617; which, it muſt be obſerved, is not, in every caſe, the ſhire within which the lands lie. Burgage ſeiſins are ordained to be regiſtered in the books of the borough.

19. Unregiſtered ſeiſins are ineffectual againſt third parties, but they are valid againſt the granters and their heirs. Seiſins regularly recorded, are preferable, not according to their own dates, but the dates of their regiſtration.

One ſeiſin ſerves in contiguous and in united tenements.

20. Seiſin neceſſarily ſuppoſes a ſuperior by whom it is given; the right therefore which the ſovereign, who acknowledges no ſuperior, has over the whole lands of Scotland, is conſtituted, *jure coronæ*, without ſeiſin. In ſeveral parcels of land that lie contiguous to one another, one ſeiſin ſerves for all, unleſs the right of the ſeveral parcels be either holden of different ſuperiors, or derived from different authors, or enjoyed by different tenures under the ſame ſuperior. In diſcontiguous lands, a ſeparate ſeiſin muſt be taken on every parcel, unleſs the ſovereign has united them into one tenandry by a charter of union; in which caſe, if there is no ſpecial place expreſſed, a ſeiſin taken on any part of the united lands will ſerve for the whole, even though they be ſituated in different ſhires. The only effect of union is, to give the diſcontiguous lands the ſame quality as if they had been contiguous or naturally united; union, therefore, does not take off the neceſſity of ſeparate ſeiſins, in lands holden by different tenures, or the rights of which flow from different ſuperiors, theſe being incapable of natural union.

Barony implies union.

21. The privilege of barony carries a higher right than union does, and conſequently includes union in it as the leſſer degree. This right of barony can neither be given, nor tranſmitted, unleſs by the Crown; but the quality of ſimple union, being once conferred on lands by the ſovereign, may be communicated by the vaſſal to a ſubvaſſal. Though part of the lands united or erected into a barony be ſold by the vaſſal to be holden *a me*, the whole union is not thereby diſſolved: what remains unſold retains the quality.

A charte becomes real only after ſeiſ

22. A charter, not perfected by ſeiſin, is a right merely perſonal, which does not transfer the property, (ſee N° clxxiii. 1.); and a ſeiſin of itſelf bears no faith, without its warrant: It is the charter and ſeiſin joined together that conſtitutes the feudal right, and ſecures the receiver againſt the effect of all poſterior ſeiſins, even though the charters on which they proceed ſhould be prior to his.

All bur muſt be ſerted in inveſtitu

23. No quality which is deſigned as a lien or real burden on a feudal right, can be effectual againſt ſingular ſucceſſors, if it be not inſerted in the inveſture. If the creditors in the burden are not particularly mentioned, the burden is not real; for no perpetual unknown incumbrance can be created upon lands. Where the right itſelf is granted with the burden of the ſum therein mentioned, or where it is declared void if the ſum be not paid againſt a day certain, the burden is real; but where the receiver is ſimply obliged by his acceptance to make payment, the clauſe is effectual only againſt him and his heirs.

clxv

SECT. IV. *Of the ſeveral kinds of Holding.*

Ward-h ing.

FEUDAL ſubjects are chiefly diſtinguiſhed by their different manners of holding, which were either ward, blanch, feu, or burgage. Ward-holding, which is now aboliſhed by 20 *Geo.* II. *c.* 50. was that which was granted for military ſervice. Its proper *reddendo* was, *ſervices*, or *ſervices uſed and wont*; by which laſt was meant the performance of ſervice whenever the ſuperior's occaſions required it. As all feudal rights were originally held by this tenure, ward-holding was *in dubio* preſumed. Hence, though the *reddendo* had contained ſome ſpecial ſervice, or yearly duty, the holding was preſumed ward, if another holding was not particularly expreſſed.

Feu-h ing.

2. Feu-holding is that whereby the vaſſal is obliged to pay to the ſuperior a yearly rent in money or grain, and ſometimes alſo in ſervices proper to a farm, as ploughing, reaping, carriages for the ſuperior's uſe, &c. *nomine feudi firmæ*. This kind of tenure was introduced for the encouragement of agriculture, the improvement of which was conſiderably obſtructed by the vaſſal's obligation to military ſervice. It appears to have been a tenure known in Scotland as far back as *leges burgorum*.

Blanc holdi

3. Blanch-holding is that whereby the vaſſal is to pay to the ſuperior an eluſory yearly duty, as a penny money, a roſe, a pair of gilt ſpurs, &c. merely in acknowledgment of the ſuperiority, *nomine albæ firmæ*. This duty, where it is a thing of yearly growth, if it be not demanded within the year, cannot be exacted thereafter; and where the words, *ſi petatur tantum*, are ſubjoined to the *reddendo*, they imply a releaſe to the vaſſal, whatever the quality of the duty may be, if it is not aſked within the year.

Burg holdi

4. Burgage-holding is that, by which boroughs-royal hold of the ſovereign the lands which are contained in their charters of erection. This, in the opinion of *Craig*, does not conſtitute a ſeparate tenure,

but is a ſpecies of ward-holding; with this ſpeciality, that the vaſſal is not a private perſon, but a community: and indeed, watching and warding, which is the uſual ſervice contained in the *reddendo* of ſuch charters, might be properly enough ſaid, ſome centuries ago, to have been of the military kind. As the royal borough is the king's vaſſal, all burgage-holders hold immediately of the crown: the magiſtrates therefore, when they receive the reſignations of the particular burgeſſes, and give ſeiſin to them, act, not as ſuperiors, but as the king's bailies ſpecially authoriſed thereto.

5. Feudal ſubjects, granted to churches, monaſteries, or other ſocieties for religious or charitable uſes, are ſaid to be mortified, or granted *ad manum mortuam*; either becauſe all caſualties muſt neceſſarily be loſt to the ſuperior, where the vaſſal is a corporation, which never dies; or becauſe the property of theſe ſubjects is granted to a dead hand, which cannot transfer it to another. In lands mortified in times of Popery to the church, whether granted to prelates for the behoof of the church, or *in puram eleemoſynam*; the only ſervices preſtable by the vaſſals were prayers, and ſinging of maſſes for the ſouls of the deceaſed, which approaches nearer to blanch-holding than ward. The purpoſes of ſuch grants having been, upon the reformation, declared ſuperſtitious, the lands mortified were annexed to the crown: but mortifications to univerſities, hoſpitals, &c. were not affected by that annexation; and lands may, at this day, be mortified to any lawful purpoſe, either by blanch or by feu holding.

SECT. V. *Of the caſualties due to the ſuperior.*

THE right of the ſuperior continues unimpaired, notwithſtanding the feudal grant, unleſs in ſo far as the *dominium utile*, or property, is conveyed to his vaſſal. The ſuperiority carries a right to the ſervices and annual duties contained in the *reddendo* of the vaſſal's charter. The duty payable by the vaſſal is a *debitum fundi*; *i. e.* it is recoverable, not only by a perſonal action againſt himſelf, but by a real action againſt the lands.

2. Beſides the conſtant fixed rights of ſuperiority, there are others, which, becauſe they depend upon uncertain events, are called *caſualties*.

3. The caſualties proper to a ward-holding, while that tenure ſubſiſted, were ward, recognition, and marriage, which it is now unneceſſary to explain, as by the late ſtatutes 20 and 25 *Geo. II.* for aboliſhing ward-holdings, the tenure of the lands holden ward of the crown or prince is turned into *blanch*, for payment of one penny Scots yearly, *ſi petatur tantum*; and the tenure of thoſe holden of ſubjects, into *feu*, for payment of ſuch yearly feu-duty in money, victual, or cattle, in place of all ſervices, as ſhall be fixed by the court of ſeſſion. And accordingly that court, by act of ſederunt, Feb. 8. 1749, laid down rules for aſcertaining the extent of theſe feu-duties.

4. The only caſualty, or rather forfeiture, proper to feu-holdings, is the loſe or tinſel of the feu-right, by the neglect of payment of the feu-duty for two full years. Yet where there is no conventional irritancy in the feu-right, the vaſſal is allowed to purge the legal irritancy at the bar; that is, he may prevent the forfeiture, by making payment before ſentence: but where the legal irritancy is forfeited by a conventional, he is not allowed to purge, unleſs where he can give a good reaſon for the delay of payment.

Non-entry.

5. The caſualties common to all holdings are, non-entry, relief, liferent-eſcheat, diſclamation, and purpreſture. NON-ENTRY is that caſualty which ariſes to the ſuperior out of the rents of the feudal ſubject, through the heir's neglecting to renew the inveſtiture after his anceſtor's death. The ſuperior is intitled to this caſualty, not only where the heir has not obtained himſelf infeft, but where his retour is ſet aſide upon nullities. The heir, from the death of the anceſtor, till he be cited by the ſuperior in a proceſs of general declarator of non-entry, loſes not only the retoured duties of his lands, (ſee next parag.); and he forfeits theſe, though his delay ſhould not argue any contempt of the ſuperior, becauſe the caſualty is conſidered to fall, as a condition implied in the fedual right, and not as a penalty of tranſgreſſion: but, where the delay proceeds not from the heir, but from the ſuperior, nothing is forfeited.

Retoured duties.

6. For underſtanding the nature of retoured duties, it muſt be known, that there was anciently a general valuation of all the lands in Scotland, deſigned both for regulating the proportion of public ſubſidies, and for aſcertaining the quantity of non-entry and relief-duties payable to the ſuperior; which appears, by a contract between K. R. Bruce and his ſubjects *anno* 1327, preſerved in the library of the Faculty of Advocates, to have been ſettled at leaſt as far back as the reign of Alexander III. This valuation became in the courſe of time, by the improvement of agriculture, and perhaps alſo by the heightening of the nominal value of our money, from the reign of Robert I. downwards to that of James III. much too low a ſtandard for the ſuperior's caſualties: wherefore, in all ſervices of heirs, the inqueſt came at laſt to take proof likewiſe of the preſent value of the lands contained in the brief (*quantum nunc valent*) in order to fix theſe caſualties. The firſt was called the *old*, and the other the *new*, *extent*. Though both extents were ordained to be ſpecified in all retours made to the chancery upon brieves of inqueſt; yet by the appellation of retoured duties in a queſtion concerning caſualties, the new extent is always underſtood. The old extent continued the rule for levying public ſubſidies, till a tax was impoſed by new proportions, by ſeveral acts made during the uſurpation. By two acts of Cromwell's parliament, held at Weſtminſter in 1656, impoſing taxations on Scotland, the rates laid upon the ſeveral counties are preciſely fixed. The ſubſidy granted by the act of convention 1667 was levied on the ſeveral counties, nearly in the ſame proportions that were fixed by the uſurper in 1656; and the ſums to which each county was ſubjected were ſubdivided among the individual land-holders in that county, according to the valuations already ſettled, or that ſhould be ſettled by the commiſſioners appointed to carry that act into execution. The rent fixed by theſe valuations is commonly called the *valued rent*; according to which the land-tax, and moſt of the other public burdens, have been levied ſince that time.

Old and new extents.

Valued rent.

7. In feu-holdings, the feu-duty is retoured as the rent, becauſe the feu-duty is preſumed to be, and truly was at firſt, the rent. The ſuperior therefore of a feu-

holding gets no non-entry, before citation in the general declarator; for he would have been intitled to the yearly feu-duty, though the fee had been full, *i. e.* though there had been a vaſſal infeſt in the lands. The ſuperior of teinds gets the fifth part of the retoured duty as non-entry, becauſe the law conſiders teinds to be worth a fifth part of the rent. In rights of annualrent which are holden of the granter, the annualrenter becomes his debtor's vaſſal; and the annualrent contained in the right is retoured to the blanch or other duty contained in the right before declarator.

8. It is becauſe the retoured duty is the preſumed rent, that the non-entry is governed by it. If therefore no retour of the lands in non-entry can be produced, nor any evidence brought of the retoured duty, the ſuperior is intitled to the real, or at leaſt to the valued, rent, even before citation. In lands formerly holden ward of the King, the heir, in place of the retoured duties, is ſubjected only to the annual payment of one *per cent.* of the valued rent.

9. The heir, after he is cited by the ſuperior in the action of general declarator, is ſubjected to the full rents till his entry, becauſe his neglect is leſs excuſable after citation. The decree of declarator, proceeding on this action, intitles the ſuperior to the poſſeſſion, and gives him right to the rents downward from the citation. As this ſort of non-entry is properly penal, our law has always reſtricted it to the retoured duties, if the heir had a probable excuſe for not entering.

In what caſes non-entry is not due.

10. Non-entry does not obtain in burgage-holdings, becauſe the incorporation of inhabitants holds the whole incorporated ſubjects of the King; and there can be no non-entry due in lands granted to communities, becauſe there the vaſſal never dies. This covers the right of particulars from non-entry: for if non-entry be excluded with regard to the whole, it cannot obtain with regard to any part. It is alſo excluded, as to a third of the lands, by the terce, during the widow's life; and as to the whole of them, by the courteſy during the life of the huſband. But it is not excluded by a precept of ſeiſin granted to the heir, till ſeiſin be taken thereupon.

Relief.

11. Relief is that caſualty which intitles the ſuperior to an acknowledgment or conſideration from the heir, for receiving him as vaſſal. It is called *relief*, becauſe, by the entry of the heir, his fee is relieved out of the hands of the ſuperior. It is not due in feu-holdings flowing from ſubjects, unleſs where it is expreſſed in the charter by a ſpecial clauſe for doubling the feu-duty at the entry of an heir; but, in feu-rights holden of the crown, it is due, though there ſhould be no ſuch clauſe in the charter. The ſuperior can recover this caſualty, either by a poinding of the ground, as a *debitum fundi*, or by a perſonal action againſt the heir. In blanch and feu holdings, where this caſualty is expreſsly ſtipulated, a year's blanch or feu duty is due in name of *relief*, beſide the current year's duty payable in name of *blanch* or *feu farm*.

Eſcheat.

12. Escheat (from *eſcheoir, to happen* or *fall*) is that forfeiture which falls through a perſon's being denounced rebel. It is either ſingle or liferent. Single eſcheat, though it does not accrue to the ſuperior, muſt be explained in this place, becauſe of its coincidence with liferent.

Letters o horning.

13. After a debt is conſtituted, either by a formal decree, or by regiſtration of the ground of debt, which, to the ſpecial effect of execution, is in law accounted a decree; the creditor may obtain letters of horning, iſſuing from the ſignet, commanding meſſengers to charge the debtor to pay or perform his obligation, within a day certain. Where horning proceeds on a formal decree of the Seſſion, the time indulged by law to the debtor is fifteen days; if upon a decree of the commiſſion of teinds or admiral, it is ten; and upon the decrees of all inferior judges, fifteen days. Where it proceeds on a regiſtered obligation, which ſpecifies the number of days, that number muſt be the rule; and, if no preciſe number be mentioned, the charge muſt be given on fifteen days, which is the term of law, unleſs where ſpecial ſtatute interpoſes; as in bills, upon which the debtor may be charged on ſix days.

14. The meſſenger muſt execute theſe letters (and indeed all ſummonſes) againſt the debtor, either perſonally or at his dwelling-houſe; and, if he get not acceſs to the houſe, he muſt ſtrike ſix knocks at the gate, and thereafter affix to it a copy of his execution. If payment be not made within the days mentioned in the horning, the meſſenger, after proclaiming three oyeſſes at the market-croſs of the head borough of the debtor's domicile, and reading the letters there, blows three blaſts with a horn, by which the debtor is underſtood to be proclaimed rebel to the king for contempt of his authority; after which, he muſt affix a copy of the execution to the market-croſs: This is called *the publication of the diligence*, or a *denunciation at the horn*. Where the debtor is not in Scotland, he muſt be charged on ſixty days, and denounced at the market-croſs of Edinburgh, and pier and ſhore of Leith.

Denun tion.

Conſe ces th

15. Denunciation, if regiſtered within 15 days, either in the ſheriff's books, or in the general regiſter, drew after it the rebel's ſingle eſcheat, *i. e.* the forfeiture of his moveables to the crown. Perſons denounced rebels have not a *perſona ſtandi in judicio*; they can neither ſue nor defend in any action. But this incapacity being unfavourable, is perſonal to the rebel, and cannot be pleaded againſt his aſſignee.

Denun tion i minal

16. Perſons cited to the court of juſticiary may be alſo denounced rebels, either for appearing there with too great a number of attendants; or, if they fail to appear, they are declared fugitives from the law. Single eſcheat falls, without denunciation, upon ſentence of death pronounced in any criminal trial; and, by ſpecial ſtatute, upon one's being convicted of certain crimes, though not capital; as perjury, bigamy, deforcement, breach of arreſtment, and uſury. By the late act aboliſhing wardholdings, the caſualties both of ſingle and liferent eſcheat are diſcharged, when proceeding upon denunciation for civil debts; but they ſtill continue, when they ariſe from criminal cauſes. All moveables belonging to the rebel at the time of his rebellion, (whether proceeding upon denunciation, or ſentence in a criminal trial), and all that ſhall be afterwards acquired by him until relaxation, fall under ſingle eſcheat. Bonds bearing intereſt, becauſe they continue heritable *quoad fiſcum*, fall not under it, nor ſuch fruits of heritable ſubjects as become due after the term next enſuing the rebellion, theſe being reſerved for the liferent eſcheat.

17. The king never retains the right of eſcheat to himſelf,

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himſelf, but makes it over to a donatory, whoſe gift is not perfected, till, upon an action of general declarator, it be declared that the rebel's eſcheat has fallen to the crown by his denunciation, and that the right of it is now transferred to the purſuer by the gift in his favour. Every creditor therefore of the rebel, whoſe debt was contracted before rebellion, and who has uſed diligence before declarator, is preferable to the donatory. But the eſcheat cannot be affected by any debt contracted, nor by any voluntary deed of the rebel after rebellion.

etters of laxation.

18. The rebel, if he either pays the debt charged for, or ſuſpends the diligence, may procure letters of relaxation from the horn, which, if publiſhed in the ſame place, and regiſtered 15 days thereafter in the ſame regiſter with the denunciation, have the effect to reſtore him to his former ſtate; but they have no retroſpect as to the moveables already fallen under eſcheat, without a ſpecial clauſe for that purpoſe.

iferent cheat.

19. The rebel, if he continues unrelaxed for year and day after rebellion, is conſtrued to be civilly dead: and therefore, where he holds any feudal right, his ſuperiors, as being without a vaſſal, are entitled, each of them, to the rents of ſuch of the lands belonging to the rebel as hold of himſelf, during all the days of the rebel's natural life, by the caſualty of LIFERENT ESCHEAT; except where the denunciation proceeds upon treaſon or proper rebellion, in which caſe the liferent falls to the king.

20. It is that eſtate only, to which the rebel has a proper right of liferent in his own perſon, that falls under his liferent eſcheat.

21. Though neither the ſuperior nor his donatory can enter into poſſeſſion in conſequence of this caſualty, till decree of declarator; yet that decree, being truly declaratory, has a retroſpect, and does not ſo properly confer a new right, as declare the right formerly conſtituted to the ſuperior, by the civil death of his vaſſal. Hence, all charters or heritable bonds, though granted prior to the rebellion, and all adjudications, though led upon debts contracted before that period, are ineffectual againſt the liferent eſcheat, unleſs ſeiſin be taken thereon within year and day after the granter's rebellion.

22. Here, as in ſingle eſcheat, no debt contracted after rebellion can hurt the donatory, nor any voluntary right granted after that period, though in ſecurity or ſatisfaction of prior debts.

lama-

ref-

23. DISCLAMATION is that caſualty whereby a vaſſal forfeits his whole feu to his ſuperior, if he diſowns or diſclaims him, without ground, as to any part of it. PURPRESTURE draws likewiſe a forfeiture of the whole feu after it; and is incurred by the vaſſal's encroaching upon any part of his ſuperior's property, or attempting by building, incloſing, or otherwiſe, to make it his own. In both theſe feudal delinquencies, the leaſt colour of excuſe ſaves the vaſſal.

tures,

24. All grants from the crown, whether charters, gifts of caſualties, or others, proceed on ſignatures which paſs the ſignet. When the king reſided in Scotland, all ſignatures were ſuperſcribed by him; but, on the acceſſion of James VI. to the crown of England, a cachet or ſeal was made, having the king's name engraved on it, in purſuance of an act of the privy-council, *April* 4. 1603. with which all ſignatures were to be afterwards ſealed, that the lords of exchequer were impowered to paſs; and theſe powers are transferred to the court of exchequer, which was eſtabliſhed in Scotland after the union of the two kingdoms in 1707. Grants of higher conſequence, as remiſſions of crimes, gifts proceeding upon forfeiture, and charters of *novodamus*, muſt have the king's ſign-manual for their warrant.

Seals.

25. If lands holding of the crown were to be conveyed, the charter paſſed, before the union of the kingdoms in 1707, by the great ſeal of Scotland; and now by a ſeal ſubſtitute in place thereof. Grants of church-dignities, during epiſcopacy, paſſed alſo by the great ſeal; and the commiſſions to all the principal officers of the crown, as Juſtice-Clerk, King's Advocate, Solicitor, *&c.* do ſo at this day. All rights which ſubjects may tranſmit by ſimple aſſignation, the king tranſmits by the privy-ſeal: as gifts of moveables, or of caſualties that require no ſeiſin. The quarter ſeal, otherwiſe called the *teſtimonial of the great ſeal*, is appended to gifts of tutory, commiſſions of brieves iſſuing from the chancery, and letters of preſentation to lands holding of a ſubject, proceeding upon forfeiture, baſtardy, or *ultimus hæres*.

Their uſe.

26. Seals are to royal grants, what ſubſcription is to rights derived from ſubjects, and give them authority; they ſerve alſo as a check to gifts procured (*ſubreptione vel obreptione*) by concealing the truth, or expreſſing a falſehood; for, where this appears, the gift may be ſtopped before paſſing the ſeals, tho' the ſignature ſhould have been ſigned by the king. All rights paſſing under the great or privy ſeal muſt be regiſtered in the regiſters of the great or privy ſeal *reſpective*, before appending the ſeal.

SECT. VI. *Of the right which the vaſſal acquires by getting the feu.*

clxvii.

Dominium utile.

UNDER the *dominium utile* which the vaſſal acquires by the feudal right, is comprehended the property of whatever is conſidered as part of the lands, whether of houſes, woods, incloſures, &c. above ground; or of coal, limeſtone, minerals, &c. under ground. Mills have, by the generality of our lawyers, been deemed a ſeparate tenement, and ſo not carried by a charter or diſpoſition, without either a ſpecial clauſe conveying mills, or the erection of the lands into a barony. Yet it is certain, that, if a proprietor builds a mill on his own lands, it will be carried by his entail, or by a retour, without mentioning it, although the lands are not erected into a barony. If the lands diſponed be aſtricted, or thirled to another mill, the purchaſer is not allowed to build a new corn-mill on his property, even though he ſhould offer ſecurity that it ſhall not hurt the thirle; which is introduced for preventing daily temptations to fraud.

2. Proprietors are prohibited to hold dove-cotes, unleſs their yearly rent, lying within two miles thereof, extend to ten chalders of victual. A purchaſer of lands, with a dove-cote, is not obliged to pull it down, though he ſhould not be qualified to build one; but, if it becomes ruinous, he cannot rebuild it. The right of brewing, though not expreſſed in the grant, is implied in the nature of property; as are alſo the rights of fiſhing, fowling, and hunting, in ſo far as they are not reſtrained by ſtatute.

3. There

Regalia.

3. There are certain rights naturally conſequent on property, which are deemed to be preſerved by the crown as *regalia;* unleſs they be ſpecially conveyed. Gold and ſilver mines are of this ſort: the firſt univerſally; and the other, where three half-pennies of ſilver can be extracted from the pound of lead, by act 1424, (three half-pennies at that time was equal to about two ſhillings five pennies of our preſent Scots money.) Theſe were by our ancient law annexed to the crown; but they are now diſſolved from it; and every proprietor is intitled to a grant of the mines within his own lands, with the burden of delivering to the crown a tenth of what ſhall be brought up.

4. Salmon-fiſhing is likewiſe a right underſtood to be reſerved by the crown, if it be not expreſsly granted: but 40 years poſſeſſion thereof, where the lands are either erected into a barony, or granted with the general clauſe of fiſhings, eſtabliſhes the full right of the ſalmon-fiſhing in the vaſſal. A charter of lands, within which any of the king's foreſts lie, does not carry the property of ſuch foreſt to the vaſſal.

Res publicæ.

5. All the ſubjects which were by the Roman law accounted *res publicæ*, as rivers, high-ways, ports, &c. are, ſince the introduction of feus, held to be *inter regalia*, or *in patrimonio principis;* and hence encroachment upon a highway is ſaid to infer purpreſture. No perſon has the right of a free port without a ſpecial grant, which implies a power in the grantee to levy anchorage and ſhore dues, and an obligation upon him to uphold the port in good condition. In this claſs of things, our forefathers reckoned fortalices, or ſmall places of ſtrength, originally built for the defence of the country, either againſt foreign invaſions, or civil commotions; but theſe now paſs with the lands in every charter.

Pertinents.

6. The vaſſal acquires right by his grant, not only to the lands ſpecially contained in the charter, but to thoſe that have been poſſeſſed 40 years as pertinent thereof. But, 1. If the lands in the grant are marked out by ſpecial limits, the vaſſal is circumſcribed by the tenor of his own right, which excludes every ſubject without theſe limits from being pertinent of the lands. 2. A right poſſeſſed under an expreſs infeftment is preferable, *cæteris paribus*, to one poſſeſſed only as pertinent. 3. Where neither party is infeft *per expreſſum*, the mutual promiſcuous poſſeſſion by both, of a ſubject as pertinent, reſolves into a commonty of the ſubject poſſeſſed: but if one of the parties has exerciſed all the acts of property of which the ſubject was capable, while the poſſeſſion of the other was confined to paſturage only, or to caſting feal and divot, the firſt is to be deemed ſole proprietor, and the other to have merely a right of ſervitude.

Privileges of barony.

7. As barony is a *nomen univerſitatis*, and unites the ſeveral parts contained in it into one individual right, the general conveyance of a barony carries with it all the different tenements of which it conſiſts, tho' they ſhould not be ſpecially enumerated; (and this holds, even without erection into a barony, in lands that have been united under a ſpecial name.) Hence, likewiſe, the poſſeſſion by the vaſſal of the ſmalleſt part of the barony-lands preſerves to him the right of the whole.

Tack or leaſe.

8. The vaſſal is intitled, in conſequence of his property, to levy the rents of his own lands, and to recover them from his tenants by an action for rent before his own court; and from all other poſſeſſors and intromitters, by an action of mails and duties before the ſheriff. He can alſo remove from his lands, tenants who have no leaſes; and he can grant tacks or leaſes to others. A tack is a contract of location, whereby the uſe of land, or any other immoveable ſubject, is ſet to the leſſee or tackſman for a certain yearly rent, either in money, the fruits of the ground, or ſervices. It ought to be reduced into writing, as it is a right concerning lands: tacks therefore, that are given verbally, to endure for a term of years, are good againſt neither party for more than one year. An obligation to grant a tack is as effectual againſt the granter, as a formal tack. A liferenter, having a temporary property in the fruits, may grant tacks to endure for the term of his own liferent.

9. The tackſman's right is limited to the fruits which ſpring up annually from the ſubject ſet, either naturally, or by the induſtry of the tackſman; he is not therefore intitled to any of the growing timber above ground, and far leſs to the minerals, coal, clay, &c. under ground, the uſe of which conſumes the ſubſtance. Tacks are, like other contracts, perſonal rights in their own nature, and conſequently ineffectual againſt ſingular ſucceſſors in the lands; but, for the encouragement of agriculture, they were, by act 1449, declared effectual to the tackſman for the full time of their endurance, into whoſe hands ſoever the lands might come.

10. To give a written tack the benefit of this ſtatute, it muſt mention the ſpecial tack-duty payable to the proprietor, which though ſmall, if it be not eluſory, ſecures the tackſman; and it muſt be followed by poſſeſſion, which ſupplies the want of a ſeiſin. If a tack does not expreſs the term of entry, the entry will commence at the next term after its date, agreeable to the rule, *Quod pure debetur, præſenti die debetur.* If it does not mention the iſh, *i. e.* the term at which it is to determine, it is good for one year only; but, if the intention of parties to continue it for more than one year, ſhould appear from any clauſe in the tack, it is ſuſtained for two years as the *minimum.* Tacks granted to perpetuity, or with an indefinite iſh, have not the benefit of the ſtatute. Tacks of houſes within borough do not fall within this act.

11. Tacks neceſſarily imply a *delectus perſonæ*, a choice by the ſetter of a proper perſon for his tenant. Hence the conveyance of a tack, which is not granted to aſſignees, is ineffectual without the landlord's conſent. A right of tack, though it be heritable, falls under the *jus mariti*, becauſe it cannot be ſeparated from the labouring cattle and implements of tillage, which are moveable ſubjects. A tack, therefore, granted to a ſingle woman, without the liberty of aſſigning, falls by her marriage; becauſe the marriage, which is a legal conveyance thereof to the huſband, cannot be annulled. This implied excluſion of aſſignees is however limited to voluntary, and does not extend to neceſſary, aſſignments; as an adjudication of a tack by the tackſman's creditor: but a tack, expreſsly excluding aſſignees, cannot be carried even by adjudication. But tackſmen may ſubſet, unleſs ſubtenants are expreſsly excluded; and liferent tacks, becauſe they import a higher degree of right in the tackſman than tacks for

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a definite term, may be aſſigned, unleſs aſſignees be ſpecially excluded.

acit relo-
tion.

12. If neither the ſetter nor tackſman ſhall properly diſcover their intention to have the tack diſſolved at the term fixed for its expiration, they are underſtood, or preſumed, to have entered into a new tack upon the ſame terms with the former, which is called *tacit relocation;* and continues till the landlord warns the tenant to remove, or the tenant renounces his tack to the landlord: this obtains alſo in the caſe of moveable tenants, who poſſeſs from year to year without written tacks.

13. In tacks of land, the ſetter is commonly bound to put all the houſes and office-houſes, neceſſary for the farm, in good condition at the tenant's entry; and the tenant muſt keep them and leave them ſo at his removal. But, in tacks of houſes, the ſetter muſt not only deliver to the tenant the ſubject ſet, in tenantable repair at his entry, but uphold it in that repair during the whole years of the tack.

14. If the inclemency of the weather, inundation, or calamity of war, ſhould have brought upon the crop an extraordinary damage, (*plus quam tolerabile*), the landlord had, by the Roman law, no claim for any part of the tack-duty: if the damage was more moderate, he might exact the full rent. It is nowhere defined, what degree of ſterility or devaſtation makes a loſs not to be borne; but the general rule of the Roman law ſeems to be made ours. Tenants are obliged to pay no public burdens to which they are not expreſsly bound by their tack, except mill-ſervices.

ſtution
cks.

15. Tacks may be evacuated during their currency, (1.) In the ſame manner as feu-rights, by the tackſman's running in arrear of his tack-duty for two years together. This irritancy may be prevented by the tenant's making payment at the bar before ſentence. (2.) Where the tenant either runs in arrear of one year's rent, or leaves his farm uncultivated at the uſual ſeaſon; in which caſe he may be ordained to give ſecurity for the arrears, and for the rent of the five following crops, if the tack ſhall ſubſiſt ſo long; otherwiſe, to remove, as if the tack were at an end. (3.) Tacks may be evacuated at any time, by the mutual conſent of parties.

ing.

16. The landlord, when he intends to remove a tenant whoſe tack is expiring, or who poſſeſſes without a tack, muſt, upon a precept ſigned by himſelf, warn the tenant forty days preceding the term of Whitſunday, at or immediately preceding the iſh, perſonally, or at his dwelling-houſe, to remove at that term, with his family and effects. This precept muſt be alſo executed on the ground of the lands, and thereafter read in the pariſh-church where the lands lie, after the morning ſervice, and affixed to the moſt patent door thereof. Whitſunday, though it be a moveable feaſt, is, in queſtions of removing, fixed to the 15th of May. In warnings from tenements within borough, it is ſufficient that the tenant be warned forty days before the iſh of the tack, whether it be Whitſunday or Martinmas; and in theſe the ceremony of chalking the door is ſuſtained as warning, when proceeding upon a verbal order from the proprietor.

17. This proceſs of warning was preciſely neceſſary for founding an action of removing againſt tenants, till act of ſederunt of the court of ſeſſion, *Dec.* 14. 1756, which leaves it in the option of the proprietor, either to uſe the former method, or to bring his action of removing before the judge-ordinary; which, if it be called forty days before the ſaid term of Whitſunday, ſhall be held as equal to a warning. Where the tenant is bound, by an expreſs clauſe of his tack, to remove at the iſh without warning, ſuch obligation is, by the ſaid act, declared to be a ſufficient warrant for letters of horning, upon which, if the landlord charge his tenant forty days before the ſaid Whitſunday, the judge is authoriſed to eject him within ſix days after the term of removing expreſſed in the tack.

Actions of
removing.

18. Actions of removing might, even before this act of ſederunt, have been purſued without any previous warning, (1.) Againſt vicious poſſeſſors, *i. e.* perſons who had ſeized the poſſeſſion by force, or who, without any legal title, had intruded into it, after the laſt poſſeſſor had given it up. (2.) Againſt poſſeſſors who had a naked tolerance. (3.) Againſt tenants who had run in arrear of rent, during the currency of their tacks. (4.) Againſt ſuch as had ſold their lands, and yet continued to poſſeſs after the term of the purchaſer's entry. Upon the ſame ground, warning was not required, in removings againſt poſſeſſors of liferented lands, after the death of the liferenter who died in the natural poſſeſſion: but if he poſſeſſed by tenants, theſe tenants could not be diſturbed in their poſſeſſions till the next Whitſunday, that they might have time to look out for other farms; but they might be compelled to remove at that term, by an action of removing, without warning.

19. A landlord's title in a removing, let it be ever ſo lame, cannot be brought under queſtion by a tenant whoſe tack flows immediately from him; but, if he is to inſiſt againſt tenants not his own, his right muſt be perfected by infeſtment, unleſs it be ſuch as requires no infeſtment; as terce, &c.

Violent
profits.

20. The defender, in a removing, muſt, before offering any defence which is not inſtantly verified, give ſecurity to pay to the ſetter the *violent profits*, if they ſhould be awarded againſt him. Theſe are ſo called, becauſe the law conſiders the tenant's poſſeſſion after the warning as violent. They are eſtimated, in tenements within borough, to double the rent; and in lands, to the higheſt profits the purſuer could have made of them, by poſſeſſing them either by a tenant, or by himſelf.

Effect of
warning not
inſiſted in.

21. If the action of removing ſhall be paſſed from, or if the landlord ſhall, after uſing warning, accept of rent from the tenant, for any term ſubſequent to that of the removal, he is preſumed to have changed his mind, and tacit relocation takes place. All actions of removing againſt the principal or original tackſman, and decrees thereupon, if the order be uſed, which is ſet forth *ſupra*, (17.), are, by the act of ſederunt 1756, declared to be effectual againſt the aſſignees to the tack, or ſubtenants.

Hypothec.

22. The landlord has, in ſecurity of his tack-duty, over and above the tenant's perſonal obligation, a tacit pledge or hypothec, not only in the fruits, but in the cattle paſturing on the ground. The corn, and other fruits, are hypothecated for the rent of that year whereof they are the crop; for which they remain affected, though the landlord ſhould not uſe his right for years together.

23. The whole cattle on the ground, conſidered as a quantity, are hypothecated for a year's rent, one after another ſucceſſively. The landlord may apply this hypothec for payment of the paſt year's rent, at any time within three months from the laſt conventional term of payment, after which it ceaſes for that year. As the tenant may increaſe the ſubject of this hypothec, by purchaſing oxen, ſheep, &c. ſo he can impair it, by ſelling part of his ſtock; but if the landlord ſuſpects the tenant's management, he may, by ſequeſtration or poinding, make his right, which was before general upon the whole ſtock, ſpecial upon every individual. A ſuperior has alſo a hypothec for his feu-duty, of the ſame kind with that juſt explained.

24. In tacks of houſes, breweries, ſhops, and other tenements, which have no natural fruits, the furniture and other goods brought into the ſubject ſet are hypothecated to the landlord for one year's rent. But the tenant may by ſale impair this hypothec, as he might that of cattle in rural tenements; and indeed, in the particular caſe of a ſhop, the tenant rents it for no other purpoſe than as a place of ſale.

clxviii.

Sect. VII. *Of the tranſmiſſion of rights, by confirmation and reſignation.*

Tranſmiſſion of feudal rights.

A vassal may tranſmit his feu either to univerſal ſucceſſors, as heirs; or to ſingular ſucceſſors, *i. e.* thoſe who acquire by gift, purchaſe, or other ſingular title. This laſt ſort of tranſmiſſion is either voluntary, by diſpoſition; or neceſſary, by adjudication.

2. By the firſt feudal rules, no ſuperior could be compelled to receive any vaſſal in the lands, other than the heir expreſſed in the inveſtiture; for the ſuperior alone had the power of aſcertaining to what order of heirs the fee granted by himſelf was to deſcend. But this right of refuſal in the ſuperior did not take place, (1.) In the caſe of creditors appriſers or adjudgers, whom ſuperiors were obliged to receive upon payment of a year's rent. (2.) In the caſe of purchaſers of bankrupt eſtates, who were put on the ſame footing with adjudgers. The crown refuſes no voluntary diſponee, on his paying a compoſition to the exchequer of a ſixth part of the valued rent. Now ſuperiors are directed to enter all ſingular ſucceſſors (except incorporations) who ſhall have got from the vaſſal a diſpoſition, containing procuratory of reſignation; they always receiving the fees or caſualties that law entitles them to on a vaſſal's entry, *i. e.* a year's rent.

Baſe rights.

3. Baſe rights, *i. e.* diſpoſitions to be holden of the diſponer, are tranſmiſſions only of the property, the ſuperiority remaining as formerly. As this kind of right might, before eſtabliſhing the regiſters, have been kept quite concealed from all but the granter and receiver, a public right was preferable to it, unleſs cloathed with poſſeſſion: but as this diſtinction was no longer neceſſary after the eſtabliſhment of the records, all infeftments are declared preferable, according to the dates of their ſeveral regiſtrations; without reſpect to the former diſtinction of baſe and public, or of being cloathed and not cloathed with poſſeſſion.

Public rights.

4. Public rights, *i. e.* diſpoſitions to be holden of the granter's ſuperior, may be perfected either by confirmation or reſignation; and therefore, they generally contain both precept of ſeiſin and procuratory of reſignation. When the receiver is to complete his right in the firſt way, he takes ſeiſin upon the precept: but ſuch ſeiſin is ineffectual without the ſuperior's confirmation; for the diſponee cannot be deemed a vaſſal, till the ſuperior receive him as ſuch, or confirm the holding. By the uſual ſtyle in the tranſmiſſion of lands, the diſpoſition contains an obligation and precept of infeftment, both *a me* and *de me*, in the option of the diſponee; upon which, if ſeiſin is taken indefinitely, it is conſtrued in favour of the diſponee to be a baſe infeftment, becauſe a public right is null without confirmation: but, if the receiver ſhall afterwards obtain the ſuperior's confirmation, it is conſidered as if it had been from the beginning a public right.

Prefe in co mation

5. Where two ſeveral public rights of the ſame ſubject are confirmed by the ſuperior, their preference is governed by the dates of the confirmations, not of the infeftments confirmed; becauſe it is the confirmation which completes a public right.

Effect confi tion.

6. Though a public right becomes, by the ſuperior's confirmation, valid from its date; yet if any mid impediment intervene betwixt that period and the confirmation, to hinder the two from being conjoined, *e. g.* if the granter of a public right ſhould afterwards grant a baſe right to another, upon which ſeiſin is taken before the ſuperior's confirmation of the firſt, the confirmation will have effect only from its own date; and conſequently the baſe right firſt completed, will carry the *property* of the lands preferable to the public one.

Reſig tion

7. Reſignation is that form of law, by which a vaſſal ſurrenders his feu to his ſuperior; and it is either *ad perpetuam remanentiam*, or *in favorem*. In reſignations *ad remanentiam*, where the feu is reſigned, to the effect that it may remain with the ſuperior, the ſuperior, who before had the ſuperiority, acquires, by the reſignation, the property alſo of the lands reſigned: and as his infeftment in the lands ſtill ſubſiſted, notwithſtanding the right by which he had given his vaſſal the property; therefore, upon the vaſſal's reſignation, the ſuperior's right of property revives, and is conſolidated with the ſuperiority, without the neceſſity of a new infeftment; but the inſtrument of reſignation muſt be recorded.

8. Reſignations *in favorem* are made, not with an intention that the property reſigned ſhould remain with the ſuperior, but that it ſhould be again given by him, in favour either of the reſigner himſelf, or of a third party; conſequently the fee remains in the reſigner, till the perſon in whoſe favour reſignation is made gets his right from the ſuperior perfected by ſeiſin. And becauſe reſignations *in favorem* are but incomplete perſonal deeds, our law has made no proviſion for recording them. Hence, the firſt ſeiſin on a ſecond reſignation is preferable to the laſt ſeiſin upon the firſt reſignation; but the ſuperior, accepting a ſecond reſignation, whereupon a prior ſeiſin may be taken in prejudice of the firſt reſignatory, is liable in damages.

9. By our former deciſions, one who was veſted with a perſonal right of lands, *i. e.* a right not completed by ſeiſin, effectually diveſted himſelf by diſponing it to another; after which, no right remained in the diſponer, which could be carried by a ſecond diſpoſition, becauſe a perſonal right is no more than a *jus obligationis*, which may be transferred by any deed ſufficiently expreſſing the will of the granter. But this doctrine, at the ſame time that it rendered the ſecurity of the records extremely uncertain, was not truly applicable to

ſuch rights as required ſeiſin to complete them; and therefore it now obtains, that the granter even of a perſonal right of lands, is not ſo diveſted by conveying the right to one perſon, but that he may effectually make it over afterwards to another; and the preference between the two does not depend on the dates of the diſpoſitions, but on the priority of the ſeiſins following upon them.

SECT. VIII. *Of Redeemable Rights.*

AN heritable right is ſaid to be redeemable, when it contains a right of reverſion, or return, in favour of the perſon from whom the right flows. Reverſions are either legal, which ariſe from the law itſelf, as in adjudications, which law declares to be redeemable within a certain term after their date; or conventional, which are conſtituted by the agreement of parties, as in wadſets, rights of annualrent, and rights in ſecurity. A wadſet (from wad or pledge) is a right, by which lands, or other heritable ſubjects, are impignorated by the proprietor to his creditor, in ſecurity of his debt; and, like other heritable rights, is perfected by ſeiſin. The debtor, who grants the wadſet, and has the right of reverſion, is called the reverſer; and the creditor, receiver of the wadſet, is called the wadſetter.

2. Wadſets, by the preſent practice, are commonly made out in the form of mutual contracts, in which one party ſells the land, and the other grants the right of reverſion. When the right of reverſion is thus incorporated in the body of the wadſet, it is effectual without regiſtration; becauſe the ſingular ſucceſſor in the wadſet is, in that caſe, ſufficiently certified of the reverſion, though it be not regiſtered, by looking into his own right, which bears it *in gremio*. But where the right of reverſion is granted in a ſeparate writing, it is inneffectual againſt the ſingular ſucceſſor of the wadſetter, unleſs it be regiſtered in the regiſter of ſeiſins within 60 days after the date of the ſeiſin upon the wadſet.

3. Rights of reverſion are generally eſteemed *ſtricti juris*; yet they go to heirs, though heirs ſhould not be mentioned, unleſs there be ſome clauſe in the right, diſcovering the intention of parties, that the reverſion ſhould be perſonal to the reverſer himſelf. In like manner, though the right ſhould not expreſs a power to redeem from the wadſetter's heir, as well as from himſelf, redemption will be competent againſt the heir. All our lawyers have affirmed, that reverſions cannot be aſſigned, unleſs they are taken to aſſignees; but from the favour of legal diligence, they may be adjudged.

4. Reverſions commonly leave the reverſer at liberty to redeem the lands *quandocunque*, without reſtriction in point of time; but a clauſe is adjected to ſome reverſions, that if the debt be not paid againſt a determinate day, the right of reverſion ſhall be irritated, and the lands ſhall become the irredeemable property of the wadſetter. Nevertheleſs, the irritancy being penal, as in wadſets, the ſum lent falls always ſhort of the value of the lands, and the right of redemption is by indulgence continued to the reverſer, even after the term has expired, while the irritancy is not declared. But the reverſer, if he does not take the benefit of this indulgence within 40 years after the lapſe of the term, is cut out of it by preſcription.

5. If the reverſer would redeem his lands, he muſt uſe an order of redemption againſt the wadſetter: the firſt ſtep of which is premonition (or notice given under form of inſtrument) to the wadſetter, to appear at the time and place appointed by the reverſion, then and there to receive payment of his debt, and thereupon to renounce his right of wadſet. In the voluntary redemption of a right of wadſet holden baſe, a renunciation duly regiſtered re-eſtabliſhes the reverſer in the full right of the lands. Where the wadſet was granted to be holden of the granter's ſuperior, the ſuperior muſt receive the reverſer, on payment of a year's rent, if he produce a diſpoſition from the wadſetter, containing procuratory of reſignation. If, at executing the wadſet, the ſuperior has granted letters of regreſs, *i. e.* an obligation again to enter the reverſer upon redemption of the lands, he will be obliged to receive him, without payment of the year's rent. But letters of regreſs will not have this effect againſt ſingular ſucceſſors in the ſuperiority, if they are not regiſtered in the regiſter of reverſions. All wadſets that remain perſonal rights, are extinguiſhed by ſimple diſcharges, though they ſhould not be recorded.

Letters of regreſs.

Redemption money.

6. If the wadſetter either does not appear at the time and place appointed, or refuſes the redemption-money, the reverſer muſt conſign it under form of inſtrument, in the hands of the perſon thereto appointed in the right of reverſion; or, if no perſon be named, in the hands of the clerk to the bills, a clerk of ſeſſion, or any reſponſal perſon. An inſtrument of conſignation, with the conſignatory's receipt of the money conſigned, completes the order of redemption, ſtops the farther currency of intereſt againſt the reverſer, and founds him in an action for declaring the order to be formal, and the lands to be redeemed in conſequence of it.

7. After decree of declarator is obtained, by which the lands are declared to return to the debtor, the conſigned money, which comes in place of the lands, becomes the wadſetter's, who therefore can charge the conſignatory upon letters of horning to deliver it up to him; but, becauſe the reverſer may, at any time before decree, paſs from his order, as one may do from any other ſtep of diligence, the conſigned ſums continue to belong to the reverſer, and the wadſetter's intereſt in the wadſet continues heritable till that period.

8. If the wadſetter chuſes to have his money rather than the lands, he muſt require from the reverſer, under form of inſtrument, the ſums due by the wadſet, in terms of the right. The wadſet ſums continue heritable, notwithſtanding requiſition, which may be paſſed from by the wadſetter even after the reverſer has conſigned the redemption-money in conſeqnence thereof.

Wadſets.

9. Wadſets are either proper or improper. A proper wadſet is that whereby it is agreed, that the uſe of the land ſhall go for the uſe of the money; ſo that the wadſetter takes his hazard of the rents, and enjoys them without accounting, in ſatisfaction, or *in ſolutum* of his intereſt.

10. In an improper wadſet, the reverſer, if the rent ſhould fall ſhort of the intereſt, is taken bound to make up the deficiency; if it amounts to more, the wadſetter is obliged to impute the excreſcence towards extinction

23. The whole cattle on the ground, conſidered as a quantity, are hypothecated for a year's rent, one after another ſucceſſively. The landlord may apply this hypothec for payment of the paſt year's rent, at any time within three months from the laſt conventional term of payment, after which it ceaſes for that year. As the tenant may increaſe the ſubject of this hypothec, by purchaſing oxen, ſheep, &c. ſo he can impair it, by ſelling part of his ſtock; but if the landlord ſuſpects the tenant's management, he may, by ſequeſtration or poinding, make his right, which was before general upon the whole ſtock, ſpecial upon every individual. A ſuperior has alſo a hypothec for his feu-duty, of the ſame kind with that juſt explained.

24. In tacks of houſes, breweries, ſhops, and other tenements, which have no natural fruits, the furniture and other goods brought into the ſubject ſet are hypothecated to the landlord for one year's rent. But the tenant may by ſale impair this hypothec, as he might that of cattle in rural tenements; and indeed, in the particular caſe of a ſhop, the tenant rents it for no other purpoſe than as a place of ſale.

clxviii.

SECT. VII. *Of the tranſmiſſion of rights, by confirmation and reſignation.*

Tranſmiſſion of feudal rights.

A VASSAL may tranſmit his feu either to univerſal ſucceſſors, as heirs; or to ſingular ſucceſſors, *i. e.* thoſe who acquire by gift, purchaſe, or other ſingular title. This laſt ſort of tranſmiſſion is either voluntary, by diſpoſition; or neceſſary, by adjudication.

2. By the firſt feudal rules, no ſuperior could be compelled to receive any vaſſal in the lands, other than the heir expreſſed in the inveſtiture; for the ſuperior alone had the power of aſcertaining to what order of heirs the fee granted by himſelf was to deſcend. But this right of refuſal in the ſuperior did not take place, (1.) In the caſe of creditors appriſers or adjudgers, whom ſuperiors were obliged to receive upon payment of a year's rent. (2.) In the caſe of purchaſers of bankrupt eſtates, who were put on the ſame footing with adjudgers. The crown refuſes no voluntary diſponee, on his paying a compoſition to the exchequer of a ſixth part of the valued rent. Now ſuperiors are directed to enter all ſingular ſucceſſors (except incorporations) who ſhall have got from the vaſſal a diſpoſition, containing procuratory of reſignation; they always receiving the fees or caſualties that law entitles them to on a vaſſal's entry, *i. e.* a year's rent.

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3. Baſe rights, *i. e.* diſpoſitions to be holden of the diſponer, are tranſmiſſions only of the property, the ſuperiority remaining as formerly. As this kind of right might, before eſtabliſhing the regiſters, have been kept quite concealed from all but the granter and receiver, a public right was preferable to it, unleſs cloathed with poſſeſſion: but as this diſtinction was no longer neceſſary after the eſtabliſhment of the records, all infeftments are declared preferable, according to the dates of their ſeveral regiſtrations; without reſpect to the former diſtinction of baſe and public, or of being cloathed and not cloathed with poſſeſſion.

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4. Public rights, *i. e.* diſpoſitions to be holden of the granter's ſuperior, may be perfected either by confirmation or reſignation; and therefore, they generally contain both precept of ſeiſin and procuratory of reſignation. When the receiver is to complete his right in the firſt way, he takes ſeiſin upon the precept: but ſuch ſeiſin is ineffectual without the ſuperior's confirmation; for the diſponee cannot be deemed a vaſſal, till the ſuperior receive him as ſuch, or confirm the holding. By the uſual ſtyle in the tranſmiſſion of lands, the diſpoſition contains an obligation and precept of infeftment, both *a me* and *de me*, in the option of the diſponee; upon which, if ſeiſin is taken indefinitely, it is conſtrued in favour of the diſponee to be a baſe infeftment, becauſe a public right is null without confirmation: but, if the receiver ſhall afterwards obtain the ſuperior's confirmation, it is conſidered as if it had been from the beginning a public right.

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in con
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7. Reſignation is that form of law, by which a vaſſal ſurrenders his feu to his ſuperior; and it is either *ad perpetuam remanentiam*, or *in favorem*. In reſignations *ad remanentiam*, where the feu is reſigned, to the effect that it may remain with the ſuperior, the ſuperior, who before had the ſuperiority, acquires, by the reſignation, the property alſo of the lands reſigned: and as his infeftment in the lands ſtill ſubſiſted, notwithſtanding the right by which he had given his vaſſal the property; therefore, upon the vaſſal's reſignation, the ſuperior's right of property revives, and is conſolidated with the ſuperiority, without the neceſſity of a new infeftment; but the inſtrument of reſignation muſt be recorded.

8. Reſignations *in favorem* are made, not with an intention that the property reſigned ſhould remain with the ſuperior, but that it ſhould be again given by him, in favour either of the reſigner himſelf, or of a third party; conſequently the fee remains in the reſigner, till the perſon in whoſe favour reſignation is made gets his right from the ſuperior perfected by ſeiſin. And becauſe reſignations *in favorem* are but incomplete perſonal deeds, our law has made no proviſion for recording them. Hence, the firſt ſeiſin on a ſecond reſignation is preferable to the laſt ſeiſin upon the firſt reſignation; but the ſuperior, accepting a ſecond reſignation, whereupon a prior ſeiſin may be taken in prejudice of the firſt reſignatory, is liable in damages.

9. By our former deciſions, one who was veſted with a perſonal right of lands, *i. e.* a right not completed by ſeiſin, effectually diveſted himſelf by diſponing it to another; after which, no right remained in the diſponer, which could be carried by a ſecond diſpoſition, becauſe a perſonal right is no more than a *jus obligationis*, which may be transferred by any deed ſufficiently expreſſing the will of the granter. But this doctrine, at the ſame time that it rendered the ſecurity of the records extremely uncertain, was not truly applicable to

ſuch rights as required ſeiſin to complete them; and therefore it now obtains, that the granter even of a perſonal right of lands, is not ſo diveſted by conveying the right to one perſon, but that he may effectually make it over afterwards to another; and the preference between the two does not depend on the dates of the diſpoſitions, but on the priority of the ſeiſins following upon them.

SECT. VIII. *Of Redeemable Rights.*

AN heritable right is ſaid to be redeemable, when it contains a right of reverſion, or return, in favour of the perſon from whom the right flows. Reverſions are either legal, which ariſe from the law itſelf, as in adjudications, which law declares to be redeemable within a certain term after their date; or conventional, which are conſtituted by the agreement of parties, as in wadſets, rights of annualrent, and rights in ſecurity. A wadſet (from wad or pledge) is a right, by which lands, or other heritable ſubjects, are impignorated by the proprietor to his creditor, in ſecurity of his debt; and, like other heritable rights, is perfected by ſeiſin. The debtor, who grants the wadſet, and has the right of reverſion, is called the reverſer; and the creditor, receiver of the wadſet, is called the wadſetter.

2. Wadſets, by the preſent practice, are commonly made out in the form of mutual contracts, in which one party ſells the land, and the other grants the right of reverſion. When the right of reverſion is thus incorporated in the body of the wadſet, it is effectual without regiſtration; becauſe the ſingular ſucceſſor in the wadſet is, in that caſe, ſufficiently certified of the reverſion, though it be not regiſtered, by looking into his own right, which bears it *in gremio*. But where the right of reverſion is granted in a ſeparate writing, it is inneffectual againſt the ſingular ſucceſſor of the wadſetter, unleſs it be regiſtered in the regiſter of ſeiſins within 60 days after the date of the ſeiſin upon the wadſet.

3. Rights of reverſion are generally eſteemed *ſtricti juris*; yet they go to heirs, though heirs ſhould not be mentioned, unleſs there be ſome clauſe in the right, diſcovering the intention of parties, that the reverſion ſhould be perſonal to the reverſer himſelf. In like manner, though the right ſhould not expreſs a power to redeem from the wadſetter's heir, as well as from himſelf, redemption will be competent againſt the heir. All our lawyers have affirmed, that reverſions cannot be aſſigned, unleſs they are taken to aſſignees; but from the favour of legal diligence, they may be adjudged.

4. Reverſions commonly leave the reverſer at liberty to redeem the lands *quandocunque*, without reſtriction in point of time; but a clauſe is adjected to ſome reverſions, that if the debt be not paid againſt a determinate day, the right of reverſion ſhall be irritated, and the lands ſhall become the irredeemable property of the wadſetter. Nevertheleſs, the irritancy being penal, as in wadſets, the ſum lent falls always ſhort of the value of the lands, and the right of redemption is by indulgence continued to the reverſer, even after the term has expired, while the irritancy is not declared. But the reverſer, if he does not take the benefit of this indulgence within 40 years after the lapſe of the term, is cut out of it by preſcription.

5. If the reverſer would redeem his lands, he muſt uſe an order of redemption againſt the wadſetter: the firſt ſtep of which is premonition (or notice given under form of inſtrument) to the wadſetter, to appear at the time and place appointed by the reverſion, then and there to receive payment of his debt, and thereupon to renounce his right of wadſet. In the voluntary redemption of a right of wadſet holden baſe, a renunciation duly regiſtered re-eſtabliſhes the reverſer in the full right of the lands. Where the wadſet was granted to be holden of the granter's ſuperior, the ſuperior muſt receive the reverſer, on payment of a year's rent, if he produce a diſpoſition from the wadſetter, containing procuratory of reſignation. If, at executing the wadſet, the ſuperior has granted letters of regreſs, *i. e.* an obligation again to enter the reverſer upon redemption of the lands, he will be obliged to receive him, without payment of the year's rent. But letters of regreſs will not have this effect againſt ſingular ſucceſſors in the ſuperiority, if they are not regiſtered in the regiſter of reverſions. All wadſets that remain perſonal rights, are extinguiſhed by ſimple diſcharges, though they ſhould not be recorded.

Letters of regreſs.

Redemption money.

6. If the wadſetter either does not appear at the time and place appointed, or refuſes the redemption-money, the reverſer muſt conſign it under form of inſtrument, in the hands of the perſon thereto appointed in the right of reverſion; or, if no perſon be named, in the hands of the clerk to the bills, a clerk of ſeſſion, or any reſponſal perſon. An inſtrument of conſignation, with the conſignatory's receipt of the money conſigned, completes the order of redemption, ſtops the farther currency of intereſt againſt the reverſer, and founds him in an action for declaring the order to be formal, and the lands to be redeemed in conſequence of it.

7. After decree of declarator is obtained, by which the lands are declared to return to the debtor, the conſigned money, which comes in place of the lands, becomes the wadſetter's, who therefore can charge the conſignatory upon letters of horning to deliver it up to him; but, becauſe the reverſer may, at any time before decree, paſs from his order, as one may do from any other ſtep of diligence, the conſigned ſums continue to belong to the reverſer, and the wadſetter's intereſt in the wadſet continues heritable till that period.

8. If the wadſetter chuſes to have his money rather than the lands, he muſt require from the reverſer, under form of inſtrument, the ſums due by the wadſet, in terms of the right. The wadſet ſums continue heritable, notwithſtanding requiſition, which may be paſſed from by the wadſetter even after the reverſer has conſigned the redemption-money in conſeqnence thereof.

Wadſets.

9. Wadſets are either proper or improper. A proper wadſet is that whereby it is agreed, that the uſe of the land ſhall go for the uſe of the money; ſo that the wadſetter takes his hazard of the rents, and enjoys them without accounting, in ſatisfaction, or *in ſolutum* of his intereſt.

10. In an improper wadſet, the reverſer, if the rent ſhould fall ſhort of the intereſt, is taken bound to make up the deficiency; if it amounts to more, the wadſetter is obliged to impute the excreſcence towards extinction

of the capital: And, as ſoon as the whole ſums, principal and intereſt, are extinguiſhed by the wadſetter's poſſeſſion, he may be compelled to renounce, or diveſt himſelf in favour of the reverſer.

11. If the wadſetter be intitled by his right to enjoy the rents without accounting, and if at the ſame time the reverſer be ſubjected to the hazard of their deficiency, ſuch contract is juſtly declared uſurious: and alſo in all proper wadſets wherein any unreaſonable advantage has been taken of the debtor, the wadſetter muſt, during the not requiſition of the ſum lent, either quit his poſſeſſion to the debtor, upon his giving ſecurity to pay the intereſt, or ſubject himſelf to account for the ſurplus-rents, as in improper wadſets.

Right of annualrent.

12. Infeftments of annualrent, the nature of which has been explained, are alſo redeemable rights. A right of annualrent does not carry the property of the lands; but it creates a real *nexus* or burden upon the property, for payment of the intereſt or annualrent contained in the right; and conſequently the bygone intereſts due upon it are *debita fundi*. The annualrenter may therefore either inſiſt in a real action for obtaining letters of poinding the ground, or ſue the tenant in a perſonal action towards the payment of his paſt intereſt: and in a competition for thoſe rents, the annualrenter's preference will not depend on his having uſed a poinding of the ground, for his right was compleated by the ſeiſin; and the power of poinding the ground, ariſing from that antecedent right, is *meræ facultatis*, and need not be exerciſed, if payment can be otherwiſe got. As it is only the intereſt of the ſum lent which is a burden upon the lands, the annualrenter, if he wants his principal ſum, cannot recover it either by poinding or by a perſonal action againſt the debtor's tenants; but muſt demand it from the debtor himſelf, on his perſonal obligation in the bond, either by requiſition, or by a charge upon letters of horning, according as the right is drawn.

13. Rights of annualrent, being ſervitudes upon the property, and conſequently conſiſtent with the right of property in the debtor, may be extinguiſhed without reſignation.

Rights of ſecurity.

14. Infeftments in ſecurity are another kind of redeemable rights (now frequently uſed in place of rights of annualrent, by which the receivers are infeft in the lands themſelves, and not ſimply in an annualrent forth of them, for ſecurity of the principal ſums, intereſt, and penalty, contained in the rights. If an infeftment in ſecurity be granted to a creditor, he may thereupon enter into the immediate poſſeſſion of the lands or annualrent for his payment. They are extinguiſhed as rights of annualrent.

15. All rights of annualrent, rights in ſecurity, and generally whatever conſtitutes a real burden on the fee, may be the ground of an adjudication, which is preferable to all adjudications, or other diligences, intervening between the date of the right and of the adjudication deduced on it; not only for the principal ſum contained in the right, but alſo for the whole paſt intereſt contained in the adjudication. This preference ariſes from the nature of real debts, or *debita fundi*: but in order to obtain it for the intereſt of the intereſt accumulated in the adjudication, ſuch adjudication muſt proceed on a proceſs of poinding the ground.

SECT. IX. *Of Servitudes.*

SERVITUDE is a burden affecting lands, or other heritable ſubjects, whereby the proprietor is either reſtrained from the full uſe of what is his own, or is obliged to ſuffer another to do ſomething upon it. Servitudes are either natural, legal, or conventional. Nature itſelf may be ſaid to conſtitute a ſervitude upon inferior tenements, whereby they muſt receive the water that falls from thoſe that ſtand on higher ground. Legal ſervices are eſtabliſhed by ſtatute or cuſtom, from conſiderations of public policy; among which may be numbered the reſtraints laid upon the proprietors of tenements within the city of Edinburgh. There is as great a variety of conventional ſervitudes, as there are ways by which the exerciſe of property may be reſtrained by paction in favour of another.

2. Conventional ſervitudes are conſtituted, either by grant, where the will of the party burdened is expreſſed in writing; or by preſcription, where his conſent is preſumed from his acquieſcence in the burden for 40 years. A ſervitude conſtituted by writing, or grant, is not effectual againſt the granter's ſingular ſucceſſors, unleſs the grantee has been in the uſe or exerciſe of his right: but they are valid againſt the granter and his heirs, even without uſe. In ſervitudes that may be acquired by preſcription, 40 years exerciſe of the right is ſufficient, without any title in writing, other than a charter and ſeiſin of the lands to which the ſervitude is claimed to be due.

3. Servitudes conſtituted by grant are not effectual, in a queſtion with the ſuperior of the tenement burdened with the ſervitude, unleſs his conſent be adhibited; for a ſuperior cannot be hurt by his vaſſal's deed: but where the ſervitude is acquired by preſcription, the conſent of the ſuperior, whoſe right afforded him a good title to interrupt, is implied. A ſervitude by grant, though followed only by a partial poſſeſſion, muſt be governed, as to its extent, by the tenor of the grant; but a ſervitude by preſcription is limited by the meaſure or degree of the uſe had by him who preſcribes: agreeably to the maxim, *tantum præſcriptum quantum poſſeſſum*.

4. Servitudes are either predial or perſonal. Predial ſervitudes are burdens impoſed upon one tenement, in favour of another tenement. That to which the ſervitude is due is called the *dominant*, and that which owes it is called the *ſervient tenement*. No perſon can have right to a predial ſervitude, if he is not proprietor of ſome dominant tenement that may have benefit by it; for that right is annexed to a tenement, and ſo cannot paſs from one perſon to another, unleſs ſome tenement goes along with it.

5. Predial ſervitudes are divided into *rural* ſervitudes, or of lands; and *urban* ſervitudes, or of houſes. The rural ſervitudes of the Romans were *iter*, *actus*, *via*, *aquæductus*, *aquæhauſtus*, and *jus paſcendi pecoris*. Similar ſervitudes may be conſtituted with us, of a foot-road, horſe-road, cart-road, dams, and aqueducts, watering of cattle, and paſturage. The right of a highway is not a ſervitude conſtituted in favour of a particular tenement, but is a right common to all travellers. The care of high-ways, bridges, and ferries, is committed to the ſheriffs, juſtices of peace, and commiſſioners of ſupply in each ſhire.

6. Common paſturage, or the right of feeding one's cattle upon the property of another, is ſometimes conſtituted by a general clauſe of paſturage in a charter or diſpoſition, without mentioning the lands burdened; in which caſe, the right comprehends whatever had been formerly appropriated to the lands diſponed out of the granter's own property, and likewiſe all paſturage due to them out of other lands. When a right of paſturage is given to ſeveral neighbouring proprietors, on a moor or common belonging to the granter, indefinite as to the number of cattle to be paſtured, the extent of their ſeveral rights is to be proportioned according to the number that each of them can fodder in winter upon his own dominant tenement.

Urban ſer-
vitudes.

7. The chief ſervitudes of houſes among the Romans were thoſe of ſupport, viz. *tigni immittendi*, and *oneris ferendi*. The firſt was the right of fixing in our neighbour's wall a joiſt or beam from our houſe: the ſecond was that of reſting the weight of one's houſe upon his neighbour's wall.

8. With us, where different floors or ſtories of the ſame houſe belong to different perſons, as is frequent in the city of Edinburgh, the property of the houſe cannot be ſaid to be entirely divided; the roof remains a common roof to the whole, and the area on which the houſe ſtands ſupports the whole; ſo that there is a communication of property, in conſequence of which the proprietor of the ground-floor muſt, without the conſtitution of any ſervitude, uphold it for the ſupport of the upper, and the owner of the higheſt ſtory muſt uphold that as a cover to the lower. When the higheſt floor is divided into garrets among the ſeveral proprietors, each proprietor is obliged, according to this rule, to uphold that part of the roof which covers his own garret.

9. No proprietor can build, ſo as to throw the rain-water falling from his own houſe, immediately upon his neighbour's ground, without a ſpecial ſervitude, which is called of *ſtillicide*; but, if it falls within his own property, though at the ſmalleſt diſtance from the march, the owner of the inferior tenement muſt receive it.

10. The ſervitudes *altius non tollendi, et non officiendi luminibus vel proſpectui*, reſtrain proprietors from raiſing their houſes beyond a certain height, or from making any building whatſoever that may hurt the light or proſpect of the dominant tenement. Theſe ſervitudes cannot be conſtituted by preſcription alone: for, though a proprietor ſhould have his houſe ever ſo low, or ſhould not have built at all upon his grounds for 40 years together, he is preſumed to have done ſo for his own conveniency or profit; and therefore cannot be barred from afterwards building a houſe on his property, or raiſing it to what height he pleaſes, unleſs he be tied down by his own conſent.

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l and di-

11. We have two predial ſervitudes to which the Romans were ſtrangers, viz. that of fewel or feal and divot, and of thirlage. The firſt is a right, by which the owner of the dominant tenement may turn up peats, turfs, feals, or divots, from the ground of the ſervient, and carry them off either for fewel, or thatch, or the other uſes of his own tenement.

lage.

12. THIRLAGE is that ſervitude, by which lands are aſtricted, or thirled, to a particular mill; and the poſſeſſors bound to grind their grain there, for payment of certain multures and ſequels as the agreed price of grinding. In this ſervitude, the mill is the dominant tenement, and the lands aſtricted (which are called alſo the *thirl* or *ſucken*) the ſervient. Multure is the quantity of grain or meal payable to the proprietor of the mill, or to the multurer his tackſman. The ſequels are the ſmall quantities given to the ſervants, under the name of *knaveſhip*, *bannock*, and *lock* or *gowpen*. The quantities paid to the mill by the lands not aſtricted, are generally proportioned to the value of the labour, and are called *out-town* or *out-ſucken multures*; but thoſe paid by the thirl are ordinarily higher, and are called *in-town* or *in-ſucken multures*.

13. Thirlage may be conſtituted by a land-holder, when, in the diſpoſition of certain lands, he aſtricts them to his own milll; or when, in the diſpoſition of a mill, he aſtricts his own lands to the mill diſponed; or when, in letting his lands, he makes it a condition in the tacks. The grant of a mill with the general clauſe of multures, without ſpecifying the lands aſtricted, conveys the thirlage of all the lands formerly aſtricted to that mill, whether they were the property of the granter, or of a third party.

14. A leſs formal conſtitution ſerves to aſtrict barony-lands to the mill of the barony, than is neceſſary in any other thirlage; which perhaps proceeds from the effects of the union betwixt the two. Hence, if a baron makes over the mill of a barony, *cum multuris*, or *cum aſtrictis multuris*, it infers an aſtriction of the barony lands to the mill conveyed, even of ſuch as had been before ſold to another for a certain duty *pro omni alio onere*. But if, prior to the baron's conveyance of his mill *cum multuris*, he had ſold any part of the barony-lands to another *cum multuris*, the firſt purchaſer's lands are not aſtricted by the poſterior grant; for a right of lands with the multures, implies a freedom of theſe lands from thirlage.

15. Thirlage is either, 1. Of grindable corns; or, 2. Of all growing corns; or, 3. Of the *invecta et illata*, *i. e.* of all the grain brought within the thirl, though of another growth. Where the thirlage is of grindable grain, it is in practice reſtricted to the corns which the tenants have occaſion to grind, either for the ſupport of their families, or for other uſes; the ſurplus may be carried out of the thirl unmanufactured, without being liable in multure. Where it is of the *grana creſcentia*, the whole grain growing upon the thirl is aſtricted, with the exceptions, 1. Of ſeed and horſe-corn, which are deſtined to uſes inconſiſtent with grinding; and, 2. Of the farm-duties due to the landlord, if they are delivered in grain not grinded. But, if the rent be payable in meal, flour, or malt, the grain of which theſe are made muſt be manufactured in the dominant mill.

16. The thirlage of *invecta et illata* is ſeldom conſtituted but againſt the inhabitants of a borough or village, that they ſhall grind all the unmanufactured grain they import thither at the dominant mill. Multure, therefore, cannot be exacted in a thirlage of *invecta et illata*, for flour or oat-meal brought into the ſervient tenement, unleſs the importer had bought it in grain, and grinded it at another mill. The ſame grain that owes multure, as *granum creſcens*, to the mill in whoſe thirl it grew, if it ſhall be afterwards brought within a borough where the *invecta et illata* are thirled, muſt pay

a ſecond multure to the proprietor of that dominant tenement; but, where the right of theſe two thirlages is in the ſame proprietor, he cannot exact both. Where lands are thirled in general terms, without expreſſing the particular nature of the ſervitude, the lighteſt thirlage is preſumed, from the favour of liberty; but in the aſtriction of a borough or village, where there is no growing grain which can be the ſubject of thirlage, the aſtriction of *invecta et illata* muſt be neceſſarily underſtood.

17. Thirlage, in the general caſe, cannot be eſtabliſhed by preſcription alone, for *iis quæ ſunt meræ facultatis non præſcribitur*; but where one has paid for 40 years together the heavy inſucken multures, the ſlighteſt title in writing will ſubject his lands. Thirlage may be, contrary to the common rule, conſtituted by preſcription alone, 1. Where one pays to a mill a certain ſum, or quantity of grain yearly, in name of multure, whether he grinds at it or not, (called *dry multure*.) 2. In mills of the king's property; which is conſtituted *jure coronæ*, without titles in writing; and, where he derives right from another, his titles are more liable to be loſt. This is extended in practice to mills belonging to church-lands, where 30 years poſſeſſion is deemed equivalent to a title in writing, from a preſumption that their rights were deſtroyed at the reformation. Though thirlage itſelf cannot be conſtituted by mere poſſeſſion, the proportion of multure payable to the dominant tenement may be ſo fixed.

18. The poſſeſſors of the lands aſtricted, are bound to uphold the mill, repair the dam-dykes and aqueducts, and bring home the millſtones. Theſe ſervices, though not expreſſed in the conſtitution, are implied.

Servitudes are *ſtricti juris*.

19. Servitudes, being reſtraints upon property, are *ſtricti juris*: they are not therefore preſumed, if the acts upon which they are claimed can be explained conſiſtently with freedom; and, when ſervitudes are conſtituted, they ought to be uſed in the way leaſt burdenſome to the ſervient tenement. Hence, one who has a ſervitude of peats upon his neighbour's moſs, is not at liberty to extend it for the uſe of any manufacture which may require an extraordinary expence of fewel; but muſt confine it to the natural uſes of the dominant tenement.

20. Servitudes are extinguiſhed, (1.) *Confuſione*, when the perſon comes to be proprietor of the dominant and ſervient tenements; for *res ſua nemini ſervit*, and the uſe the proprietor thereafter makes of the ſervient tenement is not *jure ſervitutis*, but is an act of property. (2.) By the periſhing either of the dominant or ſervient tenement. (3.) Servitudes are loſt *non utendo*, by the dominant tenement neglecting to uſe the right for 40 years; which is conſidered as a dereliction of it, though he who has the ſervient tenement ſhould have made no interruption by doing acts contrary to the ſervitude.

Liferent.

21. Perſonal ſervitudes are thoſe by which the property of a ſubject is burdened, in favour, not of a tenement, but of a perſon. The only perſonal ſervitude known in our law, is uſufruct or liferent; which is a right to uſe and enjoy a thing during life, the ſubſtance of it being preſerved. A liferent cannot therefore be conſtituted upon things which periſh in the uſe; and though it may upon ſubjects which gradually wear out by time, as houſehold furniture, &c. yet, with us, it is generally applied to heritable ſubjects. He whoſe property is burdened, is uſually called the *fiar*.

Liferents.

22. Liferents are divided into conventional and legal. Conventional liferents are either ſimple, or by reſervation. A ſimple liferent, or by a ſeparate conſtitution, is that which is granted by the proprietor in favour of another: And this ſort, contrary to the nature of predial ſervitudes, requires ſeiſin in order to affect ſingular ſucceſſors; for a liferent of lands is, in ſtrict ſpeech, not a ſervitude, but a right reſembling property which conſtitutes the liferenter vaſſal for life; and ſingular ſucceſſors have no way of diſcovering a liferent-right, which perhaps is not yet commenced, but by the records; whereas, in predial ſervitudes the conſtant uſe of the dominant tenement makes them public. The proper right of liferent is intranſmiſſible, *oſſibus uſuſructuarii inhæret*: When the profits of the liferented ſubject are tranſmitted to another, the right becomes merely perſonal: for it intitles the aſſignee to the rent, not during his own life, but his cedent's; and is therefore carried by ſimple aſſignation, without ſeiſin.

23. A liferent by reſervation, is that which a proprietor reſerves to himſelf in the ſame writing by which he conveys the fee to another. It requires no ſeiſin; for the granter's former ſeiſin, which virtually included the liferent, ſtill ſubſiſts as to the liferent which is expreſsly reſerved. In conjunct infeftments taken to huſband and wife, the wife's right of conjunct fee reſolves, in the general caſe, into a liferent.

Terce.

24. Liferents by law, are the terce and the courteſy. The terce (*tertia*) is a liferent competent by law to widows, who have not accepted of ſpecial proviſions, in the third of the heritable ſubjects in which their huſbands died infeft; and takes place only where the marriage has ſubſiſted for year and day, or where a child has been born alive of it.

25. The terce is not limited to lands, but extends to teinds, and to ſervitudes and other burdens affecting lands; thus, the widow is intitled, in the right of her terce, to a liferent of the third of the ſums ſecured, either by rights of annualrent, or by rights in ſecurity. In improper wadſets, the terce is a third of the ſum lent: In thoſe that are proper, it is a third of the wadſet lands; or, in caſe of redemption, a third of the redemption money. Neither rights of reverſion, ſuperiority, nor patronage, fall under the terce; for none of theſe have fixed profits, and ſo are not proper ſubjects for the widow's ſubſiſtence; nor tacks, becauſe they are not feudal rights. Burgage-tenements are alſo excluded from it, the reaſon of which is not ſo obvious. Since the huſband's ſeiſin is both the meaſure and ſecurity of the terce, ſuch debts or diligences alone, as exclude the huſband's ſeiſin, can prevail over it.

26. Where a terce is due out of lands burdened with a prior terce ſtill ſubſiſting, the ſecond tercer has only right to a third of the two thirds that remain unaffected by the firſt terce. But upon the death of the firſt widow, whereby the lands are diſburdened of her terce, the leſſer terce becomes enlarged, as if the firſt had never exiſted. A widow, who has accepted of a ſpecial proviſion from her huſband, is thereby excluded from the terce, unleſs ſuch proviſion ſhall contain a clauſe that ſhe ſhall have right to both.

27. The widow has no title of poſſeſſion, and ſo cannot receive the rents in virtue of her terce, till ſhe be ſerved to it; and in order to this, ſhe muſt obtain a brief out of the chancery, directed to the Sheriff, who calls an inqueſt; to take proof that ſhe was wife to the deceaſed, and that the deceaſed died infeſt in the ſubjects contained in the brief. The ſervice or ſentence of the jury, finding theſe points proved, does, without the neceſſity of a retour to the chancery, intitle the wife to enter into the poſſeſſion; but ſhe can only poſſeſs with the heir *pro indiviſo*, and ſo cannot remove tenants, till the ſheriff kens her to her terce, or divides the lands between her and the heir. In this diviſion, after determining by lot or kavil, whether to begin by the ſun or the ſhade, *i. e.* by the eaſt or the weſt, the ſheriff ſets off the two firſt acres for the heir, and the third for the widow. Sometimes the diviſion is executed, by giving one entire farm to the widow, and two of equal value to the heir. The widow's right is not properly conſtituted by this ſervice; it was conſtituted before by the huſband's ſeiſin, and fixed by his death; the ſervice only declares it, and ſo intitles her to the third part of the rents *retro* to her huſband's death, preferable to any rights that may have affected the lands in the intermediate period between that and her own ſervice. The relict, if ſhe was reputed to be lawful wife to the deceaſed, muſt be ſerved, notwithſtanding any objections by the heir againſt the marriage, which may be afterwards tried by the commiſſary.

Courteſy. 28. Courteſy is a liferent given by law, to the ſurviving huſband, of all his wife's heritage in which ſhe died infeſt, if there was a child of the marriage born alive. A marriage, though of the longeſt continuance, gives no right to the courteſy, if there was no iſſue of it. The child born of the marriage muſt be the mother's heir: If ſhe had a child of the former marriage, who is to ſucceed to her eſtate, the huſband has no right to the courteſy while ſuch child is alive; ſo that the courteſy is due to the huſband, rather as father to an heir, than as huſband to an heireſs. Heritage is here oppoſed to conqueſt; and ſo is to be underſtood only of the heritable rights to which the wife ſucceeded as heir to her anceſtors, excluding what ſhe herſelf had acquired by ſingular titles.

29. Becauſe the huſband enjoys the life-rent of his wife's whole heritage, on a lucrative title, he is conſidered as her temporary repreſentative; and ſo is liable in payment of all the yearly burdens chargeable on the ſubject, and of the current intereſt of all her debts, real and perſonal, to the value of the yearly rent he enjoys by the courteſy. The courteſy needs no ſolemnity to its conſtitution: That right, which the huſband had to the rents of his wife's eſtate; during the marriage, *jure mariti*, is continued with him after her death, under the name of *courteſy*, by an act of the law itſelf. As in the terce, the huſband's ſeiſin is the ground and meaſure of the wife's right; ſo in the courteſy, the wife's ſeiſin is the foundation of the huſband's; and the two rights are, in all other reſpects, of the ſame nature; if it is not that the courteſy extends to burgage holdings, and to ſuperiorities.

30. All liferenters muſt uſe their right *ſalva rei ſubſtantia*: whatever therefore is part of the fee itſelf, cannot be encroached on by the liferenter, *e. g.* woods or growing timber, even for the neceſſary uſes of the liferented tenement. But, where a coppice or *ſilva cædua* has been divided into hags, one of which was in uſe to be cut annually by the proprietor, the liferenter may continue the former yearly cuttings; becauſe theſe are conſidered as the annual fruits the ſubject was intended to yield, and ſo the proper ſubject of a liferent.

31. Liferenters are bound to keep the ſubject liferented in proper repair. They are alſo burdened with the alimony of the heir, where he has not enough for maintaining himſelf. The bare right of apparency founds the action againſt the liferenter. It is a burden perſonal to the liferenter himſelf, and cannot be thrown upon his adjudging creditors as coming in his place by their diligences. Liferenters are alſo ſubjected to the payment of the yearly ceſſes, ſtipends, &c. falling due during their right, and to all other burdens that attend the ſubject liferented.

32. Liferent is extinguiſhed by the liferenter's death. That part of the rents which the liferenter had a proper right to, before his death, falls to his executors; the reſt, as never having been *in bonis* of the deceaſed, goes to the fiar. Martinmas and Whitſunday are, by our cuſtom, the legal terms of the payment of rent: conſequently, if a liferenter of lands ſurvives the term of Whitſunday, his executors are entitled to the half of that year's rent, becauſe it was due the term before his death; and if he ſurvives the Martinmas, they have right to the whole. If the liferenter, being in the natural poſſeſſion, and having firſt ſowed the ground, ſhould die, even before the Whitſunday, his executors are intitled to the whole crop, in reſpect that both ſeed and induſtry were his. In a liferent of money conſtituted by a moveable bond, the executors have a right to the intereſt, down to the very day of the liferenter's death, where no terms are mentioned for the payment thereof; but in the caſe of an heritable bond, or of a money liferent ſecured on land, the intereſts of liferenter and fiar (or of heir and executor, for the ſame rules ſerve to fix the intereſts of both) are both governed by the legal terms of land-rent, without regard to the conventional.

Sect. X. *Of Teinds.*

clxxi. Teinds.

Teinds, or tithes, are that liquid proportion of our rents or goods, which is due to churchmen, for performing divine ſervice, or exerciſing the other ſpiritual functions proper to their ſeveral offices. Moſt of the canoniſts affirm, that the preciſe proportion of a tenth, not only of the fruits of the ground, but of what is acquired by perſonal induſtry, is due to the Chriſtian clergy, of divine right, which they therefore call the *proper patrimony of the church;* though it is certain that tithes, in their infancy, were given, not to the clergy alone, but to lay-monks who were called *pauperes*, and to other indigent perſons. Charles the Great was the firſt ſecular prince who acknowledged this right in the church. It appears to have been received with us, as far back as David I.

2. The perſon employed by a cathedral church or monaſtery to ſerve the cure in any church annexed, was called a *vicar*, becauſe he held the church, not in his own right, but in the right or *vice* of his employers; and ſo was removeable at pleaſure, and had no ſhare of the benefice, other than what they thought fit

to allow him: but, in the courſe of time, the appellation of *vicar* was limited to thoſe who were made perpetual, and who got a ſtated ſhare of the benefice for their incumbency; from whence aroſe the diſtinction of benefices into parſonages and vicarages.

3. Parſonage teinds are the teinds of corn; and they are ſo called becauſe they are due to the parſon or other titular of the benefice. Vicarage teinds are the ſmall teinds of calves, lint, hemp, eggs, &c. which were commonly given by the titular to the vicar who ſerved the cure in his place. The firſt ſort was univerſally due, unleſs in the caſe of their infeudation to laics, or of a pontifical exemption; but, by the cuſtoms of almoſt all Chriſtendom, the leſſer teinds were not demanded where they had not been in uſe to be paid. By the practice of Scotland, the teinds of animals, or of things produced from animals, as lambs, wool, calves, are due though not accuſtomed to be paid; but roots, herbs, &c. are not tithable, unleſs uſe of payment be proved: neither are perſonal teinds, *i. e.* the tenth of what one acquires by his own induſtry, acknowledged by our law; yet they have been found due, when ſupported by 40 years poſſeſſion.

4. The parſon who was entitled to the teind of corns, made his right effectual, either by accepting of a certain number of teind-bolls yearly from the proprietor in ſatisfaction of it; or, more frequently, by drawing or ſeparating upon the field his own tenth part of the corns, after they were reaped, from the ſtock or the remaining nine tenths of the crop, and carrying it off to his own granaries; which is called *drawn teind.*

Annexation of church-lands to the crown.

5. After the reformation, James VI. conſidered himſelf as proprietor of all the church-lands; partly becauſe the purpoſes for which they had been granted were declared ſuperſtitious; and partly, in conſequence of the reſignations which he, and queen Mary his mother, had procured from the beneficiaries: and even as to the teinds, though our reformed clergy alſo claimed them as the patrimony of the church, our ſovereign did not ſubmit to that doctrine farther than extended to a competent proviſion for miniſters. He therefore erected or ſeculariſed ſeveral abbacies and priories into temporal lordſhips; the grantees of which were called ſometimes *lords of erection*, and ſometimes *titulars*, as having by their grants the ſame title to the erected benefices that the monaſteries had formerly.

6. As the crown's revenue ſuffered greatly by theſe erections, the temporality of all church benefices (*i. e.* church lands) was, by 1587. *c.* 29. annexed to the crown. That ſtatute excepts from the annexation ſuch benefices as were eſtabliſhed before the reformation in laymen, whoſe rights the legiſlature had no intention to weaken. Notwithſtanding this ſtatute, his majeſty continued to make farther erections, which were declared null by 1592, *c.* 119. with an exception of ſuch as had been made in favour of lords of parliament ſince the general act of annexation in 1587.

7. King Charles I. ſoon after his ſucceſſion, raiſed a reduction of all theſe erections, whether granted before or after the act of annexation, upon the grounds mentioned at length by Mr Forbes in his treatiſe of tithes, p. 259. At laſt the whole matter was referred to the king himſelf by four ſeveral ſubmiſſions or compromiſes; in which the parties on one ſide were the titulars and their tackſmen, the biſhops with the inferior clergy, and the royal boroughs, for the intereſt they had in the teinds that were gifted for the proviſion of miniſters, ſchools, or hoſpitals within their boroughs; and, on the other part, the proprietors who wanted to have the leading of their own teinds. The ſubmiſſion by the titulars contained a ſurrender into his majeſty's hands of the ſuperiorities of their ſeveral erections.

Valuation of teinds.

8. Upon each of theſe ſubmiſſions his majeſty pronounced ſeparate decrees-arbitral, dated Sept. 2. 1629, which are ſubjoined to the acts of parliament of his reign. He made it lawful to proprietors to ſue the titulars for a valuation, and if they thought fit for a ſale alſo, of their teinds, before the commiſſioners named or to be named for that purpoſe. The rate of teind, when it was poſſeſſed by the proprietor jointly with the ſtock, for payment of a certain duty to the titular, and ſo did not admit a ſeparate valuation, was fixed at a fifth part of the conſtant yearly rent, which was accounted a reaſonable *ſurrogatum*, in place of a tenth of the increaſe. Where it was drawn by the titular, and conſequently might be valued ſeparately from the ſtock, it was to be valued as its extent ſhould be aſcertained upon a proof before the commiſſioners; but in this laſt valuation, the king directed the fifth part to be deducted from the proved teind, in favour of the proprietor, which was there called the *king's eaſe*. The proprietor ſuing for a valuation gets the leading of his own teinds as ſoon as his ſuit commences, providing he does not allow proteſtation to be extracted againſt him for not inſiſting.

9. Where the proprietor inſiſted alſo for a ſale of his teinds, the titular was obliged to ſell them at nine years purchaſe of the valued teind-duty. If the purſuer had a tack of his own teinds, not yet expired; or if the defender was only tackſmen of the teinds, and ſo could not give the purſuer an heritable right; an abatement of the price was to be granted accordingly by the commiſſioners.

10. There is no proviſion in the decrees-arbitral, for ſelling the teinds granted for the ſuſtentation of miniſters, univerſities, ſchools, or hoſpitals; becauſe theſe were to continue, as a perpetual fund, for the maintenance of the perſons or ſocieties to whom they were appropriated; and they are expreſsly declared not ſubject to ſale, by 1690, *c.* 30.—1693, *c.* 23. By the laſt of theſe acts, it is alſo provided, that the teinds belonging to biſhops, which had then fallen to the crown upon the aboliſhing of epiſcopacy, ſhould not be ſubject to ſale as long as they remained with the crown not diſpoſed of; nor thoſe which the proprietor, who had right both to ſtock and teind, reſerved to himſelf in a ſale or feu of the lands. But, though none of theſe teinds can be ſold, they may be valued.

King's r to the ſ riorities erection

11. The king, by the decrees arbitral, declared his own right to the ſuperiorities of erection which had been reſigned to him by the ſubmiſſion, reſerving to the titulars the feu-duties thereof, until payment by himſelf to them of 1000 merks Scots for every chalder of feu-victual, and for each hundred merks of feu-duty; which right of redeeming the feu-duties was afterwards renounced by the crown. If the church-vaſſal ſhould conſent to hold his lands of the titular, he cannot thereafter recur to the crown as his immediate ſuperior.

12. In explaining what the conſtant rent is by

which the teind muſt be valued, the following rules are obſerved. The rent drawn by the proprietor, from the ſale of ſubjects, that are more properly parts of the land than of the fruits, *e. g.* quarries, minerals, moſſes, &c. is to be deducted from the rental of the lands; and alſo the rent of ſupernumerary houſes, over and above what is neceſſary for agriculture; and the additional rent that may be paid by the tenant, in conſideration of the proprietor's undertaking any burden that law impoſes on the tenant, *e. g.* upholding the tenant's houſes, becauſe none of theſe articles are paid properly on account of the fruits. Orchards muſt alſo be deducted, and mill-rent, becauſe the profits of a mill ariſe from induſtry; and the corns manufactured there ſuffer a valuation as rent payable by the tenant, and therefore ought not to be valued a ſecond time againſt the titular as mill-rent. The yearly expence of culture ought not to be deducted; for no rent can be produced without it: but, if an improvement of rent is made at an uncommon expence, *e. g.* by draining a lake, the proprietor is allowed a reaſonable abatement on that account.

13. Notwithſtanding the ſeveral ways of miſapplying parochial teinds in the times of popery, ſome few benefices remained entire in the hands of the parſons. The miniſters planted in theſe, after the reformation, continued to have the full right to them, as proper beneficiaries: but a power was afterwards granted to the patron, to redeem the whole teind from ſuch beneficiaries, upon their getting a competent ſtipend modified to them; which teind ſo redeemed, the patron is obliged to ſell to the proprietor, at ſix years purchaſe.

14. Some teinds are more directly ſubject to an allocation for the miniſter's ſtipend than others. The teinds, in the hands of the lay titular, fall firſt to be allocated, who, ſince he is not capable to ſerve the cure in his own perſon, ought to provide one who can; and if the titular, in place of drawing the teind, has ſet it in tack, the tack-duty is allocated: this ſort is called *free teind*. Where the tack-duty, which is the titular's intereſt in the teinds, falls ſhort, the tack itſelf is burdened, or, in other words, the ſurplus teind over and above the tack-duty: but, in this caſe, the commiſſioners are empowered to recompenſe the tackſman, by prorogating his tack for ſuch a number of years as they ſhall judge equitable. Where this likewiſe proves deficient, the allocation falls on the teinds heritably conveyed by the titular, unleſs he has warranted his grant againſt future augmentations; in which caſe, the teinds of the lands belonging in property to the titular himſelf muſt be allocated in the firſt place.

15. Where there is ſufficiency of free teinds in the pariſh, the titular may allocate any of them he ſhall think fit for the miniſter's ſtipend, ſince they are all his own; unleſs there has been a previous decree of locality; and this holds, though the ſtipend ſhould have been paid immemorially out of the teinds of certain particular lands. This right was frequently abuſed by titulars, who, as ſoon as a proprietor had brought an action of ſale of his teinds, allocated the purſuer's full teind for the ſtipend, whereby ſuch action became ineffectual; it was therefore provided, that after citation in a ſale of teinds it ſhall not be in the titular's power to allocate the purſuer's teinds ſolely, but only in proportion with the other teinds in the pariſh.

Miniſters glebes, &c. exempted from teinds.

16. Miniſters glebes are declared free from the payment of teind. Lands *cum decimis incluſis* are alſo exempted from teind. But in order to exempt lands from payment of teind, it is neceſſary that the proprietor prove his right thereto, *cum decimis incluſis*, as far back as the above act of annexation 1587.

17. Teinds are *debita fructuum*, not *fundi*. The action therefore for bygone teinds is only perſonal againſt thoſe who have intermeddled, unleſs where the titular is infeft in the lands, in ſecurity of the valued teind-duty. Where a tenant is, by his tack, bound to pay a joint duty to the landlord for ſtock and teind, without diſtinguiſhing the rent of each, his defence of a *bona fide* payment of the whole to the landlord has been ſuſtained in a ſuit at the inſtance of a laic titular, but repelled where a churchman was purſuer. In both caſes the proprietor who receives ſuch rent is liable as intermeddler.

Inhibition of teinds.

18. In tacks of teinds, as of lands, there is place for tacit relocation: to ſtop the effect of which, the titular muſt obtain and execute an inhibition of teinds againſt the tackſman: which differs much from inhibition of lands (explained under the next ſection), and is intended merely to interpel or inhibit the tackſman from farther intermeddling. This diligence of inhibition may alſo be uſed at the ſuit of the titular, againſt any other poſſeſſor of the teinds; and if the tackſman or poſſeſſor ſhall intermeddle after the inhibition is executed, he is liable in a ſpuilzie.

19. Lands and teinds paſs by different titles: a diſpoſition of lands therefore, though granted by one who has alſo right to the teind, will not carry the teind, unleſs it ſhall appear from ſpecial circumſtances that a ſale of both was deſigned by the parties. In lands *cum decimis incluſis*, where the teinds are conſolidated with the ſtock, the right of both muſt neceſſarily go together in all caſes.

SECT. XI. *Of Inhibitions.*

clxxi.

THE conſtitution and tranſmiſſion of feudal rights being explained, and the burdens with which they are chargeable, it remains to be conſidered how theſe rights may be affected at the ſuit of creditors, by legal diligence. Diligences are certain forms of law, whereby a creditor endeavours to make good his payment, either by affecting the perſon of his debtor, or by ſecuring the ſubjects belonging to him from alienation, or by carrying the property of theſe ſubjects to himſelf. They are either real or perſonal. Real diligence is that which is proper to heritable or real rights; perſonal, is that by which the perſon of the debtor may be ſecured, or his perſonal eſtate affected. Of the firſt ſort we have two, *viz.* Inhibition and adjudication.

Diligences.

Inhibition.

2. Inhibition is a perſonal prohibition, which paſſes by letters under the ſignet, prohibiting the party inhibited to contract any debt, or do any deed, by which any part of his lands may be aliened or carried off in prejudice of the creditor inhibiting. It muſt be executed againſt the debtor, perſonally, or at his dwelling-houſe, as ſummonſes, and thereafter publiſhed and regiſtered in the ſame manner with interdictions, (ſee N° clxxxiii. 21.)

3. Inhibition may proceed, either upon a liquid obligation, or even on an action commenced by a creditor for making good a claim not yet ſuſtained by the judge;

which laſt is called *inhibition upon a depending action*. The ſummons, which conſtitutes the dependence, muſt be executed againſt the debtor before the letters of inhibition paſs the ſignet; for no ſuit can be ſaid to depend againſt one, till he be cited in it as a defender: but the effect of ſuch inhibitions is ſuſpended, till decree be obtained in the action againſt the debtor; and in the ſame manner, inhibitions on conditional debts have no effect till the condition be purified. Inhibitions are not granted, without a trial of the cauſe, when they proceed on conditional debts. And though, in other caſes, inhibitions now paſs of courſe, the lords are in uſe to ſtay, or recal them, either on the debtor's ſhewing cauſe why the diligence ſhould not proceed, or even *ex officio* where the ground of the diligence is doubtful.

Limited to heritage.

4. Though inhibitions, by their uniform ſtyle, diſable the debtor from ſelling his moveable as well as his heritable eſtate, their effect has been long limited to heritage, from the interruption that ſuch an embargo upon moveables muſt have given to commerce; ſo that debts contracted after inhibition may be the foundation of diligence againſt the debtor's perſon and moveable eſtate. An inhibition ſecures the inhibitor againſt the alienation, not only of lands that belonged to his debtor when he was inhibited, but of thoſe that he ſhall afterwards acquire: but no inhibition can extend to ſuch after-purchaſes as lie in a juriſdiction where the inhibition was not regiſtered; for it could not have extended to theſe, though they had been made prior to the inhibition.

5. This diligence only ſtrikes againſt the voluntary debts or deeds of the inhibited perſon: it does not reſtrain him from granting neceſſary deeds, *i. e.* ſuch as he was obliged to grant anterior to the inhibition, ſince he might have been compelled to grant theſe before the inhibitor had acquired any right by his diligence. By this rule, a wadſetter or annualrenter might, after being inhibited, have effectually renounced his right to the reverſer on payment, becauſe law could have compelled him to it; but to ſecure inhibitors againſt the effect of ſuch alienations, it is declared by act of ſederunt of the court of ſeſſion, Feb. 19. 1680, that, after intimation of the inhibition to the reverſer, no renunciation or grant of redemption ſhall be ſuſtained, except upon declarator of redemption brought by him, to which the inhibitor muſt be made a party.

Is ſimply prohibitory

6. An inhibition is a diligence ſimply prohibitory, ſo that the debt, on which it proceeds, continues perſonal after the diligence; and conſequently, the inhibitor, in a queſtion with anterior creditors whoſe debts are not ſtruck at by the inhibition, is only preferable from the period at which his debt is made real by adjudication: and where debts are contracted on heritable ſecurity, though poſterior to the inhibition, the inhibitor's debt being perſonal, cannot be ranked with them; he only draws back from the creditors ranked the ſums contained in his diligence. The heir of the perſon inhibited is not reſtrained from alienation, by the diligence uſed againſt his anceſtor; for the prohibition is perſonal, affecting only the debtor againſt whom the diligence is uſed.

7. Inhibitions do not, of themſelves, make void the poſterior debts or deeds of the perſon inhibited; they only afford a title to the uſer of the diligence to ſet them aſide, if he finds them hurtful to him: and even where a debt is actually reduced *ex capite inhibitionis*, ſuch reduction, being founded ſolely in the inhibitor's intereſt, is profitable to him alone, and canot alter the natural preference of the other creditors.

Purging inhibitio

8. Inhibitions may be reduced upon legal nullities, ariſing either from the ground of debt, or the form of diligence. When payment is made by the debtor to the inhibitor, the inhibition is ſaid to be *purged*. Any creditor, whoſe debt is ſtruck at by the inhibition, may, upon making payment to the inhibitor, compel him to aſſign the debt and diligence in his favour, that he may make good his payment the more effectually againſt the common debtor.

SECT. XII. *Of Compriſings, Adjudications, and Judicial Sales.*

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HERITABLE rights may be carried from the debtor to the creditor, either by the diligence of appriſing (now adjudication), or by a judicial ſale carried on before the court of ſeſſion. Appriſing, or compriſing, was the ſentence of a ſheriff, or of a meſſenger who was ſpecially conſtituted ſheriff for that purpoſe, by which the heritable rights belonging to the debtor were ſold for payment of the debt due to the appriſer; ſo that appriſings were, by their original conſtitution, proper ſales of the debtor's lands to any purchaſer who offered. If no purchaſer could be found, the ſheriff was to appriſe or tax the value of the lands by an inqueſt, (whence came the name of *appriſing*), and to make over to the creditor lands to the value of the debt.

Appriſi

2. That creditors may have acceſs to affect the eſtate of their deceaſed debtor, though the heir ſhould ſtand off from entering, it is made lawful (by 1540, *c.* 106.) for any creditor to charge the heir of his debtor to enter to his anceſtor, year and day being paſt after the anceſtor's death, within 40 days after the charge; and if the heir fails, the creditor may proceed to appriſe his debtor's lands, as if the heir had been entered. Cuſtom has ſo explained this ſtatute, that the creditor may charge the heir, immediately after the death of his anceſtor, provided letters of appriſing be not raiſed till after the expiry both of the year and of the 40 days next enſuing the year, within which the heir is charged to enter. But this ſtatute relates only to ſuch charges on which appriſing is to be led againſt the anceſtor's lands; for, in thoſe which are to be barely the foundation of a common ſummons or proceſs againſt the heir, action will be ſuſtained if the year be elapſed from the anceſtor's death before the execution of the ſummons, though the 40 days ſhould not be alſo expired. Though the ſtatute authoriſes ſuch charges againſt majors only, practice has alſo extended it againſt minors, and the rule is extended to the caſe where the heir is the debtor. One muſt, in this matter, diſtinguiſh between a general and a ſpecial charge. A general charge ſerves only to fix the repreſentation of the heir who is charged, ſo as to make the debt his which was formerly his anceſtor's: but a ſpecial charge makes up for the want of a ſervice (n° clxxx. 25.); and ſtates the heir *fictione juris*, in the right of the ſubjects to which he is charged to enter. Where, therefore, the heir is the debtor, a general charge for fixing the repreſentation againſt him is unneceſſary, ſince the only concern of the creditor is, that his debtor

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make up the titles to the anceſtor's eſtate, which is done by a ſpecial charge: but where the deceaſed was the debtor, the creditor muſt firſt charge his heir to enter in general, that it may be known whether he is to repreſent the debtor: if he does not enter within 40 days, the debt may be fixed againſt him by a decree of conſtitution, on which he muſt be charged to enter heir in ſpecial, upon 40 days more; and theſe muſt be elapſed before the creditor can proceed to appriſe.

3. Appriſings in courſe of time underwent many changes in their form and effect, till at length, by act 1672, *c.* 19. adjudications were ſubſtituted in their place, which directed to proceed againſt debtors by way of action before the court of ſeſſion. By that ſtatute, ſuch part of the debtor's lands is to be adjudged as is equivalent to the principal ſum and intereſt of the debt, with the compoſition due to the ſuperior and expences of infeftment, and a fifth part more in reſpect the creditor is obliged to take land for his money. The debtor muſt deliver to the creditor a valid right of the lands to be adjudged, or tranſumpts thereof, renounce the poſſeſſion in his favour, and ratify the decree of adjudication: and law conſiders the rent of the lands as preciſely commenſurated to the intereſt of the debt; ſo that the adjudger lies under no obligation to account for the ſurplus rents. In this, which is called a *ſpecial adjudication*, the legal, or time within which the debtor may redeem, is declared to be five years; and the creditor attaining poſſeſſion upon it can uſe no farther execution againſt the debtor, unleſs the lands be evicted from him.

4. Where the debtor does not produce a ſufficient right to the lands, or is not willing to renounce the poſſeſſion, and ratify the decree, (which is the caſe that has moſt frequently happened), the ſtatute makes it lawful for the creditor to adjudge all right belonging to the debtor in the ſame manner, and under the ſame reverſion of ten years, as he could, by the former laws, have appriſed it. In this laſt kind, which is called a *general adjudication*, the creditor muſt limit his claim to the principal ſum, intereſt, and penalty, without demanding a fifth part more. But no general adjudication can be inſiſted on, without libelling in the ſummons the other alternative of a ſpecial adjudication: for ſpecial adjudications are introduced by the ſtatute in the place of appriſings; and it is only where the debtor refuſes to comply with the terms thereof, that the creditor can lead a general adjudication.

5. Abbreviates are ordained to be made of all adjudications, which muſt be recorded within 60 days after the date of the decree. In every other reſpect, general adjudications have the ſame effects that appriſings had; adjudgers in poſſeſſion are accountable for the ſurplus rents; a citation in adjudications renders the ſubject litigious; ſuperiors are obliged to enter adjudgers; the legal of adjudications does not expire during the debtor's minority, &c. Only it may be obſerved, that though appriſings could not proceed before the term of payment, yet where the debtor is *vergens ad inopiam*, the court *ex nobili officio* admit adjudication for the debt before it be payable. But this ſort being founded ſolely in equity, ſubſiſts merely as a ſecurity, and cannot carry the property to the creditor by any length of time.

Two kinds of adjudications.

6. There are two kinds of adjudication, which took place at the ſame time with appriſings, and ſtill obtain; viz. adjudications on a decree *cognitionis cauſa*, otherwiſe called *contra hæreditatem jacentem;* and adjudications in implement. Where the debtor's apparent heir, who is charged to enter, formally renounces the ſucceſſion, the creditor may obtain a decree *cognitionis cauſa;* in which, though the heir renouncing is cited for the ſake of form, no ſentence condemnatory can be pronounced againſt him, in reſpect of his renunciation; the only effect of it is to ſubject the *hæreditas jacens* to the creditor's diligence.

7. Adjudications *contra hæreditatem jacentem*, carry not only the lands themſelves that belonged to the deceaſed, but the rents thereof fallen due ſince his death; for theſe, as an acceſſory to the eſtate belonging to the deceaſed would have deſcended to the heir if he had entered, which rule is applied to all adjudications led on a ſpecial charge. This ſort of adjudication is declared redeemable within ſeven years, by any co-adjudging creditor, either of the deceaſed debtor, or of the heir renouncing. The heir himſelf, who renounces, cannot be reſtored againſt his renunciation, nor conſequently redeem, if he be not a minor. But even a major may redeem indirectly, by granting a ſimulate bond to a confident perſon; the adjudication upon which, when conveyed to himſelf, is a good title to redeem all other adjudications againſt the lands belonging to his anceſtor.

8. Adjudications in implement are deduced againſt thoſe who have granted deeds without procuratory of reſignation or precept of ſeiſin, and refuſe to diveſt themſelves; to the end that the ſubject conveyed may be effectually veſted in the grantee. Theſe adjudications may be alſo directed againſt the heir of the granter, upon a charge to enter. Here there is no place for a legal reverſion; for, as the adjudication is led for completing the right of a ſpecial ſubject, it muſt carry that ſubject as irredeemably as if the right had been voluntarily completed.

9. All adjudications led within year and day of that one which has been made firſt effectual by ſeiſin (where ſeiſin is neceſſary,) or exact diligence for obtaining ſeiſin, are preferable *pari paſſu*. The year and day runs from the date of the adjudication, and not of the ſeiſin or diligence for obtaining it. After the days of that period, they are preferable according to their dates. All the co-adjudgers within the year are preferable *pari paſſu*, as if one adjudication had been led for all their debts. This makes the ſeiſin or diligence on the firſt adjudication a common right to the reſt, who muſt therefore refund to the owner of that diligence his whole expence laid out in carrying on and completing it. And tho' that firſt adjudication ſhould be redeemed, the diligence upon it ſtill ſubſiſts as to the reſt. This *pari paſſu* preference, however, does not deſtroy the legal preference of adjudications led on *debita fundi*, (ſee n° clxix. 15.); nor does it take place in adjudications in implement.

Sequeſtration.

10. Before treating of judicial ſales of bankrupts eſtates, the nature of ſequeſtration may be ſhortly explained, which is a diligence that generally uſhers in actions of ſale. Sequeſtration of lands is a judicial act of the court of ſeſſion, whereby the management of an eſtate is put into the hands of a factor or ſteward named by the court, who gives ſecurity, and is to be accountable

able for the rents to all having intereſt. This diligence is competent, either where the rights of the lands is doubtful, if it be applied for before either of the competitors has attained poſſeſſion; or where the eſtate is heavily charged with the debts: but, as it is an unfavourable diligence, it is not admitted, unleſs that meaſure ſhall appear neceſſary for the ſecurity of creditors. Subjects, not brought before the court by the diligence of creditors, cannot fall under ſequeſtration; for it is the competition of creditors which alone founds the juriſdiction of the court to take the diſputed ſubject into their poſſeſſion.

11. The court of ſeſſion who decrees the ſequeſtration has the nomination of the factor, in which they are directed by the recommendation of the creditors. A factor appointed by the ſeſſion, though the proprietor had not been infeft in the lands, has a power to remove tenants. Judicial factors muſt, within ſix months after extracting their factory, make up a rental of the eſtate, and a liſt of the arrears due by tenants, to be put into the hands of the clerk of the proceſs, as a charge againſt themſelves, and a note of ſuch alterations in the rental as may afterwards happen: and muſt alſo deliver to the clerk annually a ſcheme of their accounts, charge and diſcharge, under heavy penalties. They are, by the nature of their office, bound to the ſame degree of diligence that a prudent man adhibits in his own affairs; they are accountable for the intereſt of the rents, which they either have, or by diligence might have recovered, from a year after their falling due. As it is much in the power of thoſe factors to take advantage of the neceſſities of creditors, by purchaſing their debts at an undervalue, all ſuch purchaſes made either by the factor himſelf, or to his behoof, are declared equivalent to an acquittance or extinction of the debt. No factor can unwarrantably pay to any creditor, without an order of the court of ſeſſion; for he is, by the tenor of his commiſſion, directed to pay the rents to thoſe who ſhall be found to have the beſt right to them. Judicial factors are entitled to a ſalary, which is generally ſtated at five *per cent.* of their intromiſſions: but it is ſeldom aſcertained till their office expires, or till their accounting; that the court may modify a greater or ſmaller ſalary, or none, in proportion to the factor's integrity and diligence. Many caſes occur, where the court of ſeſſion, without ſequeſtration, name a factor, to preſerve the rents from periſhing; *e. g.* where an heir is deliberating whether to enter, where a minor is without tutors, where a ſucceſſion opens to a perſon reſiding abroad; in all which caſes the factor is ſubjected to the rules laid down in the act of ſederunt, Feb. 13. 1730.

Sale of bankrupt eſtates.

12. The word *bankrupt* is ſometimes applied to perſons whoſe funds are not ſufficient for their debts; and ſometimes, not to the debtor, but to his eſtate. The court of ſeſſion are empowered, at the ſuit of any real creditor, to try the value of a bankrupt's eſtate, and ſell it for the payment of his debts.

13. No proceſs of ſale, at the ſuit of a creditor, can proceed without a proof of the debtor's bankruptcy, or at leaſt that his lands are ſo charged with debts that no prudent perſons will buy from him; and therefore the ſummons of ſale muſt comprehend the debtor's whole eſtate. The debtor, or his apparent heir, and all the real creditors in poſſeſſion, muſt be made parties to the ſuit; but it is ſufficient if the other creditors be called by an edictal citation. The ſummons of ſale contains a concluſion of ranking or preference of the bankrupt's creditors. In this ranking, firſt and ſecond terms are aſſigned to the whole creditors for exhibiting in court (or producing) their rights and diligences; and the decree of certification proceeding thereupon, againſt the writings not produced, has the ſame effect in favour of the creditors who have produced their rights, as if that decree had proceeded upon an action of reduction-improbation. See Nº clxxxiii. 3. The ranking of theſe creditors muſt be concluded by an extracted decree, before the actual ſale. The irredeemable property of the lands is adjudged by the court to the higheſt offerer at the ſale. The creditors receiving payment muſt grant to the purchaſer abſolute warrandice, to the extent of the ſum received by them; and the lands purchaſed are declared diſburdened of all debts or deeds of the bankrupt, or his anceſtors, either on payment of the price by the purchaſer to the creditors according to their preference, or on conſignation of it, in caſe of their refuſal, in the hands of the magiſtrates of Edinburgh: the only remedy provided to ſuch creditors as judge themſelves hurt by the ſale or diviſion of the price, even though they ſhould be minors, is an action for recovering their ſhare of the price againſt the creditors who have received it.

Rankin creditor

14. The expence of theſe proceſſes is deburſed by the factor out of the rents in his hands: by which the whole burden of ſuch expence falls upon the poſterior creditors.

15. Apparent heirs are entitled to bring actions of ſale of the eſtates belonging to their anceſtors, whether bankrupt or not: the expence of which ought to fall upon the purſuer, if there is any excreſcence of the price, after payment of the creditors.

16. As proceſſes of ranking and ſale are deſigned for the common intereſt of all the creditors, no diligence carried on or completed during their pendency ought to give any preference in the competition; *pendente lite, nihil innovandum.*

17. It is a rule in all real diligences, that where a creditor is preferable on ſeveral different ſubjects, he cannot uſe his preference arbitrarily, by favouring one creditor more than another; but muſt allocate his univerſal or catholic debt proportionally againſt all the ſubjects or parties whom it affects. If it is material to ſuch creditor to draw his whole payment out of any one fund, he may apply his debt ſo as may beſt ſecure himſelf: but that inequality will be rectified as to the poſterior creditors, who had likewiſe, by their rights and diligences, affected the ſubjects out of which he drew his payment, by obliging him to aſſign in their favour his right upon the ſeparate ſubjects which he did not uſe in the ranking; by which they may recur againſt theſe ſeparate ſubjects for the ſhares which the debt preferred might have drawn out of them. As the obligation to aſſign is founded merely in equity, the catholic creditor cannot be compelled to it, if his aſſigning ſhall weaken the preference of any ſeparate debt veſted in himſelf, affecting the ſpecial ſubject ſought to be aſſigned. But if a creditor upon a ſpecial ſubject ſhall acquire from another a catholic right, or a catholic creditor ſhall purchaſe a debt affecting a ſpecial ſubject,

ject, with a view of creating to the ſpecial debt a higher degree of preference than was naturally due to it, by an arbitrary application of the catholic debt, equity cannot protect him from aſſigning in favour of the creditor excluded by ſuch application, eſpecially if, prior to the purchaſe, the ſubject had become litigious by the proceſs of ranking; for tranſmiſſions ought not to have creditors who are no parties to them, nor to give the purchaſer any new right which was not formerly in himſelf or his cedent.

II. MOVEABLE RIGHTS.

The law of heritable rights being explained, Moveable Rights fall next to be conſidered; the doctrine of which depends chiefly on the nature of Obligations.

Sect. XIII. *Of Obligations and Contracts in general.*

An obligation is a legal tie, by which one is bound to pay or perform ſomething to another. Every obligation on the perſon obliged, implies an oppoſite right in the creditor, ſo that what is a burden in regard to the one is right with reſpect to the other; and all rights founded on obligation are called *perſonal*. There is this eſſential difference between a real and a perſonal right, that a *jus in re*, whether of property, or of an inferior kind as ſervitude, entitles the perſon veſted with it to poſſeſs the ſubject as his own; or if he is not in poſſeſſion, to demand it from the poſſeſſors: whereas the creditor in a perſonal right has only *jus ad rem*, or a right to compel the debtor to fulfil his obligation; without any right in the ſubject itſelf, which the debtor is bound to transfer to him. One cannot oblige himſelf, but by a preſent act of the will. A bare reſolution therefore, or purpoſe, to be obliged, is alterable at pleaſure.

2. Obligations are either, (1.) Merely natural, where one perſon is bound to another by the law of nature, but cannot be compelled by any civil action to the performance. Thus, though deeds granted by a minor having curators, without their conſent, are null, yet the minor is naturally obliged to perform ſuch deeds; and parents are naturally obliged to provide their children in reaſonable patrimonies. Natural obligations intitle the creditor to retain what he has got in virtue thereof, without being ſubjected to reſtore it. (2.) Obligations are merely civil, which may be ſued upon by an action, but are elided by an exception in equity; this is the caſe of obligations granted through force or fear, &c. (3.) Proper or full obligations, are thoſe which are ſupported both by equity and the civil ſanction.

3. Obligations may be alſo divided into, (1.) Pure, to which neither day nor condition is adjected. Theſe may be exacted immediately. (2.) Obligations *(ex die)*, which have a day adjected to their performance. In theſe, *dies ſtatim cedit, ſed non venit;* a proper debt ariſes from the date of the obligation, becauſe it is certain that the day will exiſt; but the execution is ſuſpended till the lapſe of that day. (3.) Conditional obligations; in which there is no proper debt *(dies non cedit)* till the condition be purified, becauſe it is poſſible the condition may never exiſt; and which therefore are ſaid to create only the hope of a debt; but the granter, even of theſe, has no right to reſile. An obligation, to which a day is adjected that poſſibly may never exiſt, implies a condition; *dies incertus pro conditione habetur*. Thus, in the caſe of a proviſion to a child, payable when he attains to the age of fourteen, if the child dies before that age, the proviſion falls.

4. Obligations, when conſidered with regard to their cauſe, were divided by the Romans, into thoſe ariſing from contract, quaſi contract, delict, and quaſi delict: but there are certain obligations, even full and proper ones, which cannot be derived from any of theſe ſources, and to which Lord Stair gives the name of *obediential*. Such as the obligation on parents to aliment or maintain their children; which ariſes ſingly from the relation of parent and child, and may be enforced by the civil magiſtrate. Under parents are comprehended the mother, grandfather, and grandmother, in their proper order. This obligation on parents extends to the providing of their iſſue in all the neceſſaries of life, and giving them ſuitable education. It ceaſes, when the children can earn a livelihood by their own induſtry; but the obligation on parents to maintain their indigent children, and reciprocally on children to maintain their indigent parents, is perpetual. This obligation is, on the father's death, transferred to the eldeſt ſon, the heir of the family; who, as repreſenting the father, muſt aliment his younger brothers and ſiſters: the brothers are only intitled to alimony, till their age of twenty-one, after which they are preſumed able to do for themſelves; but the obligation to maintain the ſiſters continues till their marriage. In perſons of lower rank, the obligation to aliment the ſiſters ceaſes after they are capable of ſubſiſting by any ſervice or employment.

5. All obligations, ariſing from the natural duty of reſtitution, fall under this claſs: thus, things given upon the view of a certain event, muſt be reſtored, if that event does not afterwards exiſt: thus alſo, things given *ob turpem cauſam*, where the turpitude is in the receiver and not in the giver, muſt be reſtored. And on the ſame principle, one upon whoſe ground a houſe is built or repaired by another, is obliged, without any covenant, to reſtore the expence laid out upon it, in ſo far as it has been profitable to him.

Contracts.

6. A contract is the voluntary agreement of two or more perſons, whereby ſomething is to be given or performed upon one part, for a valuable conſideration, either preſent or future, on the other part. Conſent, which is implied in agreement, is excluded, (1.) By error in the eſſentials of the contract; for, in ſuch caſe, the party does not properly contract, but errs or is deceived; and this may be alſo applied to contracts which take their riſe from fraud or impoſition. (2.) Conſent is excluded by ſuch a degree of reſtraint upon any of the contracting parties, as extorts the agreement; for where violence or threatening are uſed again a perſon, his will has really no part in the contract.

Loan.

7. Loan, or *mutuum*, is that contract which obliges a perſon, who has borrowed any fungible ſubject from another, to reſtore to him as much of the ſame kind, and of equal goodneſs. Whatever receives its eſtimation in number, weight, or meaſure, is a fungible; as corn, wine, current coin, &c. The only proper ſubjects of this contract are things which cannot be uſed without either their extinction or alienation: hence,

the property of the thing lent is neceſſarily transferred by delivery to the borrower, who conſequently muſt run all the hazards, either of its deterioration or its periſhing, according to the rule, *res perit ſuo domino.* Where the borrower neglects to reſtore at the time and place agreed on, the eſtimation of the thing lent muſt be made according to its price at that time and in that place; becauſe it would have been worth ſo much to the lender, if the obligation had been duly performed. If there is no place nor time ſtipulated for, the value is to be ſtated according to the price that the commodity gave when and where it was demanded. In the loan of money, the value put on it by public authority, and not its intrinſic worth, is to be conſidered. This contract is obligatory only on one part; for the lender is ſubjected to no obligation: the only action therefore that it produces, is pointed againſt the borrower, that he may reſtore as much in quantity and quality as he borrowed, together with the damage the lender may have ſuffered through default of due performance.

Commodate

8. Commodate is a ſpecies of loan, gratuitous on the part of the lender, where the thing lent may be uſed, without either its periſhing or its alienation. Hence, in this ſort of loan, the property continues with the lender: the only right the borrower acquires in the ſubject is its uſe, after which he muſt reſtore the individual thing that he borrowed: conſequently, if the ſubject periſhes, it periſhes to the lender, unleſs it has periſhed by the borrower's fault. What degree of fault or negligence makes either of the contracting parties liable to the other in damages, is comprehended under the following rules. Where the contract gives a mutual benefit to both parties, each contractor is bound to adhibit a middle ſort of diligence, ſuch as a man of ordinary prudence uſes in his affairs. Where only one of the parties has benefit by the contract, that party muſt uſe exact diligence; and the other who has no advantage by it, is accountable only for dole, or for groſs omiſſions which the law conſtrues to be dole. Where one employs leſs care on the ſubject of any contract which implies an exuberant truſt, than he is known to employ in his own affairs, it is conſidered as dole.

9. By theſe rules, the borrower in the contract of commodate muſt be exactly careful of the thing lent, and reſtore it at the time fixed by the contract, or after that uſe is made of it for which it was lent: if he puts it to any other uſe, or neglects to reſtore it at the time covenanted, and if the thing periſhes thereafter, even by mere accident, he is bound to pay the value. On the other part, the lender is obliged to reſtore to the borrower ſuch of the expences deburſed by him on that ſubject as aroſe from any uncommon accident, but not thoſe that naturally attend the uſe of it. Where a thing is lent gratuitouſly, without ſpecifying any time of redelivery, it conſtitutes the contract of *precarium*, which is revocable at the lender's pleaſure, and, being entered into from a perſonal regard to the borrower, ceaſes by his death.

Depoſitation.

10. Depoſitation is a contract, by which one who has the cuſtody of a thing committed to him (the depoſitary) is obliged to reſtore it to the depoſitar. If a reward is bargained for by the depoſitary for his care, it reſolves into the contract of location. As this contract is gratuitous, the depoſitary is only anſwerable for the conſequences of groſs neglect; but after the depoſit is redemanded, he is accountable even for caſual misfortunes. He is intitled to a full indemnification for the loſſes he has ſuſtained by the contract, and to the recovery of all ſums expended by him on the ſubject.

Nautæ, pones, larii.

11. An obligation ariſes without formal paction, barely by a traveller's entering into an inn, ſhip, or ſtable, and there depoſiting his goods, or putting up his horſes; whereby the innkeeper, ſhipmaſter, or ſtabler, is accountable, not only for his own facts and thoſe of his ſervants, (which is an obligation implied in the very exerciſe of theſe employments), but of the other gueſts or paſſengers; and, indeed, in every caſe, unleſs where the goods have been loſt *damno fatali*, or carried off by pirates or houſe-breakers. Not only the maſters of ſhips, but their employers, are liable each of them for the ſhare that he has in the ſhip; but by the preſent cuſtom of trading nations, the goods brought into a ſhip muſt have been delivered to the maſter or mate, or entered into the ſhip-books. Carriers fall within the intendment of this law; and practice has extended it to vintners within borough. The extent of the damage ſuſtained by the party may be proved by his own oath *in litem.*

Seque tion.

12. Sequeſtration, whether voluntarily conſented to by the parties, or authoriſed by the judge, is a kind of depoſit; but as the office of ſequeſtree, to whoſe care the ſubject in diſpute is committed, is not conſidered as gratuitous, he cannot throw it up at pleaſure, as a common depoſitary may do; and he is liable in the middle degree of diligence. Conſignation of money is alſo a depoſit. It may be made, either where the debt is called in queſtion by the debtor, as in ſuſpenſions; or where the creditor refuſes to receive his money, as in wadſets, &c. The riſk of the conſigned money lies on the conſigner, where he ought to have made payment, and not conſignation; or has conſigned only a part; or has choſen for conſignatory, a perſon neither named by the parties nor of good credit. The charger, or other creditor, runs the riſk, if he has charged for ſums not due, or has without good reaſon refuſed payment, by which refuſal the conſignation became neceſſary. It is the office of a conſignatory, to keep the money in ſafe cuſtody till it be called for: if therefore he puts it out at intereſt, he muſt run the hazard of the debtor's inſolvency; but, for the ſame reaſon, though he ſhould draw intereſt for it, he is liable in none to the conſigner.

Conſi tion.

Pled

13. Pledge, when oppoſed to wadſet, is a contract, by which a debtor puts into the hands of his creditor a ſpecial moveable ſubject in ſecurity of the debt, to be redelivered on payment. Where a ſecurity is eſtabliſhed by law to the creditor, upon a ſubject which continues in the debtor's poſſeſſion, it has the ſpecial name of an hypothec. Tradeſmen and ſhip-carpenters have an hypothec on the houſe or ſhip repaired, for the materials and other charges of reparation; but not for the expence of building a new ſhip. Owners of ſhips have an hypothec on the cargo for the freight; heritors on the fruits of the ground, and landlords on the *invecta et illata*, for their rents. Writers alſo, and agents, have a right of hypothec, or more properly of retention, in their conſtituent's writings, for their claim of pains and deburſements. A creditor cannot, for his own payment, ſell the ſubject impignorated, without applying

Hyp

applying to the judge-ordinary for a warrant to put it up to public ſale or roup; and to this application the debtor ought to be made a party.

SECT. XIV. *Of Obligations by Word or Writ.*

THE appellation of *verbal* may be applied to all obligations to the conſtitution of which writing is not eſſential, which includes both real and conſenſual contracts; but as theſe are explained under ſeparate titles, obligations *by word*, in the ſenſe of this rubric, muſt be reſtricted, either to promiſes, or to ſuch verbal agreements as have no ſpecial name to diſtinguiſh them. Agreement implies the intervention of two different parties, who come under mutual obligations to one another. Where nothing is to be given or performed but on one part, it is properly called a *promiſe*; which, as it is gratuitous, does not require the acceptance of him to whom the promiſe is made. An offer, which muſt be diſtinguiſhed from a promiſe, implies ſomething to be done by the other party; and conſequently is not binding on the offerer, till it be accepted, with its limitations or conditions, by him to whom the offer is made; after which, it becomes a proper agreement.

2. Writing muſt neceſſarily intervene in all obligations and bargains concerning heritable ſubjects, tho' they ſhould be only temporary; as tacks, which, when they are verbal, laſt but for one year. In theſe, no verbal agreement is binding, though it ſhould be referred to the oath of the party; for, till writing is adhibited, law gives both parties a right to reſile, as from an unfiniſhed bargain; which is called *locus pœnitentiæ*. If, upon a verbal bargain of lands, part of the price ſhall be paid by him who was to purchaſe, the *interventus rei*, the actual payment of money, creates a valid obligation, and gives a beginning to the contract of ſale: and, in general, where-ever matters are no longer entire, the right to reſile ſeems to be excluded. An agreement, whereby a real right is paſſed from, or reſtricted, called *pactum liberatorium*, may be perfected verbally; for freedom is favourable, and the purpoſe of ſuch agreement is rather to diſſolve than to create an obligation. Writing is alſo eſſential to bargains made under condition that they ſhall be reduced into writing; for in ſuch caſes, it is *pars contractus*, that, till writing be adhibited, both parties ſhall have liberty to withdraw. In the ſame manner, verbal or nuncupative teſtaments are rejected by our law; but verbal legacies are ſuſtained, where they do not exceed *L.* 100 Scots.

3. Anciently, when writing was little uſed, deeds were executed by the party appending his ſeal to them, in preſence of witneſſes. For preventing frauds that might happen by appending ſeals to falſe deeds, the ſubſcription alſo of the granter was afterwards required, and, if he could not write, that of a notary. As it might be of dangerous conſequence to give full force to the ſubſcription of the parties by initials, which is more eaſily counterfeited; our practice, in order to ſuſtain ſuch ſubſcription, ſeems to require a proof, not only that the granter uſed to ſubſcribe in that way, but that *de facto* he had ſubſcribed the deed in queſtion; at leaſt, ſuch proof is required, if the inſtrumentary witneſſes be ſtill alive.

4. As a further check, it was afterwards provided that all writings carrying any heritable right, and other deeds of importance, be ſubſcribed by the principal parties, if they can ſubſcribe; otherwiſe, by two notaries, before four witneſſes ſpecially deſigned. The ſubſequent practice extended this requiſite of the deſignation of the witneſſes to the caſe where the parties themſelves ſubſcribed. Cuſtom has conſtrued obligations for ſums exceeding *L.* 100 *Scots*, to be obligations of importance. In a diviſible obligation, *ex. gr.* for a ſum of money, though exceeding *L.* 100, the ſubſcription of one notary is ſufficient, if the creditor reſtricts his claim to *L.* 100: But in an obligation indiviſible, *e. g.* for the performance of a fact, if it be not ſubſcribed in terms of the ſtatute, it is void. When notaries thus atteſt a deed, the atteſtation or docquet muſt ſpecially expreſs that the granter gave them a mandate to ſign; nor is it ſufficient that this be mentioned in the body of the writing.

5. In every deed, the name of him who writes it, with his dwelling-place, or other mark of diſtinction, muſt be inſerted. The witneſſes muſt both ſubſcribe as witneſſes, and their names and deſignations be inſerted in the body of the deed: And all ſubſcribing witneſſes muſt know the granter, and either ſee him ſubſcribe, or hear him acknowledge his ſubſcription; otherwiſe they are declared puniſhable as acceſſory to forgery. Deeds, decrees, and other ſecurities, conſiſting of more than one ſheet, may be written by way of book, in place of the former cuſtom of paſting together the ſeveral ſheets, and ſigning the joinings on the margin; provided each page be ſigned by the granter, and marked by its number, and the teſting clauſe expreſs the number of pages.

Solemnities of notorial inſtruments &c.

6. Inſtruments of ſeiſin are valid, if ſubſcribed by one notary, before a reaſonable number of witneſſes; which is extended by practice to inſtruments of reſignation. Two witneſſes are deemed a reaſonable number to every deed that can be executed by one notary. It is not neceſſary, that the witneſſes to a notorial inſtrument, or execution, ſee the notary or meſſenger ſign; for they are called as witneſſes to the tranſaction which is atteſted, and not to the ſubſcription of the perſon atteſting.

7. A new requiſite has been added to certain deeds ſince the union, for the benefit of the revenue: They muſt be executed on ſtamped paper, or parchment, paying a certain duty to the crown. Charters, inſtruments of reſignation, ſeiſins, and retours of lands holden of a ſubject, are charged with 2 *s.* 3 *d.* of duty: Bonds, tacks, contracts, and other perſonal obligations, paid at firſt 6 *d.* to which further additions have ſince, at different times, been made, the duty at preſent amounting to 4 *s.* Bail-bonds, bills, teſtaments, diſcharges, or acquittances of rent or of intereſt, and judicial deeds, as notorial inſtruments, bonds of cautionry in ſuſpenſions, &c. are excepted.

Blank-bonds.

8. The granter's name and deſignation are eſſential, not properly as ſolemnities, but becauſe no writing can have effect without them. Bonds were, by our ancient practice, frequently executed without filling up the creditor's name; and they paſſed from hand to hand, like notes payable to the bearer: But as there was no method for the creditor of a perſon poſſeſſed of theſe to ſecure them for his payment, all writings taken blank in the creditor's name are declared null, as covers to fraud; with the exception of indorſations of bills of exchange.

9. Certain

Privileged deeds.

9. Certain privileged writings do not require the ordinary ſolemnities. 1. Holograph deeds (written by the granter himſelf) are effectual without witneſſes. The date of no holograph writing, except a bill of exchange, (ſee next paragr.) can be proved by the granter's own aſſertion, in prejudice either of his heir or his creditors, but muſt be ſupported by other adminicles. 2. Teſtaments if executed where men of ſkill and buſineſs cannot be had, are valid though they ſhould not be quite formal: and let the ſubject of a teſtament be ever ſo valuable, one notary ſigning for the teſtator, before two witneſſes, is in practice ſufficient. Clergymen were frequently notaries before the reformation; and, though they were afterwards prohibited to act as notaries, the caſe of teſtaments is excepted; ſo that theſe are ſupported by the atteſtation of one miniſter, with two witneſſes. 3. Diſcharges to tenants are ſuſtained without witneſſes, from their preſumed ruſticity, or ignorance in buſineſs. 4. Miſſive letters *in re mercatoria*, commiſſions, and fitted accounts in the courſe of trade, and bills of exchange, though they are not holograph, are, from the favour of commerce, ſuſtained without the ordinary ſolemnities.

Bills of exchange.

10. A bill of exchange is an obligation in the form of a mandate, whereby the drawer or mandant deſires him to whom it is directed, to pay a certain ſum, at the day and place therein mentioned, to a third party. Bills of exchange are drawn by a perſon in one country to his correſpondent in another; and they have that name, becauſe it is the exchange, or the value of money in one place compared with its value in another, that generally determines the preciſe extent of the ſum contained in the draught. The creditor in the bill is ſometimes called the poſſeſſor, or *porteur*. As parties to bills are of different countries, queſtions concerning them ought to be determined by the received cuſtom of trading nations, unleſs where ſpecial ſtatute interpoſes. For this reaſon, bills of exchange, though their form admits not of witneſſes, yet prove their own dates, in queſtions either with the heir, or creditors of the debtor; but this doctrine is not extended to inland bills payable to the drawer himſelf.

Their ſolemnities, and obligations.

11. A bill is valid, without the deſignation, either of the drawer, or of the perſon to whom it is made payable: It is enough, that the drawer's ſubſcription appears to be truly his; and one's being poſſeſſor of a bill marks him out to be the creditor, if he bears the name given in the bill to the creditor: Nay, though the perſon drawn on ſhould not be deſigned, his acceptance preſumes that it was he whom the drawer had in his eye. Bills drawn blank, in the creditor's name, fall under the ſtatutory nullity; for though indorſations of bills are excepted from it, bills themſelves are not. Not only the perſon drawn upon muſt ſign his acceptance, but the drawer muſt ſign his draught, before any obligation can be formed againſt the accepter: Yet it is ſufficient in practice, that the drawer ſigns before the bill be produced in judgment; though it ſhould be after the death both of the creditor and accepter. A creditor in a bill may tranſmit it to another by indorſation, though the bill ſhould not bear *to his order*; by the ſame rule that other rights are tranſmiſſible by aſſignation, though they do not bear *to aſſignees*.

Obligations

12. The drawer, by ſigning his draught, becomes liable for the value to the creditor in the bill, in caſe the perſon drawn upon either does not accept, or after acceptance does not pay; for he is preſumed to have received value from the creditor at giving him the draught, though it ſhould not bear *for value received*: But, if the drawer was debtor to the creditor in the bill before the draught, the bill is preſumed to be given towards payment of the debt, unleſs it expreſsly bears *for value*. The perſon drawn upon, if he refuſe to accept, while he has the drawer's money in his hands, is liable to him in damages. As a bill preſumes value from the creditor, indorſation preſumes value from the indorſee; who therefore, if he cannot obtain payment from the accepter, has recourſe againſt the indorſer, unleſs the bill be indorſed in theſe words, *without recourſe*.

13. Payment of a bill, by the accepter, acquits both the drawer and him at the hands of the creditor: but it intitles the accepter, if he was not the drawer's debtor, to an action of recourſe againſt him; and, if he was, to a ground of compenſation. Where the bill does not bear value in the hands of the perſon drawn upon, it is preſumed that he is not the drawer's debtor, and conſequently he has recourſe againſt the drawer, *ex mandato*.

14. Bills, when indorſed, are conſidered as ſo many bags of money delivered to the onerous indorſee; which therefore carry right to the contents, free of all burdens that do not appear on the bills themſelves. Hence, a receipt or diſcharge, by the original creditor, if granted on a ſeparate paper, does not exempt the accepter from ſecond payment to the indorſee; hence, alſo, no ground of compenſation competent to the accepter againſt the original creditor can be pleaded againſt the indorſee: but, if the debtor ſhall prove, by the oath of the indorſee, that he paid not the full value for the indorſation, the indorſee is juſtly conſidered as but a name; and therefore all exceptions, receivable againſt the original creditor, will be ſuſtained againſt him.

Negot tion.

15. Bills muſt be negotiated by the poſſeſſor, againſt the perſon drawn upon, within a preciſe time, in order to preſerve recourſe againſt the drawer. In bills payable ſo many days after ſight, the creditor has a diſcretionary power of fixing the payment ſomewhat ſooner or later, as his occaſions ſhall require. Bills payable on a day certain, need not be preſented for acceptance till the day of payment, becauſe that day can neither be prolonged nor ſhortened by the time of acceptance. For the ſame reaſon, the acceptance of bills, payable on a preciſe day, need not be dated: but, where a bill is drawn payable ſo many days after ſight, it muſt; becauſe there the term of payment depends on the date of the acceptance.

Days grace

16. Though bills are, in ſtrict law, due the very day on which they are made payable, and may therefore be protested on the day thereafter; yet there are three days immediately following the day of payment, called *days of grace*, within any of which the creditor may proteſt the bill: but if he delay proteſting till the day after the laſt day of grace, he loſes his recourſe. Where a bill is proteſted, either for not acceptance or not payment, the diſhonour muſt be notified to the drawer or indorſer, within three poſts at fartheſt. This ſtrictneſs of negotiation is confined to ſuch bills as may be proteſted by the poſſeſſor upon the third day of grace: where, therefore, bills are indorſed after the days of grace are expired, the indorſee is left more at liberty,

and does not loſe his recourſe, tho' he ſhould not take a formal proteſt for not payment, if, within a reaſonable time, he ſhall give the indorſer notice of the accepter's refuſing to pay. Not only does the poſſeſſor, who neglects ſtrict negotiation, loſe his recourſe againſt the drawer, where the perſon drawn upon becomes afterwards bankrupt; but tho' he ſhould continue ſolvent: for he may, in that caſe, recover payment from the debtor, and ſo is not to be indulged in an unneceſſary proceſs againſt the drawer, which he has tacitly renounced by his negligence. Recourſe is preſerved againſt the drawer, though the bill ſhould not be duly negotiated, if the perſon drawn upon was not his debtor; for there the drawer can qualify no prejudice by the neglect of diligence, and he ought not to have drawn on one who owed him nothing.

17. The privileges ſuperadded to bills by ſtatute are, that though, by their form, they can have no clauſe of regiſtration, yet, if duly proteſted, they are regiſtrable within ſix months after their date in caſe of not acceptance, or in ſix months after the term of payment in the caſe of not payment; which regiſtration is made the foundation of ſummary diligence, either againſt the drawer or indorſer in the caſe of not acceptance, or againſt the accepter in the caſe of not payment. This is extended to inland bills, *i. e.* bills both drawn and made payable in Scotland. After acceptance, ſummary diligence lies againſt no other than the accepter; the drawer and indorſer muſt be purſued by an ordinary action. It is only the principal ſum in the bill, and intereſt, that can be charged for ſummarily: the exchange, when it is not included in the draught, the re-exchange incurred by ſuffering the bill to be proteſted and returned, and the expence of diligence, muſt all be recovered by an ordinary action; becauſe theſe are not liquid debts, and ſo muſt be previouſly conſtituted.

18. Bills, when drawn payable at any conſiderable diſtance of time after date, are denied the privileges of bills; for bills are intended for currency, and not to lie as a ſecurity in the creditor's hands. Bills are not valid which appear *ex facie* to be donations. No extrinſic ſtipulation ought to be contained in a bill which deviates from the proper nature of bills: hence, a bill to which a penalty is adjected, or with a clauſe of intereſt from the date, is null. Inland precepts drawn, not for money the medium of trade, but for fungibles, are null, as wanting writer's name and witneſſes. It is not an agreed point whether promiſſory notes, without writer and witneſſes, unleſs holograph, are probative.

19. By 12th *Geo.* III. *c.* 72. the law of Scotland has undergone very material alterations as to bills and promiſſory notes. By that act, they are declared to have the ſame privileges, and to preſcribe in ſix years after the term of payment. Bank-notes and poſt-bills are excepted from this preſcription; nor does it run during the years of the creditor's minority. Inland bills and promiſſory notes muſt be proteſted within the days of grace, to ſecure recourſe; and the diſhonour notified within 14 days after the proteſt. Summary diligence may paſs not only againſt the acceptor, but likewiſe againſt the drawer, and all the indorſees jointly and ſeverally; and at the inſtance of any indorſee, though the bill was not proteſted in his name, upon his producing a receipt or letter from the proteſting indorſee. This act is in force only for ſeven years after 15th May 1772, and to the end of the then next ſeſſion of parliament: conſequently is not yet become a permanent part of the law of Scotland.

Solemnities of deeds ſigned in a foreign country.

20. As for the ſolemnities eſſential to deeds ſigned in a foreign country, when they come to receive execution in Scotland, it is a general rule, that no laws can be of authority beyond the dominions of the lawgiver. Hence, in ſtrictneſs, no deed, though perfected according to the law of the place where it is ſigned, can have effect in another country where different ſolemnities are required to a deed of that ſort. But this rigour is ſo ſoftened *ex comitate*, by the common conſent of nations, that all perſonal obligations granted according to the law of that country where they are ſigned, are effectual every where; which obtains even in obligations to convey heritage. Conveyances themſelves, of heritable ſubjects, muſt be perfected according to the law of the country where the heritage lies, and from which it cannot be removed.

Delivery and depoſitation of deeds.

21. A writing, while the granter keeps it under his own power or his doer's, has no force; it becomes obligatory, only after it is delivered to the grantee himſelf, or found in the hands of a third perſon. As to which laſt, the following rules are obſerved. A deed found in the hands of one who is doer both for the granter and grantee, is preſumed to have been put in in his hands as doer for the grantee. The preſumption is alſo for delivery, if the deed appears in the hands of one who is a ſtranger to both. Where a deed is depoſited in the hands of a third perſon, the terms of depoſitation may be proved by the oath of the depoſitary, unleſs where they are reduced into writing. A deed appearing in the cuſtody of the grantee himſelf, is conſidered as his abſolute right; in ſo much that the granter is not allowed to prove that it was granted in truſt, otherwiſe than by a written declaration ſigned by the truſtee, or by his oath.

What deeds effectual without delivery.

22. The following deeds are effectual without delivery, (1.) Writings containing a clauſe diſpenſing with the delivery: theſe are of the nature of revokable deeds, where the death of the granter is equivalent to delivery, becauſe after death there can be no revocation. (2.) Deeds in favour of children, even natural ones; for parents are the proper cuſtodiars or keepers of their childrens writings. From a ſimilar reaſon, poſtnuptial ſettlements by the huſband to the wife need no delivery. (3.) Rights which are not to take effect till the granter's death, or even where he reſerves an intereſt to himſelf during his life; for it is preſumed he holds the cuſtody of theſe, merely to ſecure to himſelf ſuch reſerved intereſt. (4.) Deeds that the granter lay under an antecedent natural obligation to execute, *e. g.* rights granted to a cautioner for his relief. (5.) Mutual obligations, *e. g.* contracts; for every ſuch deed, the moment it is executed, is a common evident to all the parties contractors. Laſtly, the publication of a writing by regiſtration, is equivalent to delivery.

SECT. XV. *Of Obligations and Contracts ariſing from conſent, and of Acceſſory Obligations.* clxxv.

Conſenſual contracts.

CONTRACTS conſenſual, *i. e.* which might, by the Roman law, be perfected by ſole conſent, without the intervention either of things or of writing, are ſale, permutation, location, ſociety, and mandate. Where the ſubject of any of theſe contracts is heritable, writing is neceſſary.

Sale.

2. Sale is a contract, by which one becomes obliged to give ſomething to another, in conſideration of a certain price in current money to be paid for it. Things conſiſting merely in hope, may be the ſubject of this contract, as the draught of a net. Commodities, where their importation or uſe is abſolutely prohibited, cannot be the ſubject of ſale; and even in run goods, no action lies againſt the vender for not delivery, if the buyer knew the goods were run.

3. Though this contract may be perfected before delivery of the ſubject, the property remains till then with the vender. See N° clxii. 9. Yet till delivery, the hazard of its deterioration falls on the purchaſer, becauſe he has all the profits ariſing from it after the ſale. On the other hand, the ſubject itſelf periſhes to the vender; (1.) If it ſhould periſh through his fault, or after his undue delay to deliver it. (2.) If a ſubject is ſold as a fungible, and not as an individual, or *corpus*, *e. g.* a quantity of farm-wheat, ſold without diſtinguiſhing the parcel to be delivered from the reſt of the farm. (3.) The *periculum* lies on the vender till delivery, if he be obliged by a ſpecial article in the contract to deliver the ſubject at a certain place.

Location.

4. Location is that contract, where an hire is ſtipulated for the uſe of things, or for the ſervice of perſons. He who lets his work or the uſe of his property to hire, is the locator or leſſor; and the other, the conductor or leſſee. In the location of things, the leſſor is obliged to deliver the ſubject, fitted to the uſe it was let for; and the leſſee muſt preſerve it carefully, put it to no other uſe, and, after that is over, reſtore it. Where a workman or artificer lets his labour, and if the work is either not performed according to contract, or if it be inſufficient, even from mere unſkilfulneſs, he is liable to his employer in damages; for he ought not, as an artificer, to have undertaken a work to which he was not equal. A ſervant hired for a certain term, is intitled to his full wages, though from ſickneſs or other accident he ſhould be diſabled for a part of his time; but, if he die before the term, his wages are only due for the time he actually ſerved. If a maſter dies, or without good reaſon turns off, before the term, a ſervant who eats in his houſe, the ſervant is intitled to his full wages, and to his maintenance till that term: and, on the other part, a ſervant who without ground deſerts his ſervice, forfeits his wages and maintenance, and is liable to his maſter in damages.

Society.

5. Society or copartnerſhip is a contract, whereby the ſeveral partners agree concerning the communication of loſs and gain ariſing from the ſubject of the contract. It is formed by the reciprocal choice that the partners make of one another; and ſo is not conſtituted in the caſe of co-heirs, or of ſeveral legatees in the ſame ſubject. A copartnerſhip may be ſo conſtituted, that one of the partners ſhall, either from his ſole right of property in the ſubject, or from his ſuperior ſkill, be entitled to a certain ſhare of the profits, without being ſubjected to any part of the loſs; but a ſociety, where one partner is to bear a certain proportion of loſs, without being entitled to any ſhare of the profits, is juſtly reprobated. All the partners are intitled to ſhares of profit and loſs proportioned to their ſeveral ſtocks, where it is not otherwiſe covenanted.

6. As partners are united, from a *delectus perſonæ*, in a kind of brotherhood, no partner can, without a ſpecial power contained in the contract, transfer any part of his ſhare to another. All the partners are bound *in ſolidum* by the obligation of any one of them, if he ſubſcribe by the *firm* or ſocial name of the company; unleſs it be a deed that falls not under the common courſe of adminiſtration. The company effects are the company property of the ſociety ſubjected to its debts; ſo that no partner can claim a diviſion thereof, even after the ſociety is diſſolved, till theſe are paid: and, conſequently, no creditor of a partner can, by diligence, carry to himſelf the property of any part of the common ſtock, in prejudice of a company-creditor: but he may, by arreſtment, ſecure his debtor's ſhare in the company's hands, to be made forthcoming to him at the cloſe of the copartnerſhip, in ſo far as it is not exhauſted by the company debts.

7. Society being founded in the mutual confidence among the *ſocii*, is diſſolved, not only by the renunciation, but by the death of any one of them, if it be not otherwiſe ſpecially covenanted. A partner who renounces upon unfair views, or at a critical time, when his withdrawing may be fatal to the ſociety, looſes his partners from all their engagements to him, while he is bound to them for all the profits he ſhall make by his withdrawing, and for the loſs ariſing thereby to the company. Not only natural, but civil death, *e. g.* ariſing from a ſentence inflicting capital puniſhment, makes one incapable to perform the duties of a partner, and conſequently diſſolves the ſociety. In both caſes, of death and renunciation, the remaining partners may continue the copartnerſhip, either expreſsly, by entering into a new contract; or tacitly, by carrying on their trade as formerly. Public trading companies are now every day conſtituted, with rules very different from thoſe which either obtained in the Roman law, or at this day obtain in private ſocieties. The proprietors or partners in theſe, though they may transfer their ſhares, cannot renounce; nor does their death diſſolve the company, but the ſhare of the deceaſed deſcends to his repreſentative.

8. A joint trade is not a copartnerſhip, but a momentary contract, where two or more perſons agree to contribute a ſum, to be employed in a particular courſe of trade, the produce whereof is to be divided among the adventurers, according to their ſeveral ſhares, after the voyage is finiſhed. If, in a joint trade, that partner who is intruſted with the money for purchaſing the goods, ſhould, in place of paying them in caſh, buy them upon credit, the furniſher who followed his faith alone in the ſale, has no recourſe againſt the other adventurers; he can only recover from them what of the buyer's ſhare is yet in their hands. Where any one of the adventurers in a joint trade becomes bankrupt, the others are preferable to his creditors, upon the common ſtock, as long as it continues undivided, for their relief of all the engagements entered into by them on account of the adventure.

9. Mandate is a contract, by which one employs another to manage any buſineſs for him; and by the Roman law, it muſt have been gratuitous. It may be conſtituted tacitly, by one's ſuffering another to act in a certain branch of his affairs, for a tract of time together, without challenge. The mandatory is at liberty not to accept of the mandate; and, as his powers

are ſolely founded in the mandant's commiſſion, he muſt, if he undertakes it, ſtrictly adhere to the directions given him: Nor is it a good defence, that the method he followed was more rational; for in that his employer was the proper judge. Where no ſpecial rules are preſcribed, the mandatory, if he acts prudently, is ſecure, whatever the ſucceſs may be; and he can ſue for the recovery of all the expences reaſonably deburſed by him in the execution of his office.

10. Mandates may be general, containing a power of adminiſtring the mandant's whole affairs; but no mandate implies a power of diſpoſing gratuitouſly of the conſtituent's property, nor even of ſelling his heritage for an adequate price: but a general mandatory may ſell ſuch of the moveables as muſt otherwiſe periſh. No mandatory can, without ſpecial powers, tranſact doubtful claims belonging to his conſtituent, or refer them to arbiters.

11. Mandates expire, (1.) By the revocation of the employer, though only tacit, as if he ſhould name another mandatory for the ſame buſineſs. (2.) By the renunciation of the mandatory; even after he has executed part of his commiſſion, if his office be gratuitous. (3.) By the death, either of the mandant or mandatory: But if matters are not entire, the mandate continues in force, notwithſtanding ſuch revocation, renunciation, or death. Procuratories of reſignation, and precepts of ſeiſin, are made out in the form of mandates; but, becauſe they are granted for the ſole benefit of the mandatory, all of them, excepting precepts of *clare conſtat*, are declared to continue after the death either of the granter or grantee. Deeds which contain a clauſe or mandate for regiſtration, are for the ſame reaſon made regiſtrable after the death of either.

12. The favour of commerce has introduced a tacit mandate, by which maſters of ſhips are empowered to contract in name of their exercitors or employers, for repairs, ſhip-proviſions, and whatever elſe may be neceſſary for the ſhip or crew; ſo as to oblige not themſelves only, but their employers. Whoever has the actual charge of the ſhip is deemed the maſter, though he ſhould have no commiſſion from the exercitors, or ſhould be ſubſtituted by the maſter in the direction of the ſhip without their knowledge. Exercitors are liable, whether the maſter has paid his own money to a merchant for neceſſaries, or has borrowed money to purchaſe them. The furniſher or lender muſt prove that the ſhip needed repairs, proviſions, &c. to ſuch an extent; but he is under no neceſſity to prove the application of the money or materials to the ſhip's uſe. If there are ſeveral exercitors, they are liable *ſinguli in ſolidum*. In the ſame manner the undertaker of any branch of trade, manufacture, or other land negociation, is bound by the contracts of the inſtitors whom he ſets over it, in ſo far as relates to the ſubject of the *præpoſitura*.

13. Contracts and obligations, in themſelves imperfect, receive ſtrength by the contracter or his heirs doing any act thereafter which imports an approbation of them, and conſequently ſupplies the want of an original legal conſent. This is called *homologation*; and it takes place even in deeds intrinſically null, whether the nullity ariſes from the want of ſtatutory ſolemnities, or from the incapacity of the granter. It cannot be inferred, (1.) By the act of a perſon who was not in the knowledge of the original deed; for one cannot approve what he is ignorant of. (2.) Homologation has no place where the act or deed, which is pleaded as ſuch, can be aſcribed to any other cauſe; for an intention to come under an obligation is not preſumed.

Quaſi-contracts.

14. Quaſi-contracts are formed without explicit conſent, by one of the parties doing ſomething that by its nature either obliges him to the other party, or the other party to him. Under this claſs may he reckoned tutory, &c. the entry of an heir, *negotiorum geſtio*, *indebiti ſolutio*, communion of goods between two or more common proprietors, and *mercium jactus levandæ navis cauſa*. *Negotiorum geſtio* forms thoſe obligations which ariſe from the management of a perſon's affairs, in his abſence, by another, without a mandate. As ſuch manager acts without authority from the proprietor, he ought to be liable in exact diligence, unleſs he has from friendſhip interpoſed in affairs which admitted no delay; and he is accountable for his intromiſſions with intereſt. On the other part, he is intitled to the recovery of his neceſſary deburſements on the ſubject, and to be relieved of the obligations in which he may have bound himſelf in conſequence of the management.

15. *Indebiti ſolutio*, or the payment to one of what is not due to him, if made through any miſtake, either of fact, or even of law, founds him who made the payment in an action againſt the receiver for repayment *(condictio indebiti.)* This action does not lie, (1.) If the ſum paid was due *ex æquitate*, or by a natural obligation: for the obligation to reſtore is founded ſolely in equity. (2.) If he who made the payment knew that nothing was due; for *qui conſulto dat quod non debebat, præſumitur donare.*

Right of dividing common property.

16. Where two or more perſons become common proprietors of the ſame ſubject, either by legacy, gift, or purchaſe, without the view of co-partnerſhip, an obligation is thereby created among the proprietors to communicate the profit and loſs ariſing from the ſubject, while it remains common: And the ſubject may be divided at the ſuit of any having intereſt. This diviſion, where the queſtion is among the common proprietors, is *according to the valuation of their reſpective properties:* But, where the queſtion is between the proprietors and thoſe having ſervitudes upon the property, the ſuperfice is only divided, without prejudice to the property. Commonties belonging to the king, or to royal boroughs, are not diviſible. Lands lying runrig, and belonging to different proprietors, may be divided, with the exception of borough and incorporated acres; the execution of which is committed to the judge-ordinary, or juſtices of the peace.

Lex Rhodia de jactu.

17. The throwing of goods overboard, for lightening a ſhip in a ſtorm, creates an obligation, whereby the owners of the ſhip and goods ſaved are obliged to contribute for the relief of thoſe whoſe goods were thrown overboard, that ſo all may bear a proportional loſs of the goods ejected for the common ſafety. In this contribution, the ſhip's proviſions ſuffer no eſtimation. A maſter who has cut his maſt, or parted with his anchor, to ſave the ſhip, is intitled to this relief; but if he has loſt them by the ſtorm, the loſs falls only on the ſhip and freight. If the ejection does not ſave the ſhip, the goods preſerved from ſhipwreck are not liable in contribution. Ejection may be lawfully made, if the maſter and a third part of the mariners judge

judge that meaſure neceſſary, though the owner of the goods ſhould oppoſe it: and the goods ejected are to be valued at the price that the goods of the ſame ſort which are ſaved ſhall be afterwards ſold for.

Acceſſory obligations.

18. There are certain obligations which cannot ſubſiſt by themſelves, but are acceſſions to, or make a part of, other obligations. Of this ſort are fidejuſſion, and the obligation to pay intereſt. Cautionry, or fidejuſſion, is that obligation by which one becomes engaged as ſecurity for another, that he ſhall either pay a ſum, or perform a deed.

Cautionry.

19. A cautioner for a ſum of money may be bound, either ſimply as cautioner for the principal debtor, or conjunctly and ſeverally for and with the principal debtor. The firſt has, by our cuſtoms, the *beneficium ordinis*, or of diſcuſſion; by which the creditor is obliged to diſcuſs the proper debtor, before he can inſiſt for payment againſt the cautioner. Where one is bound as full debtor with and for the principal, or conjunctly and ſeverally with him, the two obligants are bound equally in the ſame obligation, each *in ſolidum;* and conſequently, the cautioner, though he is but an acceſſory, may be ſued for the whole, without either diſcuſſing or even citing the principal debtor. Cautioners for performance of facts by another, or for the faithful diſcharge of an office, (*e. g.* for factors, tutors, &c.) cannot by the nature of their engagement be bound conjunctly and ſeverally with the principal obligant, becauſe the fact to which the principal is bound cannot poſſibly be performed by any other. In ſuch engagements, therefore, the failure muſt be previouſly conſtituted againſt the proper debtor, before action can be brought againſt the cautioner for making up the loſs of the party ſuffering.

20. The cautioner, who binds himſelf at the deſire of the principal debtor, has an *actio mandati* or of relief againſt him, for recovering the principal and intereſt paid by himſelf to the creditor, and for neceſſary damages; which action lies *de jure*, though the creditor ſhould not aſſign to him on payment. As relief againſt the debtor is implied in fidejuſſory obligations, the cautioner, where ſuch relief is cut off, is no longer bound: hence, the defence of preſcription frees the cautioner, as well as the principal debtor.

21. But, (1.) Where the cautionry is interpoſed to an obligation merely natural, the relief is reſtricted to the ſums that have really turned to the debtor's profit. (2.) A cautioner who pays without citing the debtor, loſes his relief, in ſo far as the debtor had a relevant defence againſt the debt, in whole or in part. Relief is not competent to the cautioner, till he either pays the debt, or is diſtreſſed for it; except, 1ſt, Where the debtor is expreſly bound to deliver to the cautioner his obligation cancelled, againſt a day certain, and has failed: or, 2dly, Where the debtor is *vergens ad inopiam;* in which caſe the cautioner may, by proper diligence, ſecure the debtor's funds for his own relief, even before payment or diſtreſs.

22. A right of relief is competent *de jure* to the cautioner who pays againſt his co-cautioners, unleſs where the cautioner appears to have renounced it. In conſequence of this implied relief, a creditor, if he ſhall grant a diſcharge to any one of the cautioners, muſt, in demanding the debt from the others, deduct that part as to which he has cut off their relief by that diſcharge. Where a cautioner in a bond ſigns a bond of corroboration, as a principal obligant with the proper debtor, and with them a new cautioner, the cautioner in the new bond is intitled to a total relief againſt the firſt cautioner, at whoſe deſire he is preſumed to be bound.

23. Cautionry is alſo judicial, as in a ſuſpenſion. It is ſufficient to looſe the cautioner, that when he became bound, the ſuſpender had good reaſon to ſuſpend, *e. g.* if the charger had at that period no title, or had not then performed his part, tho' theſe grounds of ſuſpenſion ſhould be afterwards taken off. In all maritime cauſes, where the parties are frequently foreigners, the defender muſt give caution *judicio ſiſti et judicatum ſolvi:* ſuch cautioner gets free by the death of the defender before ſentence; but he continues bound, tho' the cauſe ſhould be carried from the admiral to the court of ſeſſion. This ſort of caution is only to be exacted in cauſes ſtrictly maritime.

24. It happens frequently, that a creditor takes two or more obligants bound to him, all as principal debtors, without fidejuſſion. Where they are ſo bound, for the performance of facts that are in themſelves indiviſible, they are liable each for the whole, or *ſinguli in ſolidum*. But, if the obligation be for a ſum of money, they are only liable *pro rata;* unleſs, (1.) Where they are in expreſs words bound conjunctly and ſeverally; or, (2.) In the caſe of bills or promiſſory notes. One of ſeveral obligants of this ſort, who pays the whole debt, or fulfils the obligation, is intitled to a proportional relief againſt the reſt; in ſuch manner, that the loſs muſt, in every caſe, fall equally upon all the ſolvent obligants.

25. Obligations for ſums of money are frequently accompanied with an obligation for the annualrent or intereſt thereof. Intereſt (*uſuræ*) is the profit due by the debtor of a ſum of money to the creditor, for the uſe of it. The canon law conſidered the taking of intereſt as unlawful: the law of Moſes allowed it to be exacted from ſtrangers; and all the reformed nations of Europe have found it neceſſary, after the example of the Romans, to authoriſe it at certain rates fixed by ſtatute. Soon after the reformation, our legal intereſt was fixed at the rate of ten *per cent. per annum;* from which time, it has been gradually reduced, till at laſt, by 12 *Ann. ſtat.* 2. *c.* 16. it was brought to five *per cent.* and has continued at that rate ever ſince.

26. Intereſt is due, either by law, or by paction. It is due by law, either from the force of ſtatute, under which may be included acts of ſederunt, or from the nature of the tranſaction. Bills of exchange, and inland bills, though they ſhould not be proteſted, carry intereſt from their date in caſe of not acceptance; or from the day of their falling due, in caſe of acceptance and not payment. Where a bill is accepted, which bears no term of payment, or which is payable on demand, no intereſt is due till demand be made of the ſum, the legal voucher of which is a notorial proteſt. Intereſt is due by a debtor after denunciation, for all the ſums contained in the diligence, even for that part which is made up of intereſt. Sums paid by cautioners on diſtreſs, carry intereſt, not only as to the principal ſum in the obligation, but as to the intereſt paid by the cautioner. Factors named by the court of ſeſſion

are liable for intereſt, by a ſpecial act of ſederunt; ſee N° clxxii. 11.

27. It ariſes *ex lege*, or from the nature of the tranſaction, that a purchaſer in a ſale is liable in intereſt for the price of the lands bought from the term of his entry, though the price ſhould be arreſted in his hands, or though the ſeller ſhould not be able to deliver to him a ſufficient progreſs or title to the lands; for no purchaſer can in equity enjoy the fruits of the lands, while at the ſame time he retains the intereſt of the price: but lawful conſignation of the price made by a purchaſer, upon the refuſal of the perſons having right to receive it, ſtops the currency of intereſt. Where one intermeddles with money belonging to another which carries intereſt, he ought to reſtore it *cum omni obventione et cauſa*; and is therefore liable in the intereſt of it, as being truly an acceſſory of the ſubject itſelf. It is alſo from the nature of the tranſaction, that intereſt is in certain caſes allowed to merchants or others in name of damages.

28. Intereſt is due by expreſs paction, where there is a clauſe in a bond or obligation, by which money is made to carry intereſt. An obligation is not lawful, where it is agreed on, that the yearly intereſt of the ſum lent, if it ſhould not be paid punctually as it falls due, ſhall be accumulated into a principal ſum bearing intereſt; but an obligation may be lawfully granted, not only for the ſum truly lent, but for the intereſt to the day at which the obligation is made payable, whereby the intermediate intereſt is accumulated into a principal ſum from the term of payment. Intereſt may be alſo due by implied paction: Thus, where intereſt upon a debt is by a letter promiſed for time paſt, ſuch promiſe implies a paction for intereſt as long as the debt remains unpaid; thus alſo, the uſe of payment of intereſt preſumes a paction, and when intereſt is expreſſed for one term, it is preſumed to be bargained for till payment.

29. The ſubject-matter of all obligations conſiſts either of things, or of facts. Things exempted from commerce cannot be the ſubject of obligation. See N° clxii. 2. One cannot be obliged to the performance of a fact naturally impoſſible; nor of a fact in itſelf immoral, for that is alſo in the judgment of law impoſſible. Since impoſſible obligations are null, no penalty or damage can be incurred for non-performance: but it is otherwiſe, if the fact be in itſelf poſſible, though not in the debtor's power; in which caſe the rule obtains, *locum facti impræſtabilis ſubit damnum et intereſſe.*

30. An obligation, to which a condition is adjected, either naturally or morally impoſſible, is in the general caſe null; for the parties are preſumed not to have been ſerious. But ſuch obligation is valid, and the condition thereof held *pro non ſcripta*, (1.) In teſtaments; (2.) In obligations, to the performance of which the granter lies under a natural tie, as in bonds of proviſion to a child. Where an obligation is granted under a condition, lawful but unfavourable, *e. g.* that the creditor ſhall not marry without the conſent of certain friends, no more weight is given to the condition than the judge thinks reaſonable. A condition, which is in ſome degree in the power of the creditor himſelf, is held as fulfilled, if he has done all he could to fulfil it. Implement or performance cannot be demanded in a mutual contract, by that party who himſelf declines or cannot fulfil the counterpart.

Donation.

31. Donation, ſo long as the ſubject is not delivered to the donee, may be juſtly ranked among obligations; and it is that obligation which ariſes from the mere good-will and liberality of the granter. Donations imply no warrandice, but from the future facts of the donor. They are hardly revokable by our law for ingratitude, though it ſhould be of the groſſeſt kind; thoſe betwixt man and wife are revokable by the donor, even after the death of the donee; but remuneratory grants, not being truly donations, cannot be ſo revoked. That ſpecial ſort of donation, which is conſtituted verbally, is called a *promiſe*. The Roman law intitled all donors to the *beneficium competentiæ*, in virtue of which they might retain ſuch part of the donation as was neceſſary for their own ſubſiſtence. Our law allows this benefit to fathers, with reſpect to the proviſions granted to their children; and to grandfathers, which is a natural conſequence of childrens obligation to aliment their indigent parents; but to no collateral relation, not even to brothers.

32. Donations, made in contemplation of death, or *mortis cauſa*, are of the nature of legacies, and like them revokable: conſequently, not being effectual in the granter's life, they cannot compete with any of his creditors; not even with thoſe whoſe debts were contracted after the donation. They are underſtood to be given from a perſonal regard to the donee, and therefore fall by his predeceaſe. No deed, after delivery, is to be preſumed a *donatio mortis cauſa*; for revocation is excluded by delivery.

33. Deeds are not preſumed, *in dubio*, to be donations. Hence, a deed by a debtor to his creditor, if donation be not expreſſed, is preſumed to be granted in ſecurity or ſatisfaction of the debt; but bonds of proviſion to children are, from the preſumption of paternal affection, conſtrued to be intended as an additional patrimony: yet a tocher, given to a daughter in her marriage-contract, is preſumed to be in ſatisfaction of all former bonds and debts; becauſe marriage-contracts uſually contain the whole proviſions in favour of the bride. One who aliments a perſon that is come of age, without an expreſs paction for board, is preſumed to have entertained him as a friend, unleſs in the caſe of thoſe who earn their living by the entertainment or board of ſtrangers. But alimony given to minors, who cannot bargain for themſelves is not accounted a donation; except either where it is preſumed, from the near relation of the perſon alimenting, that it was given *ex pietate*; or where the minor had a father or curators, with whom a bargain might have been made.

SECT. XVI. *Of the Diſſolution or Extinction of Obligations.*

clxxvi.

Extinction of obligations; as, performance.

OBLIGATIONS may be diſſolved by performance or implement, conſent, compenſation, novation, and confuſion. (1.) By ſpecifical performance: thus, an obligation for a ſum of money is extinguiſhed by payment. The creditor is not obliged to accept of payment by parts, unleſs where the ſum is payable by different diviſions. If a debtor in two or more ſeparate bonds to the ſame creditor, made an indefinite payment, without aſcribing it, at the time, to any one of the obligations, the payment is applied, 1ſt, To intereſt, or to ſums not bearing intereſt. 2dly, To the ſums that are leaſt ſecured, if the debtor thereby incurs no rigorous penalty. But, 3dly, If this application be penal on the debtor, *e. g.* by ſuffering the legal of an adjudication to expire, the payment will be ſo applied to as to ſave the debtor from that forfeiture. Where one of the debts is ſecured by a cautioner, the other not, the application is to be ſo made, *cæteris paribus*, that both creditor and cautioner may have equal juſtice done to them.

2. Payment made by the debtor upon a miſtake in fact, to one whom he believed, upon probable grounds, to have the right of receiving payment; extinguiſhes the obligation. But payment made to one, to whom the law denies the power of receiving it, has not this effect; as if a debtor, ſeized by letters of caption, ſhould make payment to the meſſenger; for *ignorantia juris neminem excuſat.* In all debts, the debtor, if he be not interpelled, may ſafely pay before the term, except in tack-duties or feu-duties; the payment whereof, before the terms at which they are made payable, is conſtrued to be colluſive, in a queſtion with a creditor of the landlord or ſuperior. Payment is *in dubio* preſumed, by the voucher of the debt being in the hands of the debtor; *chirographum, apud debitorem repertum, præſumitur ſolutum.*

By conſent.

3. Obligations are extinguiſhable by the conſent of the creditor, who, without full implement, or even any implement, may renounce the right conſtituted in his own favour. Though a diſcharge or acquittance, granted by one whom the debtor *bona fide* took for the creditor, but who was not, extinguiſhes the obligation, if the ſatisfaction made by the debtor was real; yet where it is imaginary, the diſcharge will not ſcreen him from paying to the true creditor the debt that he had made no prior ſatisfaction for. In all debts which are conſtituted by writing, the extinction, whether it be by ſpecifical performance, or bare conſent, muſt be proved, either by the oath of the creditor, or by a diſcharge in writing; and the ſame ſolemnities which law requires in the obligation, are neceſſary in the diſcharge: but, where payment is made, not by the debtor himſelf, but by the creditor's intromiſſion with the rents of the debtor's eſtate, or by delivery to him of goods in name of the debtor, ſuch delivery or intromiſſion, being *facti*, may be proved by witneſſes, though the debt ſhould have been not only conſtituted by writing, but made real on the debtor's lands by adjudication.

4. A diſcharge, though it ſhould be general, of all that the granter can demand, extends not to debts of an uncommon kind, which are not preſumed to have been under the granter's eye. This doctrine applies alſo to general aſſignations. In annual payments, as of rents, feu-duties, intereſt, &c. three conſecutive diſcharges by the creditor, of the yearly or termly duties, preſume the payment of all preceedings. Two diſcharges by the anceſtor, and the third by the heir, do not infer this preſumption, if the heir was ignorant of the anceſtor's diſcharges. And diſcharges by an adminiſtrator, as a factor, tutor, &c. preſume only the payment of all preceding duties incurred during his adminiſtration. This preſumption ariſes from repeating the diſcharges thrice ſucceſſively; and ſo does not hold in the caſe of two diſcharges, though they ſhould include the duties of three or more terms.

By co ſation.

5. Where the ſame perſon is both creditor and debtor to another, the mutual obligations, if they are for equal ſums, are extinguiſhed by compenſation; if for unequal, ſtill the leſſer obligation is extinguiſhed, and the greater diminiſhed, as far as the concourſe of debt and credit goes. To found compenſation, (1.) Each of the parties muſt be debtor and creditor at the ſame time. (2.) Each of them muſt be debtor and creditor in his own right. (3.) The mutual debts muſt be of the ſame quality: hence, a ſum of money cannot be compenſated with a quantity of corns; becauſe, till the prices are fixed, at which the corns are to be converted into money, the two debts are incommenſurable. Laſtly, compenſation cannot be admitted, where the mutual debts are not clearly aſcertained, either by a written obligation, the ſentence of a judge, or the oath of the party. Where this requires but a ſhort diſcuſſion, ſentence for the purſuer is delayed for ſome time, *ex æquitate*, that the defender may make good his ground of compenſation. Where a debt for fungibles is aſcertained in money, by the ſentence of a judge, the compenſation can have no effect farther back than the liquidation; becauſe, before ſentence, the debts were incommenſurable: but, where a debt for a ſum of money is, in the courſe of a ſuit, conſtituted by the oath of the debtor, the compenſation, after it is admitted by the judge, operates, *retro*, in ſo far as concerns the currency of intereſt, to the time that, by the parties acknowledgment, the debt became due: for, in this caſe, the debtor's oath is not what creates the debt, or makes it liquid; it only declares that ſuch a liquid ſum was truly due before. Compenſation cannot be offered after decree, either by way of ſuſpenſion or reduction; unleſs it has been formerly pleaded, and unjuſtly repelled. Decrees in abſence are excepted.

By r tion.

6. The right of retention, which bears a near reſemblance to compenſation, is chiefly competent, where the mutual debts, not being liquid, cannot be the ground of compenſation; and it is ſometimes admitted *ex æquitate*, in liquid debts, where compenſation is excluded by ſtatute: thus, though compenſation cannot be pleaded after decree, either againſt a creditor or his aſſigney; yet, if the original creditor ſhould become bankrupt, the debtor, even after decree, may retain againſt the aſſigney, till he gives ſecurity for ſatisfying the debtor's claim againſt the cedent. This right is frequently founded in the expence deburſed or work employed on the ſubject retained, and ſo ariſes from the mutual obligations incumbent on the parties. But retention may be ſuſtained, though the debt due to him who claims it does not ariſe from the nature of the obligation by which he is debtor: thus, a factor on a land-eſtate may retain the ſums levied by him in conſequence of his factory, not only till he be paid of the diſburſements made on occaſion of ſuch eſtate, but alſo till he be diſcharged from the ſeparate engagements he may have entered into on his conſtituent's account.

By

7. Obligations are diſſolved by novation, whereby one obligation is changed into another, without changing either the debtor or creditor. The firſt obligation being thereby extinguiſhed, the cautioners in it are looſed, and all its conſequences diſcharged; ſo that the debtor remains bound only by the laſt. As a creditor to whom a right is once conſtituted, ought not to loſe

it by implication, novation is not eaſily preſumed, and the new obligation is conſtrued to be merely corroborative of the old; but, where the ſecond obligation expreſsly bears to be *in ſatisfaction* of the firſt, theſe words muſt neceſſarily be explained into novation. Where the creditor accepts of a new debtor, in place of the former who is diſcharged, this method of extinction is called *delegation*.

8. Obligations are extinguiſhed *confuſione*, where the debt and credit meet in the ſame perſon, either by ſucceſſion or ſingular title, *e. g.* when the debtor ſucceeds to the creditor, or the creditor to the debtor, or a ſtranger to both; for one cannot be debtor to himſelf. If the ſucceſſion, from which the *confuſio* ariſes, happens afterwards to be divided, ſo as the debtor and creditor come again to be different perſons; the *confuſio* does not produce an extinction, but only a temporary ſuſpenſion, of the debt.

Sect. XVII. *Of Aſſignations.*

Heritable rights, when they are cloathed with infeftment, are tranſmitted by diſpoſition, which is a writing containing procuratory of reſignation and precept of ſeiſin; but thoſe which either require no ſeiſin, or on which ſeiſin has not actually followed, are tranſmiſſible by ſimple aſſignation. He who grants the aſſignation, is called the cedent; and he who receives it, the aſſigney or ceſſionary: if the aſſigney conveys his right to a third perſon, it is called a tranſlation; and if he aſſigns it back to the cedent, a retroceſſion. Certain rights are, from the uſes to which they are deſtined, incapable of tranſmiſſion, as alimentary rights: others cannot be aſſigned by the perſon inveſted in them, without ſpecial powers given to him; as tacks, reverſions: the tranſmiſſion of a third ſort, is not preſumed to be intended, without an expreſs conveyance; as of paraphernal goods, which are ſo proper to the wife, that a general aſſignation, by her to her huſband, of all that did or ſhould belong to her at her deceaſe, does not comprehend them. A liferent-right is, by its nature, incapable of a proper tranſmiſſion; but its profits may be aſſigned, while it ſubſiſts.

2. Aſſignations muſt not only be delivered to the aſſigney, but intimated by him to the debtor. Intimations are conſidered as ſo neceſſary for completing the conveyance, that in a competition between two aſſignations, the laſt, if firſt intimated, is preferred.

3. Though, regularly, intimation to the debtor is made by an inſtrument, taken in the hands of a notary, by the aſſigney or his procurator; yet the law admits equipollencies, where the notice of the aſſignment given to the debtor is equally ſtrong. Thus, a charge upon letters of horning at the aſſigney's inſtance, or a ſuit brought by him againſt the debtor, ſupplies the want of intimation; theſe being judicial acts, which expoſe the conveyance to the eyes both of the judge and of the debtor; or the debtor's promiſe of payment by writing to the aſſigney, becauſe that is in effect a corroborating of the original debt. The aſſigney's poſſeſſion of the right, by entering into payment of the rents or intereſt, is alſo equal to an intimation; for it imports, not only notice to the debtor, but his actual compliance: but the debtor's private knowledge of the aſſignment is not ſuſtained as intimation.

4. Certain conveyances need no intimation. (1.) Indorſations of bills of exchange; for theſe are not to be fettered with forms, introduced by the laws of particular ſtates. (2.) Bank-notes are fully conveyed by the bare delivery of them; for as they are payable to the bearer, their property muſt paſs with their poſſeſſion. (3.) Adjudication, which is a judicial conveyance; and marriage, which is a legal one; carry the full right of the ſubjects thereby conveyed, without intimation: nevertheleſs, as there is nothing in theſe conveyances which can of themſelves put the debtor *in mala fide*, he is therefore *in tuto* to pay to the wife, or to the original creditor in the debt adjudged, till the marriage or adjudication be notified to him. Aſſignments of moveable ſubjects, though they be intimated, if they are made *retenta poſſeſſione*, (the cedent retaining the poſſeſſion), cannot hurt the cedent's creditors; for ſuch rights are preſumed, in all queſtions with creditors, to be colluſive, and granted in truſt for the cedent himſelf.

Effects of aſſignation.

5. An aſſignation carries to the aſſigney the whole right of the ſubject conveyed, as it was in the cedent; and conſequently, he may uſe diligence, either in his cedent's name while he is alive, or in his own.

6. After an aſſignation is intimated, the debtor cannot prove a payment, or compenſation, by the oath of the cedent, who has no longer any intereſt in the debt; unleſs the matter has been made litigious by an action commenced prior to the intimation: but the debtor may refer to the oath of the aſſigney, who is in the right of the debt, that the aſſignment was gratuitous, or in truſt for the cedent; either of which being proved, the oath of the cedent will affect the aſſigney. If the aſſignation be in part onerous, and in part gratuitous, the cedent's oath is good againſt the aſſigney, only in ſo far as his right is gratuitous. All defences competent againſt the original creditor in a moveable debt, which can be proved otherwiſe than by his oath, continue relevant againſt even an onerous aſſigney; whoſe right can be no better than that of his author, and muſt therefore remain affected with all the burdens which attended it in the author's perſon.

Sect. XVIII. *Of Arreſtments and Poindings.*

clxxviii.

Arreſtment

The diligences, whereby a creditor may affect his debtor's moveable ſubjects, are arreſtment and poinding. By arreſtment is ſometimes meant the ſecuring of a criminal's perſon till trial; but as it is underſtood in the rubric of this title, it is the order of a judge, by which he who is debtor in a moveable obligation to the arreſter's debtor, is prohibited to make payment or delivery till the debt due to the arreſter be paid or ſecured. The arreſter's debtor is uſually called the common debtor; becauſe, where there are two or more competing creditors, he is debtor to all of them. The perſon in whoſe hands the diligence is uſed, is ſtyled the arreſtee.

2. Arreſtment may be laid on by the authority either of the ſupreme court, or of an inferior judge. In the firſt caſe, it proceeds either upon ſpecial letters of arreſtment, or on a warrant contained in letters of horning; and it muſt be executed by a meſſenger. The warrants granted by inferior judges are called precepts of arreſtment, and they are executed by the officer proper to the court. Where the debtor to the common debtor is a pupil, arreſtment is properly uſed in the

hands of the tutor, as the pupil's adminiſtrator: this doctrine may perhaps extend to other general adminiſtrators, as commiſſioner, &c. But arreſtment, uſed in the hands of a factor or ſteward, cannot found an action of forthcoming without calling the conſtituent. Where the debtor to the common debtor is a corporation, arreſtment muſt be uſed in the hands of the directors or treaſurer, who repreſent the whole body. Arreſtment, when it is uſed in the hands of the debtor himſelf, is inept; for that diligence is intended only as a reſtraint upon third parties.

3. All debts, in which one is perſonally bound, though they ſhould be heritably ſecured, are grounds upon which the creditor may arreſt the moveable eſtate belonging to his debtor. Arreſtment may proceed on a debt, the term of payment whereof is not yet come, in caſe the debtor be *vergens ad inopiam*. If a debt be not yet conſtituted by decree or regiſtration, the creditor may raiſe and execute a ſummons againſt his debtor for payment, on which pending action arreſtment may be uſed, in the ſame manner as inhibition, which is called *arreſtment upon a dependence*. If one's ground of credit be for the performance of a fact, or if his depending proceſs be merely declaratory, without a concluſion of payment or delivery, ſuch claims are not admitted to be ſufficient grounds for arreſtment.

What debts arreſtable.

4. Moveable debts are the proper ſubject of arreſtment; under which are comprehended conditional debts, and even depending claims. For leſſening the expence of diligence to creditors, all bonds which have not been made properly heritable by ſeiſin are declared arreſtable: but this does not extend to adjudications, wadſets, or other perſonal rights of lands, which are not properly debts. Certain moveable debts are not arreſtable. (1.) Debts due by bill, which paſs from hand to hand as bags of money. (2.) Future debts; for though inhibition extends to *adquirenda* as well as *adquiſita*, yet arreſtment is limited, by its warrant, to the debt due at the time of ſerving it againſt the arreſtee. Hence, an arreſtment of rents or intereſt carries only thoſe that have already either fallen due, or at leaſt become current. Claims, depending on the iſſue of a ſuit, are not conſidered as future debts; for the ſentence, when pronounced, has a retroſpect to the period at which the claim was firſt founded. The like doctrine holds in conditional debts. (3.) Alimentary debts are not arreſtable; for theſe are granted on perſonal conſiderations, and ſo are not communicable to creditors: but the paſt intereſt due upon ſuch debt may be arreſted by the perſon who has furniſhed the alimony. One cannot ſecure his own effects to himſelf for his maintenance, ſo as they ſhall not be affectable by his creditors. Salaries annexed to offices granted by the king, and particularly thoſe granted to the judges of the Seſſion, and the fees of ſervants, are conſidered as alimentary funds; but the ſurplus fee, over and above what is neceſſary for the ſervant's perſonal uſes, may be arreſted.

Effect of breach of arreſtment.

5. If, in contempt of the arreſtment, the arreſtee ſhall make payment of the ſum, or deliver the goods arreſted, to the common debtor, he is not only liable criminally for breach of arreſtment, but he muſt pay the debt again to the arreſter. Arreſtment is not merely prohibitory, as inhibitions are; but is a ſtep of diligence which founds the uſer in a ſubſequent action, whereby the property of the ſubject arreſted may be adjudged to him. It therefore does not, by our latter practice, fall by the death of the arreſtee; but continues to ſubſiſt, as a foundation for an action of forthcoming againſt his heir, while the ſubject arreſted remains *in medio*. Far leſs is arreſtment loſt, either by the death of the arreſter, or of the common debtor.

Looſing arreſtm

6. Where arreſtment proceeds on a depending action, it may be looſed by the common debtor's giving ſecurity to the arreſter for his debt in the event it ſhall be found due. Arreſtment founded on decrees, or on regiſtred obligations, which in the judgment of law are decrees, cannot be looſed but upon payment or conſignation; except, (1.) Where the term of payment of the debt is not yet come, or the condition has not yet exiſted. (2.) Where the arreſtment has proceeded on a regiſtered contract, in which the debts or mutual obligations are not liquid. (3.) Where the decree is ſuſpended, or turned into a libel; for, till the ſuſpenſion be diſcuſſed, or the pending action concluded, it cannot be known whether any debt be truly due. A looſing takes off the *nexus* which had been laid on the ſubject arreſted; ſo that the arreſtee may thereafter pay ſafely to his creditor, and the cautioner is ſubſtituted in place of the arreſtment, for the arreſter's ſecurity: yet the arreſter may, while the ſubject continues with the arreſtee, purſue him in a forthcoming, notwithſtanding the looſing.

Forthc ing on reſtme

7. Arreſtment is only an inchoated or begun diligence; to perfect it, there muſt be an action brought by the arreſter againſt the arreſtee, to make the debt or ſubject arreſted forthcoming. In this action, the common debtor muſt be called for his intereſt, that he may have an opportunity of excepting to the lawfulneſs or extent of the debt on which the diligence proceeded. Before a forthcoming can be purſued, the debt due by the common debtor to the arreſter muſt be liquidated; for the arreſter can be no further intitled to the ſubject arreſted than to the extent of the debt due to him by the common debtor. Where the ſubject arreſted is a ſum of money, it is, by the decree of forthcoming, directed to be paid to the purſuer towards ſatisfying his debt; where goods are arreſted, the judge ordains them to be expoſed to ſale, and the price to be delivered to the purſuer. So that, in either caſe, decrees of forthcoming are judicial aſſignations to the arreſter of the ſubject arreſted.

Prefe in arr ments

8. In all competitions, regard is had to the dates, not of the grounds of debt, but of the diligences proceeding upon them. In the competition of arreſtments, the preference is governed by their dates, according to the priority even of hours, where it appears with any certainty which is the firſt. But, as arreſtment is but a begun diligence, therefore if a prior arreſter ſhall neglect to inſiſt in an action of forthcoming for ſuch a time as may be reaſonably conſtrued into a deſertion of his begun diligence, he loſes his preference. But, as dereliction of diligence is not eaſily preſumed, the diſtance of above two years, between the firſt arreſtment and the decree of forthcoming, was found not to make ſuch a *mora* as to intitle the poſterior arreſter to a preference. This rule of preference, according to the dates of the ſeveral arreſtments, holds, by our preſent practice, whether they have proceeded on a decree, or

on a dependence; on debts not yet payable, or on debts already payable; provided the pendency ſhall have been cloſed, or the debt have become payable, before the iſſue of the competition.

9. In the competition of arreſtments with aſſignations, an aſſignation by the common debtor, intimated before arreſtment, is preferable to the arreſtment. If the aſſignation is granted before arreſtment, but not intimated till after it, the arreſter is preferred.

10. **Poinding** is that diligence affecting moveable ſubjects, by which their property is carried directly to the creditor. No poinding can proceed, till a charge be given to the debtor to pay or perform, and the days thereof be expired, except poindings againſt vaſſals for their feu-duties, and poindings againſt tenants for rent, proceeding upon the landlord's own decree; in which the ancient cuſtom of poinding without a previous charge continues. A debtor's goods may be poinded by one creditor, though they have been arreſted before by another; for arreſtment being but an imperfect diligence, leaves the right of the ſubject ſtill in the debtor, and ſo cannot hinder any creditor from uſing a more perfect diligence, which has the effect of carrying the property directly to himſelf.

11. No cattle pertaining to the plough, nor inſtruments of tillage, can be poinded in the time of labouring or tilling the ground, unleſs where the debtor has no other goods. By labouring-time is underſtood, that time, in which that tenant, whoſe goods are to be poinded, is ploughing, though he ſhould have been earlier or later than his neighbours; but ſummer fallowing does not fall under this rule.

12. In the execution of poinding, the debtor's goods muſt be appriſed, firſt on the ground of the lands where they are laid hold on, and a ſecond time at the market-croſs of the juriſdiction, by the ſtated appriſers thereof; or, if there be none, by perſons named by the meſſenger or other officer employed in the diligence. Next, the meſſenger muſt, after public intimation by three oyeſſes, declare the value of the goods according to the ſecond appriſement, and require the debtor to make payment of the debt, including intereſt and expences. If payment ſhall be offered to the creditor, or in his abſence to his lawful attorney; or if, in caſe of refuſal by them, conſignation of the debt ſhall be made in the hands of the judge-ordinary or his clerk, the goods muſt be left with the debtor; if not, the meſſenger ought to adjudge and deliver them over, at the appriſed value, to the uſer of the diligence towards his payment: and the debtor is intitled to a copy of the warrant and executions, as a voucher that the debt is diſcharged in whole or in part by the goods poinded.

13. Miniſters may poind for their ſtipends, upon one appriſement on the ground of the lands; and landlords were always in uſe to poind ſo, for their rents. Appriſement of the goods at the market-croſs of the next royal borough, or even of the next head-borough of ſtewartry or regality, though theſe juriſdictions be aboliſhed, is declared as ſufficient as if they were carried to the head-borough of the ſhire. Poinding, whether it be conſidered as a ſentence, or as the execution of a ſentence, muſt be proceeded in between ſun-riſing and ſun-ſetting; or at leaſt it muſt be finiſhed before the going off of day-light. The powers of the officer employed in the execution of poindings, are not clearly defined by cuſtom, in the caſe of a third party claiming the property of the goods to be poinded. This is certain, that he may take the oath of the claimant, upon the verity of his claim; and if from thence it ſhall appear that the claimant's title is colluſive, he ought to proceed in the diligence; but, if there remains the leaſt doubt, his ſafeſt courſe is to deliver the goods to the claimant, and to expreſs in his execution the reaſons why poinding did not proceed.

Powers of meſſengers in poinding.

14. Any perſon who ſtops a poinding *via facti*, on groundleſs pretences, is liable, both criminally, in the pains of deforcement, (ſee N° clxxxvi. 15.) and civilly, in the value of the goods which might have been poinded by the creditor.

15. By 12th Geo. III. *c.* 72. the creditor upon whoſe diligence a debtor is rendered bankrupt, or the debtor himſelf, if he finds his circumſtances failing, may apply to the court of ſeſſion for a ſequeſtration of his perſonal eſtate for behoof of all his creditors; and have it veſted either in a factor named by the court, or in a factor or truſtees named by the creditors. All arreſtments or poindings of the debtor's effects executed within 30 days prior to the ſequeſtration are ineffectual. This act is temporary.

Sect. XIX. *Of Preſcriptions.* clxxix.

Preſcription.

Prescription, which is a method, both of eſtabliſhing and of extinguiſhing property, is either poſitive or negative. Poſitive preſcription is generally defined, as the Roman *uſucapio*, The acquiſition of property (it ſhould rather be, when applied to our law, the ſecuring it againſt all further challenge) by the poſſeſſor's continuing his poſſeſſion for the time which law has declared ſufficient for that purpoſe: negative, is the loſs or amiſſion of a right, by neglecting to follow it forth, or uſe it, during the whole time limited by law. The doctrine of preſcription, which is, by ſome writers, condemned as contrary to juſtice, has been introduced, that the claims of negligent creditors might not ſubſiſt for ever, that property might be at laſt fixed, and forgeries diſcouraged, which the difficulty of detecting muſt have made exceeding frequent, if no length of time had limited the legal effect of writings.

Poſitive.

2. Poſitive preſcription was firſt introduced into our law by 1617, *c.* 12. which enacts, that whoever ſhall have poſſeſſed his lands, annualrents, or other heritages, peaceably, in virtue of infeftments, for 40 years continually after their dates, ſhall not thereafter be diſquieted in his right by any perſon pretending a better title. Under *heritages* are comprehended every right that is *fundo annexum*, and capable of continual poſſeſſion. Continued poſſeſſion, if proved as far back as the memory of man, preſumes poſſeſſion upwards to the date of the infeftment. The whole courſe of poſſeſſion muſt by the act be founded on ſeiſins; and conſequently no part thereof on the bare right of apparency: but 40 years poſſeſſion, without ſeiſin, is ſufficient in the preſcription of ſuch heritable rights as do not require ſeiſin. The poſſeſſion muſt alſo be without any *lawful* interruption, *i. e.* it muſt neither be interrupted *via facti*, nor *via juris*. The preſcription of ſubjects not expreſſed in the infeftment as part and pertinent of another

other ſubject ſpecially expreſſed, has been explained, N° clxvii. 6.

3. The act requires, that the poſſeſſor produce, as his title of preſcription, a charter of the lands, preceding the 40 years poſſeſſion, with the ſeiſin following on it: and where there is no charter extant, ſeiſins, one or more, ſtanding together for 40 years, and proceeding either on retours or precepts of *clare conſtat*. This has given riſe to a reaſonable diſtinction obſerved in practice, between the preſcription of a ſingular ſucceſſor, and of an heir. Singular ſucceſſors muſt produce for their title of preſcription, not only a ſeiſin, but its warrant, as a charter, diſpoſition, *&c.* either in their own perſon, or in that of their author: but the production, by an heir, of ſeiſins, one or more, ſtanding together for 40 years, and proceeding on retours or precepts of *clare conſtat*, is ſufficient. The heir is not obliged to produce the retours or precepts on which his ſeiſins proceed, nor is the ſingular ſucceſſor obliged to produce the ground of his charter; ſo that if the title of preſcription produced be a fair deed, and a ſufficient title of property, the poſſeſſor is ſecure by the act, which admits no ground of challenge, but falſehood. A ſpecial ſtatute, for eſtabliſhing the poſitive preſcription in moveable rights, was not neceſſary; for, ſince a title in writing is not requiſite for the acquiring of theſe, the negative preſcription, by which all right of action for recovering their property is cut off, effectually ſecures the poſſeſſor.

Negative preſcription.

4. The negative preſcription of obligations, by the lapſe of 40 years, was introduced into our law long before the poſitive, by (1469, *c.* 29.—1474, *c.* 55.) This preſcription is now amplified by the foreſaid act (1617), which has extended it to all actions competent upon heritable bonds, reverſions, and others whatſoever; unleſs where the reverſions are either incorporated in the body of the wadſet-right, or regiſtered in the regiſter of reverſions: And reverſions ſo incorporated, or regiſtered, are not only exempted from the negative preſcription, but they are an effectual bar againſt any perſon from pleading the poſitive.

A ſhorter negative preſcription.

5. A ſhorter negative preſcription is introduced by ſtatute, in certain rights and debts. Actions of ſpuilzie, ejection, *and others of that nature*, muſt be purſued within three years after the commiſſion of the fact on which the action is founded. As in ſpuilzies and ejections, the purſuer was intitled, *in odium* of violence, to a proof by his own oath *in litem*, and to the violent profits againſt the defender, the ſtatute meant only to limit theſe ſpecial privileges by a three years preſcription, without cutting off the right of action, where the claim is reſtricted to ſimple reſtitution. Under the general words, *and others of that nature*, are comprehended all actions where the purſuer is admitted to prove his libel by his own oath *in litem*.

Preſcription of ſervants fees, &c.

6. Servants fees, houſe-rents, mens ordinaries, (*i. e.* money due for board,) and merchants accounts, fall under the triennial preſcription, (by 1579, *c.* 83.) There is alſo a general clauſe ſubjoined to this ſtatute, of *other the like debts*, which includes alimentary debts, wages due to workmen, and accounts due to writers, agents, or procurators. Theſe debts may, by this act, be proved after the three years, either by the writing or oath of the debtor; ſo that they preſcribe only as to the mean of proof by witneſſes; but after the three years, it behoves the creditor to refer to the debtor's oath, not only the conſtitution, but the ſubſiſtence of the debt. In the preſcription of houſe-rents, ſervants fees, and alimony, each term's rent, fee, or alimony, runs a ſeparate courſe of preſcription; ſo that in an action for theſe, the claim will be reſtricted to the arrears incurred within the three years immediately before the citation: But, in accounts, preſcription does not begin till the laſt article; for a ſingle article cannot be called an account. Actions of removing muſt alſo be purſued within three years after the warning. Reductions of erroneous retours, preſcribe, if not purſued within 20 years

7. Miniſters ſtipends and multures preſcribe in five years after they are due; and arrears of rent, five years after the tenant's removing from the lands. As the preſcription of mails and duties was introduced in favour of poor tenants, that they might not ſuffer by neglecting to preſerve their diſcharges, a proprietor of lands ſubject to a liferent, who had obtained a leaſe of all the liferented lands from the liferenter, is not intitled to plead it, nor a tackſman of one's whole eſtate, who had by the leaſe a power of removing tenants. Bargains concerning moveables, or ſums of money which are proveable by witneſſes preſcribe, in five years after the bargain. Under theſe are included ſales, locations, and all other conſenſual contracts, to the conſtitution of which writing is not neceſſary. But all the above mentioned debts, may, after the five years, be proved, either by the oath or the writing of the debtor; of which above, (par. 6.) A quinquennial preſcription is eſtabliſhed in arreſtments, whether on decrees or depending actions: The firſt preſcribe in five years after uſing the arreſtment, and the laſt in five years after ſentence is pronounced on the depending action.

8. No perſon binding for or with another, either as cautioner or co-principal, in a bond or contract for a ſum of money, continues bound after ſeven years from the date of the bond, provided he has either a clauſe of relief in the bond, or a ſeparate bond of relief, intimated to the creditor, at his receiving the bond. But all diligence uſed within the ſeven years againſt the cautioner, ſhall ſtand good. As this is a public law, intended to prevent the bad conſequences of raſh engagements, its benefit cannot, before the lapſe of the ſeven years, be renounced by the cautioner. As it is correctory, it is ſtrictly interpreted: Thus, bonds bearing a mutual clauſe of relief *pro rata*, fall not under it; nor bonds of corroboration, nor obligations, where the condition is not purified, or the term of payment not come within the ſeven years; becauſe no diligence can be uſed on theſe. The ſtatute excludes all cautionries for the faithful diſcharge of offices; theſe not being obligations in a bond or contract for ſums of money. And practice has denied the benefit of it to all judicial cautioners, as cautioners in a ſuſpenſion. Actions of count and reckoning, competent either to minors againſt their tutors or curators, or *vice verſa*, preſcribe in ten years after the majority or death of the minor.

9. Holograph bonds, miſſive letters, and books of account, not atteſted by witneſſes, preſcribe in 20 years, unleſs the creditor ſhall thereafter prove the verity of the ſubſcription by the debtor's oath. It is therefore ſufficient to ſave from the effect of this preſcription,

that the conſtitution of the debt be proved by the party's oath, after the 20 years; whereas in ſtipends, merchants accounts, &c. not only the conſtitution, but the ſubſiſtence of the debt, muſt be proved by writing or the debtor's oath, after the term of preſcription. Some lawyers extend this preſcription of holograph writings to all obligations for ſums not exceeding L. 100 *Scots*, which are not atteſted by witneſſes; becauſe though theſe are in practice ſuſtained, yet they ought not to have the ſame duration with deeds atteſted by witneſſes. Though in the ſhort preſcriptions of debts, the right of action is for ever loſt, if not exerciſed within the time limited; yet where action was brought on any of thoſe debts, before the preſcription was run, it ſubſiſted, like any other right, for 40 years. As this defeated the purpoſe of the acts eſtabliſhing theſe preſcriptions, all proceſſes upon warnings, ſpuilzes, ejections, or arreſtments, or for payment of the debts contained in act 1669, *c.* 9. are by the ſaid act, joined with 1685, *c.* 14. declared to preſcribe in five years, if not wakened within that time; ſee N° clxxxiii. 26.

10. Certain obligations are loſt by the lapſe of leſs than 40 years, without the aid of ſtatute, where the nature of the obligation, and the circumſtances of parties, juſtify it: thus, bills which are not intended for laſting ſecurities, produce no action, where the creditor has been long ſilent, unleſs the ſubſiſtence of the debt be proved by the debtor's oath; but the preciſe time is not fixed by practice. Thus alſo, a receipt for bills granted by a writer to his employer, not inſiſted upon for 23 years, was found not productive of an action. The preſcriptions of the reſtitution of minors, of the benefit of inventory, &c. are explained in their proper places.

11. In the poſitive preſcription, as eſtabliſhed by the act 1617, the continued poſſeſſion for 40 years, proceeding upon a title of property not chargeable with falſehood, ſecures the poſſeſſor againſt all other grounds of challenge, and ſo preſumes *bona fides, præſumptione juris et de jure*. In the long negative preſcription, *bona fides* in the debtor is not required: the creditor's neglecting to inſiſt for ſo long a time, is conſtrued as an abandoning of his debt, and ſo is equivalent to a diſcharge. Hence, though the ſubſiſtence of the debt ſhould be referred to the debtor's own oath, after the 40 years, he is not liable.

12. Preſcription runs *de momento in momentum*: the whole time defined by law muſt be completed, before a right can be either acquired or loſt by it; ſo that interruption, made on the laſt day of the fortieth year, breaks its courſe. The poſitive preſcription runs againſt the ſovereign himſelf, even as to his annexed property, but it is generally thought he cannot ſuffer by the negative: he is ſecured againſt the negligence of his officers, in the management of proceſſes, by expreſs ſtatute, 1600, *c.* 14. The negative, as well as the poſitive preſcription, runs againſt the church, though churchmen have but a temporary intereſt in their benefices. But becauſe the rights of beneficiaries to their ſtipends are liable to accidents, through the frequent change of incumbents, 13 years poſſeſſion does, by a rule of the Roman chancery which we have adopted, found a preſumptive title in the beneficiary: but this is not properly preſcription; for if by titles recovered, perhaps, out of the incumbent's own hands, it ſhall appear that he has poſſeſſed tithes, or other ſubjects, to a greater extent than he ought, his poſſeſſion will be reſtricted accordingly. This right muſt not be confounded with that eſtabliſhed in favour of churchmen, which is confined to church lands and rents, and conſtitutes a proper preſcription upon a poſſeſſion of 30 years.

13. The clauſe in the act 1617, ſaving minors from preſcription, is extended to the poſitive, as well as to the negative preſcription; but the exception of minority is not admitted in the caſe of hoſpitals for children, where there is a continual ſucceſſion of minors, that being a *caſus inſolitus*. Minors are expreſsly excepted in ſeveral of the ſhort preſcriptions, as 1579, *c.* 18.——1669, *c.* 9.; but where law leaves them in the common caſe, they muſt be ſubject to the common rules.

14. Preſcription does not run *contra non valentem agere*, againſt one who is barred, by ſome legal incapacity, from purſuing; for in ſuch caſe, neither negligence nor dereliction can be imputed to him. This rule is, by a favourable interpretation, extended to wives who *ex reverentia maritali* forbear to purſue actions competent to them againſt their huſbands. On the ſame ground, preſcription runs only from the time that the debt or right could be ſued upon. Thus, inhibition preſcribes only from the publiſhing of the deed granted to the inhibiter's prejudice; and in the preſcription of removings, the years are computed only from the term at which the defender is warned to remove. Neither can preſcription run againſt perſons who are already in poſſeſſion, and ſo can gain nothing by a purſuit. Thus, where a perſon, who has two adjudications affecting the ſame lands, is in poſſeſſion upon one of them, preſcription cannot run againſt the other during ſuch poſſeſſion.

Certain rights incapable of preſcription.

15. Certain rights are incapable of preſcription: (1.) Things that law has exempted from commerce. (2.) *Res meræ facultatis*, e. g. a faculty to charge a ſubject with debts, to revoke, &c. cannot be loſt by preſcription; for faculties may, by their nature, be exerciſed at any time: hence, a proprietor's right of uſing any act of property on his own grounds, cannot be loſt by the greateſt length of time. (3.) Exceptions competent to a perſon for eliding an action, cannot preſcribe, unleſs the exception is founded on a right productive of an action, *e. g.* compenſation; ſuch right muſt be inſiſted on, within the years of preſcription. (4.) Obligations of yearly penſions or payments, tho' no demand has been made on them for forty years, do not ſuffer a total preſcription, but ſtill ſubſiſt as to the arrears fallen due within that period; becauſe preſcription cannot run againſt an obligation till it be payable, and each year's penſion or payment is conſidered as a ſeparate debt.

16. No right can be loſt *non utendo* by one, unleſs the effect of that preſcription be to eſtabliſh it in another. Hence the rule ariſes, *juri ſanguinis nunquam præſcribitur*. Hence alſo, a proprietor of land cannot loſe his property by the negative preſcription, unleſs he who objects it can himſelf plead the poſitive. On the ſame ground, a ſuperior's right of feu-duties cannot be loſt *non utendo*; becauſe being inherent in the ſuperiority, it is truly a right of lands that cannot ſuffer the negative preſcription, except in favour of one who can

plead the poſitive ; which the vaſſal cannot do, being deſtitute of a title. This rule applies alſo to parſonage tithes, which are an inherent burden upon all lands not ſpecially exempted ; and from which therefore the perſon liable cannot preſcribe an immunity, by bare non-payment : but ſuch vicarage tithes as are only due where they are eſtabliſhed by uſage, may be loſt by preſcription. In all theſe caſes, though the radical right cannot ſuffer the negative preſcription, the bygone duties, not demanded within the forty years, are loſt to the proprietor, ſuperior, or titular.

Interruption of preſcription.

17. Preſcription may be interrupted by any deed, whereby the proprietor or creditor uſes his right or ground of debt. In all interruptions, notice muſt be given to the poſſeſſor of the ſubject, or the debtor, that the proprietor or creditor intends to ſue upon his right. All writings whereby the debtor himſelf acknowledges the debt, and all proceſſes for payment brought or diligences uſed againſt him upon his obligation, by horning, inhibition, arreſtment, *&c.* muſt be effectual to interrupt preſcription.

18. Interruptions, by citation upon libelled ſummonſes, where they are not uſed by a minor, preſcribe, if not renewed every ſeven years : but where the appearance of parties, or any judicial act has followed thereupon, it is no longer a bare citation, but an action which ſubſiſts for forty years. Citations for interupting the preſcription of real rights muſt be given by meſſengers ; and the ſummonſes, on which ſuch citations proceed, muſt paſs the ſignet upon a bill, and be regiſtered within ſixty days after the execution, in a particular regiſter appointed for that purpoſe : and where interruption of real rights is made *via facti*, an inſtrument muſt be take upon it, and recorded in the ſaid regiſter ; otherwiſe it can have no effect againſt ſingular ſucceſſors.

19. Interruption has the effect to cut off the courſe of preſcription, ſo that the perſon preſcribing can avail himſelf of no part of the former time, but muſt begin a new courſe, commencing from the date of the interruption. Minority therefore is no proper interruption ; for it neither breaks the courſe of preſcription, nor is it a document or evidence taken by the minor on his right : it is a perſonal privilege competent to him, by which the operation of the preſcription is indeed ſuſpended during the years of minority, which are therefore diſcounted from it ; but it continues to run after majority, and the years before and after the minority may be conjoined to complete it. The ſame doctrine applies to the privilege ariſing from one's incapacity to act.

20. Diligence uſed upon a debt, againſt any one of two or more co-obligants, preſerves the debt itſelf, and ſo interrupts preſcription againſt all of them ; except in the ſpecial caſe of cautioners, who are not affected by any diligence uſed againſt the principal debtor. In the ſame manner, a right of annualrent, conſtituted upon two ſeparate tenements, is preſerved as to both from the negative preſcription, by diligence uſed againſt either of them. But whether ſuch diligence has alſo the effect to hinder the poſſeſſor of the other tenement by ſingular titles from the benefit of the poſitive preſcription, may be doubted.

III. OF SUCCESSION.

SECT. XX. *Of Succeſſion in heritable Rights.*

SINGULAR ſucceſſors are thoſe who ſucceed to a perſon yet alive, in a ſpecial ſubject by ſingular titles ; but ſucceſſion, in its proper ſenſe, is a method of tranſmitting rights from the dead to the living. Heritable rights deſcend by ſucceſſion to the heir properly ſo called ; moveable rights, to the executors, who are ſometimes ſaid to be heirs in moveables. Succeſſion is either by ſpecial deſtination, which deſcends to thoſe named by the proprietor himſelf ; or legal, which devolves upon the perſons whom the law marks out for ſucceſſors, from a preſumption, that the proprietor would have named them had he made a deſtination. The firſt is in all caſes preferred to the other, as preſumption muſt yield to truth.

2. In the ſucceſſion of heritage, the heirs at law are otherwiſe called heirs general, heirs whatſoever, or heirs of line ; and they ſucceed by the right of blood, in the following order. Firſt, deſcendents ſons are preferred to daughters, and the eldeſt ſon to all the younger. Where there are daughters only, they ſucceed equally, and are called heirs-portioners. Failing immediate deſcendents, grandchildren ſucceed ; and in default of them, great-grandchildren ; and ſo on *in infinitum* : preferring, as in the former caſe, males to females, and the eldeſt male to the younger.

3. Next after deſcendents, collaterals ſucceed ; among whom the brothers *german* of the deceaſed have the firſt place. But as, in no caſe, the legal ſucceſſion of heritage is, by the law of Scotland, divided into parts, unleſs where it deſcends to females ; the immediate younger brother of the deceaſed excludes the reſt, according to the rule, *heritage deſcends*. Where the deceaſed is himſelf the youngeſt, the ſucceſſion goes to the immediate elder brother, as being the leaſt deviation from this rule. If there are no brothers german, the ſiſters german ſucceed equally : then brothers *conſanguinean*, in the ſame order as brothers german ; and failing them, ſiſters *conſanguinean* equally. Next, the father ſucceeds. After him, his brothers and ſiſters, according to the rules already explained ; then the grand-father ; failing him, his brothers and ſiſters ; and ſo upwards, as far back as propinquity can be proved. Though children ſucceed to their mother, a mother cannot to her child ; nor is there any ſucceſſion by our law through the mother of the deceaſed ; in ſo much that one brother *uterine*, *i. e.* by the mother only, cannot ſucceed to another, even in that eſtate which flowed originally from their common mother.

4. In heritage there is a right of repreſentation, by which one ſucceeds, not from any title in himſelf, but in the place of, and as repreſenting ſome of his deceaſed aſcendents. Thus, where one leaves a younger ſon, and a grandchild by his eldeſt, the grandchild, though farther removed in degree from the deceaſed than his uncle, excludes him, as coming in place of his father the eldeſt ſon. Hence ariſes the diſtinction between ſucceſſion *in capita*, where the diviſion is made into as many equal parts as there are *capita* or heirs, which is the caſe of heirs-portioners ; and ſucceſſion *in ſtirpes*, where the remoter heirs draw no more among them than the ſhare belonging to their aſcendent or *ſtirps*,

whom they repreſent; an example of which may be figured in the caſe of one who leaves behind him a daughter alive, and two grand-daughters by a daughter deceaſed. In which caſe the two grand-daughters would ſucceed equally to that half which would have belonged to their mother had ſhe been alive.

5. In the ſucceſſion of heirs-portioners, indiviſible rights, *e. g.* titles of dignity, fall to the eldeſt ſiſter. A ſingle right of ſuperiority goes alſo to the eldeſt; for it hardly admits a diviſion, and the condition of the vaſſal ought not to be made worſe by multiplying ſuperiors upon him. Where there are more ſuch rights, the eldeſt may perhaps have her election of the beſt; but the younger ſiſters are intitled to a recompence, in ſo far as the diviſions are unequal; at leaſt, where the ſuperiorities yield a conſtant yearly rent. The principal ſeat of the family falls to the eldeſt, with the garden and orchard belonging to it, without recompence to the younger ſiſters; but all other houſes are divided amongſt them, together with the lands on which they are built, as parts and pertinents of theſe lands.

6. Thoſe heritable rights, to which the deceaſed did himſelf ſucceed as heir to his father or other anceſtor, get ſometimes the name of heritage in a ſtrict ſenſe, in oppoſition to the *feuda nova*, or feus of conqueſt, which he had acquired by ſingular titles, and which deſcend, not to his heir of line, but of conqueſt. This diſtinction obtains only, where two or more brothers or uncles, or their iſſue, are next in ſucceſſion; in which caſe, the immediate younger brother, as heir of line, ſucceeds to the proper heritage, becauſe that deſcends; whereas the conqueſt aſcends to the immediate elder brother. It has no place in female ſucceſſion, which the law divides equally among the heirs-portioners. Where the deceaſed was the younger brother, the immediate elder brother is heir both of line and of conqueſt. An eſtate diſponed by a father to his eldeſt ſon, is not conqueſt in the ſon's perſon, but heritage; becauſe the ſon would have ſucceeded to it, though there had been no diſpoſition. The heir of conqueſt ſucceeds to all rights affecting land, which require ſeiſin to perfect them. But teinds go to the heir of line; becauſe they are merely a burden on the fruits, not on the land. Tacks do not fall under conqueſt, becauſe they are complete rights without ſeiſin; nor perſonal bonds taken to heirs ſecluding executors.

7. The heir of line is entitled to the ſucceſſion, not only of ſubjects properly heritable, but to that ſort of moveables called *heirſhip*, which is the beſt of certain kinds. This doctrine has been probably introduced, that the heir might not have an houſe and eſtate to ſucceed to, quite diſmantled by the executor. In that ſort which goes by pairs or dozens, the beſt pair or dozen is the heirſhip. There is no heirſhip in fungibles, or things eſtimated by quantity; as grain, hay, current money, &c. To entitle an heir to this privilege, the deceaſed muſt have been either, (1.) A prelate: (2.) A baron, *i. e.* who ſtood infeſt at his death in lands, tho' not erected into a barony; or even in a right of annualrent: Or, (3.) A burgeſs; not an honorary one, but a trading burgeſs of a royal borough, or at leaſt one entitled to enter burgeſs in the right of his anceſtor. Neither the heir of conqueſt, nor of talzie, has right to heirſhip-moveables.

Succeſſion by deſtination.

8. As to ſucceſſion by deſtination, no proprietor can ſettle any heritable eſtate, in the proper form a teſtament; not even bonds ſecluding executors, tho' theſe are not heritable *ex ſua natura*: But, where a teſtament is in part drawn up in the ſtyle of a deed *inter vivos*, ſuch part of it may contain a ſettlement of heritage, though executors ſhould be named in the teſtamentary part. The common method of ſettling the ſucceſſion of heritage is by diſpoſition, contract of marriage, or ſimple procuratory of reſignation: and, tho' a diſpoſition ſettling heritage ſhould have neither precept nor procuratory, it founds an action againſt the heir of line to complete his titles to the eſtate; and therefore diveſt himſelf in favour of the diſponee. The appellation of talzie, or entail, is chiefly uſed in the caſe of a land eſtate, which is ſettled on a long ſeries of heirs, ſubſtituted one after another. The perſon firſt called in the tailzie, is the inſtitute; the reſt, the heirs of tailzie, or the ſubſtitutes.

Tailzies.

9. Tailzies, when conſidered in relation to their ſeveral degrees of force, are either, (1.) Simple deſtinations: (2.) Tailzies with prohibitory clauſes. (3.) Tailzies with prohibitory, reſolutive, and irritant clauſes. That is a ſimple deſtination, where the perſons called to the ſucceſſion are ſubſtituted one after another, without any reſtraint laid on the exerciſe of their property. The heirs, therefore, ſucceeding to ſuch eſtate, are abſolute fiars, and conſequently may alter the deſtination at pleaſure.

10. In tailzies with clauſes prohibitory, *e. g.* declaring that it ſhall not be lawful to the heirs to contract debts or alien the lands in prejudice of the ſucceſſion, none of the heirs can alien gratuitouſly. But the members of entail may contract debts which will be effectual to the creditors, or may diſpoſe of the eſtate for onerous cauſes. In both theſe ſorts, the maker himſelf may alter the tailzie; except, (1.) Where it has been granted for an onerous cauſe, as in mutual tailzies; or, (2.) Where the maker is expreſly diſabled, as well as the inſtitute or the heirs.

Their requiſites.

11. Where a tailzie is guarded with irritant and reſolutive clauſes, the eſtate entailed cannot be carried off by the debt, or deed, of any of the heirs ſucceeding thereto, in prejudice of the ſubſtitutes. It was long doubted, whether ſuch tailzies ought to be effectual, even where the ſuperior's conſent was adhibited; becauſe they ſunk the property of eſtates, and created a perpetuity of liferents. They were firſt explicitely authoriſed by 1685, *c.* 22. By this ſtatute, the entail muſt be regiſtered in a ſpecial regiſter eſtabliſhed for that purpoſe; and the irritant and reſolutive clauſes muſt be inſerted, not only in the procuratories, precepts, and ſeiſins, by which the tailzies are firſt conſtituted, but in all the after-conveyances thereof; otherwiſe they can have no force againſt ſingular ſucceſſors. But a tailzie, even without theſe requiſites, is effectual againſt the heir of the granter, or againſt the inſtitute who accepts of it.

Heirs of entail, their powers and reſtrictions.

12. An heir of entail has full power over the entailed eſtate, except in ſo far as he is expreſly fettered; and as entails are an unfavourable reſtraint upon property, and a frequent ſnare to trading people, they are *ſtrictiſſimi juris*; ſo that no prohibition or irritancies are to be inferred by implication. By 10 George III. *c.* 51. heirs of entail are entitled (notwithſtanding any reſtrictions in the deed of entail) to improve their eſtates by

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by granting leaſes, building farm-houſes, draining, incloſing, and excambing, under certain limitations, and to claim repayment of three-fourths of the expence from the next heir of entail.—This act extends to all tailzies, whether made prior or poſterior to the 1685.

Contravention, by whom inferred.

13. An heir, who counteracts the directions of the tailzie, by aliening any part of the eſtate, charging it with debt, &c. is ſaid to contravene. It is not the ſimple contracting of debt that infers contravention; the lands entailed muſt be actually adjudged upon the debt contracted. An heir may, where he is not expreſsly barred, ſettle rational proviſions on his wife and children, without incurring contravention.

In what caſes an heir may ſell.

14. When the heirs of the laſt perſon ſpecially called in a tailzie come to ſucceed, the irritancies have no longer any perſon in favour of whom they can operate; and conſequently, the fee, which was before tailzied, becomes ſimple and unlimited in the perſon of ſuch heirs. The king may purchaſe lands within Scotland, notwithſtanding the ſtricteſt entail; and where the lands are in the hands of minors or fatuous perſons, his majeſty may purchaſe them from the curators or guardians. And heirs of entail may ſell to their vaſſals the ſuperiorities belonging to the entailed eſtate; but in all theſe caſes, the price is to be ſettled in the ſame manner that the lands or ſuperiorities ſold were ſettled before the ſale.

Rights taken in conjunct fee.

15. Rights, not only of land-eſtates, but of bonds, are ſometimes granted to two or more perſons in conjunct fee. Where a right is ſo granted to two ſtrangers, without any ſpecial clauſe adjected to it, each of them has an equal intereſt in the fee, and the part of the deceaſed deſcends to his own heir. If the right be taken to the two jointly, and *the longeſt liver* and their heirs, the ſeveral ſhares of the conjunct fiars are affectable by their creditors during their lives; but, on the death of any one of them, the ſurvivor has the fee of the whole, in ſo far as the ſhare of the predeceaſed remains free, after payment of his debts. Where the right is taken to the two in conjunct fee, and to the heirs of one of them, he to whoſe heirs the right is taken is the only fiar; the right of the other reſolves into a ſimple liferent: yet where a father takes a right to himſelf and his ſon jointly, and to the ſon's heirs, ſuch right being gratuitous, is not underſtood to ſtrip the father of the fee, unleſs a contrary intention ſhall plainly appear from the tenor of the right.

16. Where a right is taken to a huſband and wife, in conjunct fee and liferent, the huſband, as the *perſona dignior*, is the only fiar: the wife's right reſolves into a liferent, unleſs it be preſumable, from ſpecial circumſtances, that the fee was intended to be in the wife. Where a right of moveables is taken to huſband and wife, the heirs of both ſucceed equally, according to the natural meaning of the words.

Heirs of proviſion.

17. Heirs of proviſion are thoſe who ſucceed to any ſubject, in virtue of a proviſion in the inveſtiture, or other deed of ſettlement. This appellation is given moſt commonly to heirs of a marriage. Theſe are more favourably regarded than heirs by ſimple deſtination, who have only the hope of ſucceſſion; for heirs of a marriage, becauſe their proviſions are conſtituted by an onerous contract, cannot be diſappointed of them by any gratuitous deed of the father. Nevertheleſs, as their right is only a right of ſucceſſion, which is not deſigned to reſtrain the father from granting onerous or rational deeds, he continues to have the full power of ſelling the ſubject, or charging it with debts, unleſs a proper right of credit be given to the heir by the marriage-contract, *e. g.* if the father ſhould oblige himſelf to infeſt the heir in the lands, or make payment of the ſum provided againſt a day certain, or when the child attains a certain age, &c.; for ſuch rights, when perfected by infeſtment, or ſecured by diligence, are effectual againſt all the poſterior deeds of the father, even onerous.

18. Tho' all proviſions to children, by a marriage-contract conceived in the ordinary form, being merely rights of ſucceſſion, are poſtponed to every onerous debt of the granter, even to thoſe contracted poſterior to the proviſions; yet where a father executes a bond of proviſion to a child actually exiſting, whether ſuch child be the heir of a marriage or not, a proper debt is thereby created, which, though it be without doubt gratuitous, is not only effectual againſt the father himſelf and his heirs, but is not reducible at the inſtance even of his prior onerous creditors, if he was ſolvent at the time of granting it. A father may, notwithſtanding a firſt marriage-contract, ſettle a jointure on a ſecond wife, or provide the children of a ſecond marriage; for ſuch ſettlements are deemed onerous; but where they are exorbitant, they will be reſtricted to what is rational: and in all ſuch ſettlements, where the proviſions of the firſt marriage-contract are incroached upon, the heirs of that marriage have recourſe againſt the father, in caſe he ſhould afterwards acquire a ſeparate eſtate, which may enable him to fulfil both obligations.

19. Where heritable rights are provided to the *heirs* of a marriage, they fall to the eldeſt ſon, for he is the heir at law in heritage. Where a ſum of money is ſo provided, the word *heir* is applied to the ſubject of the proviſion, and ſo marks out the executor, who is the heir in moveables. When an heritable right is provided to the *bairns* (or iſſue) of a marriage, it is divided equally among the children, if no diviſion be made by the father; for ſuch deſtination cuts off the excluſive right of the legal heir. No proviſion granted to bairns, gives a ſpecial right of credit to any one child, as long as the father lives: the right is granted *familiæ*; ſo that the whole muſt indeed go to one or other of them; but the father has a power inherent in him, to divide it among them, in ſuch proportions as he thinks beſt; yet ſo as none of them may be entirely excluded, except in extraordinary caſes.

20. A clauſe of return is that, by which a ſum in a bond or other right, is, in a certain event, limited to return to the granter himſelf, or his heirs. When a right is granted for onerous cauſes, the creditor may defeat the clauſe of return, even gratuitouſly. But, where the ſum in the right flows from the granter, or where there is any other reaſonable cauſe for the proviſion of return in his favour, the receiver cannot diſappoint it gratuitouſly. Yet ſince he is fiar, the ſum may be either aſſigned by him for an onerous cauſe, or affected by his creditors.

21. An heir is, in the judgment of law, *eadem perſona cum defuncto*, and ſo repreſents the deceaſed univerſally, not only in his rights but in his debts: in the firſt view, he is ſaid to be heir *active*; in the ſecond, *paſſive*. From this general rule are excepted, heirs ſub-

ſtituted in a ſpecial bond, and even ſubſtituted in a diſpoſition *omnium bonorum*, to take effect at the granter's death; for ſuch ſubſtitutes are conſidered as ſingular ſucceſſors, and their right as an univerſal legacy, which does not ſubject the legatee *ultra valorem*.

22. Before an heir can have an active title to his anceſtor's rights, he muſt be entered by ſervice and retour. He who is entitled to enter heir, is, before his actual entry, called apparent heir. The bare right of apparency carries certain privileges with it. An apparent heir may defend his anceſtor's titles againſt any third party who brings them under challenge. Tenants may ſafely pay him their rents; and after they have once acknowledged him by payment, he may compel them to continue it; and the rents not uplifted by the apparent heir belong to his executors, upon his death.

23. As an heir is, by his entry, ſubjected univerſally to his anceſtor's debts, apparent heirs have therefore a year (*annus deliberandi*) allowed to them from the anceſtor's deceaſe, to deliberate whether they will enter or not; till the expiring of which, though they may be charged by creditors to enter, they cannot be ſued in any proceſs founded upon ſuch charge. Though declaratory actions, and others which contain no perſonal concluſion, may be purſued againſt the apparent heir, without a previous charge; action does not lie even upon theſe, within the year, if the heir cannot make the proper defences without incurring a paſſive title. But judicial ſales, commenced againſt an anceſtor, may be continued upon a citation of the heir, without waiting the year of deliberating. This *annus deliberandi* is computed, in the caſe of a poſthumous heir, from the birth of ſuch heir. An apparent heir, who, by immixing with the eſtate of his anceſtor, is as much ſubjected to his debts as if he had entered, can have no longer a right to deliberate whether he will enter or not.

24. All ſervices proceed on brieves from the chancery, which are called brieves of inqueſt, and have been long known in Scotland. The judge, to whom the brief is directed, is required to try the matter by an inqueſt of fifteen ſworn men. The inqueſt, if they find the claim verified, muſt declare the claimant heir to the deceaſed, by a verdict or ſervice, which the judge muſt atteſt, and return the brief, with the ſervice proceeding on it, to the chancery.

25. The ſervice of heirs is either general or ſpecial. A general ſervice veſts the heir in the right of all heritable ſubjects, which either do not require ſeiſin, or which have not been perfected by ſeiſin in the perſon of the anceſtor. A ſpecial ſervice, followed by ſeiſin, veſts the heir in the right of the ſpecial ſubjects in which the anceſtor died infeſt.

26. If an heir, doubtful whether the eſtate of his anceſtor be ſufficient for clearing his debts, ſhall, at any time within the *annus deliberandi*, exhibit upon oath a full inventory of all his anceſtor's heritable ſubjects, to the clerk of the ſhire where the lands lie; or, if there is no heritage requiring ſeiſin, to the clerk of the ſhire where he died; and if, after the ſame is ſubſcribed by the ſheriff or ſheriff-depute, the clerk, and himſelf, and regiſtered in the ſheriff's books, the extract thereof ſhall be regiſtered within forty days after expiry of the *annus deliberandi* in the general regiſter appointed for that purpoſe, his ſubſequent entry will ſubject him no farther than to the value of ſuch inventory. If the inventory be given up and regiſtered within the time preſcribed, the heir may ſerve on it, even after the year.

27. Creditors are not obliged to acquieſce in the value of the eſtate given up by the heir; but, if they be real creditors, may bring the eſtate to a public ſale, in order to diſcover its true value; ſince an eſtate is always worth what can be got for it. An heir by inventory, as he is, in effect, a truſtee for the creditors, muſt account for that value to which the eſtate may have been improved ſince the death of the anceſtor, and he muſt communicate to all the creditors the caſes he has got in tranſacting with any one of them.

Entry upon a precept of *clare conſtat*.

28. Practice has introduced an anomalous ſort of entry, without the interpoſition of an inqueſt, by the ſole conſent of the ſuperior, who, if he be ſatisfied that the perſon applying to him is the next heir, grants him a precept (called of *clare conſtat*, from the firſt words of its recital), commanding his bailie to infeft him in the ſubjects that belonged to his anceſtor. Theſe precepts are, no doubt, effectual againſt the ſuperior who grants them, and his heirs; and they may, when followed by ſeiſin, afford a title of preſcription: But as no perſon can be declared an heir by private authority, they cannot bar the true heir from entering after 20 years, as a legal entry would have done. Of the ſame nature is the entry by haſp and ſtaple, commonly uſed in burgage tenements of houſes; by which the bailie, without calling an inqueſt, cognoſces or declares a perſon heir, upon evidence brought before himſelf; and, at the ſame time infefts him in the ſubject, by the ſymbol of the haſp and ſtaple of the door. Charges given by creditors to apparent heirs to enter, ſtand in the place of an actual entry, ſo as to ſupport the creditor's diligence.

Entry by haſp and ſtaple.

A ſpecial ſervice includes a general one.

29. A general ſervice cannot include a ſpecial one; ſince it has no relation to any ſpecial ſubject, and carries only that claſs of rights on which ſeiſin has not proceeded; but a ſpecial ſervice implies a general one of the ſame kind or character, and conſequently carries even ſuch rights as have not been perfected by ſeiſin. Service is not required to eſtabliſh the heir's right in titles of honour, or offices of the higheſt dignity; for theſe deſcend *jure ſanguinis*.

Paſſive titles.

30. An heir, by immixing with his anceſtor's eſtate without entry, ſubjects himſelf to his debts, as if he had entered; or, in our law-phraſe, incurs a paſſive title. The only paſſive title by which an apparent heir becomes liable univerſally for all his anceſtor's debts, is *geſtio pro herede*, or his behaving as none but an heir has right to do. Behaviour as heir is inferred, from the apparent heir's intromiſſion, after the death of the anceſtor, with any part of the lands or other heritable ſubjects belonging to the deceaſed, to which he himſelf might have completed an active title by entry.

Geſtio pro hærede.

31. This paſſive title is excluded, if the heir's intromiſſion be by order of law; or if it be founded on ſingular titles, and not as heir to the deceaſed. But an apparent heir's purchaſing any right to his anceſtor's eſtate, otherwiſe than at public roup (auction), or his poſſeſſing it in virtue of rights ſettled in the perſon of any near relation of the anceſtor, to whom he himſelf may ſucceed as heir, otherwiſe than upon pur-

chaſe by public ſale, is deemed behaviour as heir.

32. Behaviour as heir is alſo excluded, where the intromiſſion is ſmall, unleſs an attention to defraud the anceſtor's creditors be preſumable from the circumſtances attending it. Neither is behaviour inferred againſt the apparent heir, from the payment of his anceſtor's debt, which is a voluntary act, and profitable to the creditors: nor by his taking out of brieves to ſerve; for one may alter his purpoſe, while it is not completed: nor by his aſſuming the titles of honour belonging to his anceſtor, or exerciſing an honorary office hereditary in the family; for theſe are rights annexed to the blood, which may be uſed without proper repreſentation. But the exerciſing an heritable office of profit, which may paſs by voluntary conveyance, and conſequently is adjudgeable, may reaſonably be thought to infer a paſſive title. Laſtly, as paſſive titles have been introduced, merely for the ſecurity of creditors; therefore, where queſtions concerning behaviour ariſe among the different orders of heirs, they are liable to one another no farther than *in valorem* of their ſeveral intromiſſions.

Præceptio hæreditatis.

33. Another paſſive title in heritage, may be incurred by the apparent heir's accepting a gratuitous right from the anceſtor, to any part of the eſtate to which he himſelf might have ſucceeded as heir; and it is called *præceptio hereditatis*, becauſe it is a taking of the ſucceſſion by the heir before it opens to him by the death of his anceſtor. If the right be onerous, there is no paſſive title; if the conſideration paid for it does not amount to its full value, the creditors of the deceaſed may reduce it, in ſo far as it is gratuitous, but ſtill it infers no paſſive title.

34. The heir incurring this paſſive title is no farther liable, than if he had at the time of his acceptance entered heir to the granter, and ſo ſubjected himſelf to the debts that were then chargeable againſt him; but with the poſterior debts he has nothing to do, not even with thoſe contracted between the date of the right, and the infeftment taken upon it, and he is therefore called *ſucceſſor titulo lucrativo poſt contractum debitum*.

35. Neither of theſe paſſive titles takes place, unleſs the ſubject intermeddled with or diſponed be ſuch as the intromitter or receiver would ſucceed to as heir. In this alſo, theſe two paſſive titles agree, that the intromiſſion in both muſt be after the death of the anceſtor; for there can be no *termini habiles* of a paſſive title, while the anceſtor is alive. But in the following reſpect they differ: *Geſtio pro herede*, being a vicious paſſive title founded upon a quaſi delict, cannot be objected againſt the delinquent's heir, if proceſs has not been litiſconteſted while the delinquent himſelf was alive; whereas the *ſucceſſor titulo lucrativo* is by the acceptance of the diſpoſition underſtood to have entered into a tacit contract with the granter's creditors, by which he undertakes the burden of their debts; and all actions founded on contract are tranſmiſſible againſt heirs.

Other paſſive titles.

36. An apparent heir, who is cited by the anceſtor's creditor in a proceſs for payment, if he offers any peremptory defence againſt the debt, incurs a paſſive title; for he can have no intereſt to object againſt it, but in the character of heir. In the ſame manner, the heir's not renouncing upon a charge to enter heir, infers it: But the effect of both theſe is limited to the ſpecial debt purſued for, or charged upon. This paſſive title, which is inferred from the heir's not renouncing, has no effect till decree paſs againſt him; and even a renunciation offered after decree, if the decree be in abſence, will intitle the heir to a ſuſpenſion of all diligence againſt his perſon and eſtate, competent upon his anceſtor's debts.

37. By the principles of the feudal law, an heir, when he is to complete his titles by ſpecial ſervice, muſt neceſſarily paſs over his immediate anceſtor, *e. g.* his father, if he was not infeft; and ſerve heir to that anceſtor who was laſt veſt and ſeiſed in the right, and in whoſe *hæreditas jacens* the right muſt remain, till a title be connected thereto from him. As this bore hard upon creditors who might think themſelves ſecure in contracting with a perſon whom they ſaw for ſome time in the poſſeſſion of an eſtate, and from thence conclude that it was legally veſted in him; it is therefore provided, that every perſon, paſſing over his immediate anceſtor who had been three years in poſſeſſion, and ſerving heir to one more remote, ſhall be liable for the debts and deeds of the perſon interjected, to the value of the eſtate to which he is ſerved. This being correctory of the feudal maxims, has been ſtrictly interpreted, ſo as not to extend to the gratuitous deeds of the perſon interjected, nor to the caſe where the interjected perſon was a naked fiar, and poſſeſſed only civilly thro' the liferenter.

Reduct by the *ex capi lecti.*

38. Our law, from its jealouſy of the weakneſs of mankind while under ſickneſs, and of the importunity of friends on that occaſion, has declared that all deeds affecting heritage, if they be granted by a perſon on death-bed, (*i. e.* after contracting that ſickneſs which ends in death), to the damage of the heir, are ineffectual, except where the debts of the granter have laid him under a neceſſity to alien his lands. As this law of deathbed is founded ſolely in the privilege of the heir, deathbed-deeds, when conſented to by the heir, are not reducible. The term properly oppoſed to deathbed is *liege pouſtie*, by which is underſtood a ſtate of health; and it gets the name, becauſe perſons in health have the *legitima poteſtas*, or lawful power, of diſpoſing of their property at pleaſure.

What ſtitute death- deed.

39. The two extremes being proved, of the granter's ſickneſs immediately before ſigning, and of his death following it, though at the greateſt diſtance of time, did, by our former law, found a preſumption that the deed was granted on death-bed, which could not have been elided but by a poſitive proof of the granter's convaleſcence; but now the allegation of death-bed is alſo excluded, by his having lived 60 days after ſigning the deed. The legal evidence of convalence is the granter's having been, after the date of the deed, at kirk OR market unſupported; for a proof of either will ſecure the deed from challenge. The going to kirk or market muſt be performed when the people are met together in the church or churchyard for any public meeting, civil or eccleſiaſtical, or in the market-place at the time of public market. No other proof of convaleſcence is receivable, becauſe at kirk and market there are always preſent unſuſpected witneſſes, which we can hardly be ſure of in any other caſe.

To heirs reduc comp

40. The privilege of ſetting aſide deeds *ex capite lecti*, is competent to all heirs, not to heirs of line only, but of conqueſt, tailzie, or proviſion; not only to the

immediate, but to remoter heirs, as ſoon as the ſucceſſion opens to them. But, where it is conſented to or ratified by the immediate heir, it is ſecured againſt all challenge, even from the remoter. Yet the immediate heir cannot, by any antecedent writing, renounce his right of reduction, and thereby give ſtrength to deeds that may be afterwards granted *in lecto* to his hurt; for no private renunciation can authoriſe a perſon to act contrary to a public law; and ſuch renunciation is preſumed to be extorted through the fear of exheredation. If the heir ſhould not uſe this privilege of reduction, his creditor may, by adjudication, transfer it to himſelf; or he may, without adjudication, reduce the deed, libelling upon his intereſt as creditor to the heir: But the granter's creditors have no right to this privilege, in regard that the law of death-bed was introduced, not in behalf of the granter himſelf, but of his heir.

41. The law of death-bed ſtrikes againſt diſpoſitions of every ſubject to which the heir would have ſucceeded, or from which he would have had any benefit, had it not been ſo diſponed. Deathbed-deeds granted in conſequence of a full or proper obligation in *liege pouſtie*, are not ſubject to reduction; but, where the antecedent obligation is merely natural, they are reducible. By ſtronger reaſon, the deceaſed cannot, by a deed merely voluntary, alter the nature of his eſtate on death-bed to the prejudice of his heir, ſo as from heritable to make it moveable; but if he ſhould, in *liege pouſtie*, exclude his apparent heir, by an irrevocable deed containing reſerved faculties, the heir cannot be heard to quarrel the exerciſe of theſe faculties on death-bed.

42. In a competition between the creditors of the deceaſed and of the heir, our law has juſtly preferred the creditors of the deceaſed, as every man's eſtate ought to be liable, in the firſt place, for his own debt. But this preference is, by the ſtatute, limited to the caſe where the creditors of the deceaſed have uſed diligence againſt their debtor's eſtate, within three years from his death; and therefore the heir's creditors may, after that period, affect it for their own payment. All diſpoſitions by an heir, of the anceſtor's eſtate, within a year after his death, are null, in ſo far as they are hurtful to the creditors of the anceſtor. This takes place, though theſe creditors ſhould have uſed no diligence, and even where the diſpoſitions are granted after the year: It is thought they are ineffectual againſt the creditors of the deceaſed who have uſed diligence within the three years.

SECT. XXI. *Of Succeſſion in Moveables.*

IN the ſucceſſion of moveable rights, it is an univerſal rule, that the next in degree to the deceaſed (or next of kin) ſucceeds to the whole; and if there are two or more equally near, all of them ſucceed by equal parts, without that prerogative, which takes place in heritage, of the eldeſt ſon over the younger, or of males over females. Neither does the right of repreſentation, explained N° clxxx. 4. obtain in the ſucceſſion of moveables, except in the ſingle caſe of a competition between the full blood and the half blood; for a niece by the full blood will be preferred before a brother by the half blood, though ſhe is by one degree more remote from the deceaſed than her uncle. Where the eſtate of a perſon deceaſed conſiſts partly of heritage, and partly of moveables, the heir in the heritage has no ſhare of the moveables, if there are others as near in degree to the deceaſed as himſelf: But where the heir, in ſuch caſe, finds it his intereſt to renounce his excluſive claim to the heritage, and betake himſelf to his right as one of the next of kin, he may collate or communicate the heritage with the others, who in their turn muſt collate the moveables with him; ſo that the whole is thrown into one maſs, and divided equally among all of them. This doctrine holds, not only in the line of deſcendants, but of collaterals; for it was introduced, that the heir might in no caſe be worſe than the other next of kin.

Succeſſion in moveables by deſtination.

2. One may ſettle his moveable eſtate upon whom he pleaſes, excluding the legal ſucceſſor, by a teſtament; which is a written declaration of what a perſon wills to be done with his moveable eſtate after his death. No teſtamentary deed is effectual, till the death of the teſtator; who may therefore revoke it at pleaſure, or make a new one, by which the firſt loſes its force; and hence teſtaments are called *laſt* or *latter wills*. Teſtaments in their ſtrict acceptation, muſt contain a nomination of executors, *i. e.* of perſons appointed to adminiſter the ſucceſſion according the will of the deceaſed: Yet nothing hinders one from making a ſettlement of moveables, in favour of an univerſal legatee, though he ſhould not have appointed executors; and on the other part, a teſtament where executors are appointed, is valid, though the perſon who is to have the right of ſucceſſion ſhould not be named. In this laſt caſe, if the executor nominated be a ſtranger, *i. e.* one who has no legal intereſt in the moveable eſtate, he is merely a truſtee, accountable to the next of kin; but he may retain a third of the dead's part (explained par. 6.) for his trouble in executing the teſtament; in payment of which, legacies, if any be left to him, muſt be imputed. The heir, if he be named executor, has right to the third as a ſtranger; but if one be named who has an intereſt in the legal ſucceſſion, he has no allowance, unleſs ſuch intereſt be leſs than a third. Nuncupative or verbal teſtaments are not, by the law of Scotland, effectual for ſupporting the nomination of an executor, let the ſubject of the ſucceſſion be ever ſo ſmall: But verbal legacies, not exceeding *L.* 100 *Scots*, are ſuſtained: and even where they are granted for more, they are ineffectual only as to the exceſs.

Legacy.

3. A legacy is a donation by the deceaſed, to be paid by the executor to the legatee. It may be granted either in the teſtament or in a ſeparate writing. Legacies are not due till the granter's death; and conſequently they can tranſmit no right to the executors of the legatee, in the event that the granter ſurvives him.

4. Legacies, where they are general, *i. e.* of a certain ſum of money indefinitely, give the legatee no right in any one debt or ſubject; he can only inſiſt in a perſonal action againſt the executor, for payment out of the teſtator's effects. A ſpecial legacy, *i. e.* of a particular debt due to the deceaſed, or of a particular ſubject belonging to him, is of the nature of an aſſignation, by which the property of the ſpecial debt or ſubject veſts, upon the teſtator's death, in the legatee, who can therefore directly ſue the debtor or poſſeſſor: Yet as no legacy can be claimed till the debts are paid, the executor muſt be cited in ſuch proceſs, that it may be known, whether there are free effects ſufficient for

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anſwering the legacy. Where there is not enough for payment of all the legacies, each of the general legatees muſt ſuffer a proportional abatement: But a ſpecial legatee gets his legacy entire, though there ſhould be nothing over for payment of the reſt; and, on the contrary, he has no claim, if the debt or ſubject bequeathed ſhould periſh, whatever the extent of the free executry may be.

Who can teſt, and under what reſtrictions.

5. Minors, after puberty, can teſt without their curators, wives without their huſbands, and perſons interdicted without their interdictors: but baſtards cannot teſt, except in the caſes afterwards ſet forth, Nº clxxii. 3. As a certain ſhare of the goods, falling under the communion that is conſequent on marriage, belongs, upon the huſband's deceaſe, to his widow, *jure relictæ*, and a certain ſhare to the children, called the *legitime*, *portion-natural*, or *bairns part of gear*; one who has a wife or children, though he be the abſolute adminiſtrator of all theſe goods during his life, and conſequently may alien them by a deed *inter vivos* in *liege pouſtie*, even gratuitouſly, if no fraudulent intention to diſappoint the wife or children ſhall appear, yet cannot impair their ſhares gratuitouſly on death-bed; nor can he diſpoſe of his moveables to their prejudice by teſtament, though it ſhould be made in *liege pouſtie*; ſince teſtaments do not operate till the death of the teſtator, at which period the diviſion of the goods in communion have their full effect in favour of the widow and children.

Diviſion of a teſtament.

6. If a perſon deceaſed leaves a widow, but no child, his teſtament, or, in other words, the goods in communion, divide in two: one half goes to the widow; the other is the dead's part, *i. e.* the abſolute property of the deceaſed, on which he can teſt, and which falls to his next of kin, if he dies inteſtate. Where he leaves children, one or more, but no widow, the children get one half as their legitime: the other half is the dead's part; which falls alſo to the children, if the father has not teſted upon it. If he leaves both widow and children, the diviſion is tripartite: the wife takes one third by herſelf; another falls, as legitime, to the children equally among them, or even to an only child, though he ſhould ſucceed to the heritage; the remaining third is the dead's part. Where the wife predeceaſes without children, one half is retained by the huſband, the other falls to her next of kin: Where ſhe leaves children, the diviſion ought alſo to be bipartite, by the common rules of ſociety, ſince no legitime is truly due on a mother's death: yet it is in practice tripartite; two thirds remain with the ſurviving father, as if one third were due to him *proprio nomine*, and another as adminiſtrator of the legitime for his children; the remaining third, being the wife's ſhare, goes to her children, whether of that or any former marriage, for they are all equally her next of kin.

What debts affect the executry.

7. Before a teſtament can be divided, the debts owing by the deceaſed are to be deducted; for all executry muſt be free. As the huſband has the full power of burdening the goods in communion, his debts affect the whole, and ſo leſſen the legitime and the ſhare of the relict, as well as the dead's part. His funeral charges, and the mournings and alimony due to the widow, are conſidered as his proper debts; but the legacies, or other gratuitous rights, granted by him on death-bed, affect only the dead's part. Bonds bearing intereſt, due by the deceaſed, cannot diminiſh the relict's ſhare, becauſe ſuch bonds, when due to the deceaſed, do not increaſe it. The funeral charges of the wife predeceaſing, fall wholly on her executors who have right to her ſhare. Where the deceaſed leaves no family, neither huſband, wife, nor child, the teſtament ſuffers no diviſion, but all is the dead's part.

8. The whole iſſue of the huſband, not only by that marriage which was diſſolved by his death, but by any former marriage, has an equal intereſt in the legitime; otherwiſe the children of the firſt marriage would be cut out, as they could not claim the legitime during their father's life. But no legitime is due, (1.) Upon the death of a mother. (2.) Neither is it due to grandchildren, upon the death of a grandfather. Nor, (3.) To children foriſfamiliated, *i. e.* to ſuch as, by having renounced the legitime, are no longer conſidered as *in familia*, and ſo are excluded from any farther ſhare of the moveable eſtate than they have already received.

Renunc
tion of
legitime

9. As the right of legitime is ſtrongly founded in nature, the renunciation of it is not to be inferred by implication. Renunciation by a child of his claim of legitime has the ſame effect as his death, in favour of the other children intitled thereto; and conſequently the ſhare of the renouncer divides among the reſt; but he does not thereby loſe his right to the dead's part, if he does not alſo renounce his ſhare in the father's executry. Nay, his renunciation of the legitime, where he is the only younger child, has the effect to convert the whole ſubject thereof into dead's part, which will therefore fall to the renouncer himſelf as next of kin, if the heir be not willing to collate the heritage with him.

Collati
among
younge
childre

10. For preſerving an equality among all the children, who continue intitled to the legitime, we have adopted the Roman doctrine of *collatio bonorum*; whereby the child, who has got a proviſion from his father, is obliged to collate it with the others, and impute it towards his own ſhare of the legitime; but if, from the deed of proviſion, the father ſhall appear to have intended it as a *præcipuum* to the child, collation is excluded. A child is not bound to collate an heritable ſubject provided to him, becauſe the legitime is not impaired by ſuch proviſion. As this collation takes place only in queſtions among children who are intitled to the legitime, the relict is not bound to collate donations given her by her huſband, in order to increaſe the legitime; and on the other part, the children are not obliged to collate their proviſions, in order to increaſe her ſhare.

Confi
tion.

11. As an heir in heritage muſt complete his titles by entry, ſo an executor is not veſted in the right of the moveable eſtate of the deceaſed without confirmation. Confirmation is a ſentence of the commiſſary or biſhop's court, impowering an executor, one or more, upon making inventory of the moveables pertaining to the deceaſed, to recover, poſſeſs, and adminiſter them, either in behalf of themſelves, or of others intereſted therein. Teſtaments muſt be confirmed in the commiſſariot where the deceaſed had his principal dwelling-houſe at his death. If he had no fixed reſidence, or died in a foreign country, the confirmation muſt be at *Edinburgh*, as the *commune forum*; but if he went abroad with an intention to return, the commiſſariot within which he reſided, before he left Scotland, is the only proper court.

12. Confirmation proceeds upon an edict, which is affixed on the door of the pariſh-church where the deceaſed dwelt, and ſerves to intimate to all concerned the day of confirmation, which muſt be nine days at leaſt after publiſhing the edict. In a competition for the office of executor, the commiſſary prefers, *primo loco*, the perſon named to it by the deceaſed himſelf, whoſe nomination he ratifies or confirms, without any previous decerniture: this is called the confirmation of a teſtament-teſtamentary. In default of an executor named by the deceaſed, univerſal diſponees are by the preſent practice preferred; after them, the next of kin; then the relict; then creditors; and, laſtly, ſpecial legatees. All theſe muſt be decerned executors, by a ſentence called a *decree-dative;* and if afterwards they incline to confirm, the commiſſary authoriſes them to adminiſter, upon their making inventory, and giving ſecurity to make the ſubject thereof forthcoming to all having intereſt; which is called the confirmation of a teſtament-dative.

13. A creditor, whoſe debtor's teſtament is already confirmed, may ſue the executor, who holds the office for all concerned, to make payment of his debt. Where there is no confirmation, he himſelf may apply for the office, and confirm as executor-creditor; which intitles him to ſue for and receive the ſubject confirmed, for his own payment: and where one applies for a confirmation as executor-creditor, every co-creditor may apply to be conjoined with him in the office. As this kind of confirmation is ſimply a form of diligence, creditors are exempted from the neceſſity of confirming more than the amount of their debts.

14. A creditor, whoſe debt has not been conſtituted, or his claim not cloſed by decree, during the life of his debtor, has no title to demand directly the office of executor *qua* creditor: but he may charge the next of kin who ſtands off, to confirm, who muſt either renounce within twenty days after the charge, or be liable for the debt; and if the next of kin renounces, the purſuer may conſtitute his debt, and obtain a decree *cognitionis cauſa*, againſt the *hæreditas jacens* of the moveables, upon which he may confirm as executor-creditor to the deceaſed. Where one is creditor, not to the deceaſed, but to his next of kin who ſtands off from confirming, he may affect the moveables of the deceaſed, by obtaining himſelf decerned executor-dative to the deceaſed, as if he were creditor to him, and not to his next of kin.

15. Where an executor has either omitted to give up any of the effects belonging to the deceaſed in inventory, or has eſtimated them below their juſt value, there is place for a new confirmation, *ad omiſſa, vel male appretiata*, at the ſuit of any having intereſt; and if it appears that he has not omitted or undervalued any ſubject *doloſè*, the commiſſary will ordain the ſubjects omitted, or the difference between the eſtimations in the principal teſtament and the true values, to be added thereto; but if dole ſhall be preſumed, the whole ſubject of the teſtament *ad omiſſa vel male appretiata*, will be carried to him who confirms it, to the excluſion of the executor in the principal teſtament.

16. The legitime and relict's ſhare, becauſe they are rights ariſing *ex lege*, operate *ipſo jure*, upon the father's death, in favour of the relict and children; and conſequently paſs from them, though they ſhould die before confirmation, to their next of kin: whereas the dead's part, which falls to the children or other next of kin in the way of ſucceſſion, remains, if they ſhould die before confirming, *in bonis* of the firſt deceaſed; and ſo does not deſcend to their next of kin, but may be confirmed by the perſon who, at the time of confirmation, is the next of kin to the firſt deceaſed. Special aſſignations, though neither intimated, nor made public, during the life of the granter, carry to the aſſigney the full right of the ſubjects aſſigned, without confirmation. Special legacies are really aſſignations, and ſo fall under this rule. The next of kin, by the bare poſſeſſion of the *ipſa corpora* of moveables, acquires the property thereof without confirmation, and tranſmits it to his executors.

Partial confirmation.

17. The confirmation of any one ſubject by the next of kin, as it proves his right of blood, has been adjudged to carry the whole executry out of the teſtament of the deceaſed, even what was omitted, and to tranſmit all to his own executors. The confirmation of a ſtranger, who is executor nominated, as it is merely a truſt for the next of kin, has the effect to eſtabliſh the right of the next of kin to the ſubjects confirmed, in the ſame manner as if himſelf had confirmed them.

Executors how far liable.

18. Executry, though it carries a certain degree of repreſentation of the deceaſed, is properly an office: executors therefore are not ſubjected to the debts due by the deceaſed, beyond the value of the inventory; but, at the ſame time, they are liable in diligence for making the inventory effectual to all having intereſt. An executor-creditor who confirms more than his debt amounts to, is liable in diligence for what he confirms. Executors are not liable in intereſt, even upon ſuch bonds recovered by them as carried intereſt to the deceaſed, becauſe their office obliges them to retain the ſums they have made effectual, in order to a diſtribution thereof among all having intereſt. This holds though they ſhould again lend out the money upon intereſt, as they do it at their own riſk.

In what caſes they may pay without ſentence.

19. There are certain debts of the deceaſed called privileged debts, which were always preferable to every other. Under that name are comprehended, medicines furniſhed to the deceaſed on death-bed, phyſicians fees during that period, funeral charges, and the rent of his houſe, and his ſervants wages for the year or term current at his death. Theſe the executors are in ſafety to pay on demand. All the other creditors, who either obtain themſelves confirmed, or who cite the executor already confirmed, within ſix months after their debtor's death, are preferred, *pari paſſu*, with thoſe who have done more timely diligence; and therefore no executor can either retain for his own debt, or pay a teſtamentary debt, ſo as to exclude any creditor, who ſhall uſe diligence within the ſix months, from the benefit of the *pari paſſu* preference; neither can a decree for payment of debt be obtained, in that period, againſt an executor, becauſe, till that term be elapſed, it cannot be known how many creditors may be intitled to the fund in his hands. If no diligence be uſed within the ſix months, the executor may retain for his own debt, and pay the reſidue *primo venienti*. Such creditors of the deceaſed as have uſed diligence within a year after their debtor's death, are preferable on the ſubject of his teſtament to the creditors of his next of kin.

20. The only paſſive title in moveables is vitious intromiſſion,

Vitious intromiſſion.

tromiſſion; which may be defined, an unwarrantable intermeddling with the moveable eſtate of a perſon deceaſed, without the order of law. This is not confined, as the paſſive titles in heritage are, to the perſons intereſted in the ſucceſſion, but ſtrikes againſt all intromitters whatever. Where an executor confirmed, intromits with more than he has confirmed, he incurs a paſſive title; fraud being in the common caſe preſumed from his not giving up in inventory the full ſubject intermeddled with. Vitious intromiſſion is alſo preſumed, where the repoſitories of a dying perſon are not ſealed up, as ſoon as he becomes incapable of ſenſe, by his neareſt relations; or, if he dies in a houſe not his own, they muſt be ſealed by the maſter of ſuch houſe, and the keys delivered to the judge-ordinary, to be kept by him, for the benefit of all having intereſt.

21. The paſſive title of vitious intromiſſion does not take place where there is any probable title or circumſtance that takes off the preſumption of fraud. In conſequence of this rule, neceſſary intromiſſion, or *cuſtodiæ cauſa*, by the wife or children, who only continue the poſſeſſion of the deceaſed, in order to preſerve his goods for the benefit of all concerned, infers no paſſive title. And, upon the ſame principle, an intromitter, by confirming himſelf executor, and thereby ſubjecting himſelf to account, before action be brought againſt him on the paſſive titles, purges the vitioſity of his prior intromiſſion: and where the intromitter is one who is intereſted in the ſucceſſion, *e. g.* next of kin, his confirmation, at any time within a year from the death of the deceaſed, will exclude the paſſive title, notwithſtanding a prior citation. As this paſſive title was intended only for the ſecurity of creditors, it cannot be ſued upon by legatees; and ſince it ariſes *ex delicto*, it cannot be pleaded againſt the heir of the intromitter. As in delicts, any one of many delinquents may be ſubjected to the whole puniſhment, ſo any one of many intromitters may be ſued *in ſolidum* for the purſuer's debt, without calling the reſt; but the intromitter who pays, has an action of relief againſt the others for their ſhare of it. If the intromitters are ſued jointly, they are liable, not *pro rata* of their ſeveral intromiſſions, but *pro virili*.

Mutual relief betwixt the heir and executor.

28. The whole of a debtors eſtate is ſubjected to the payment of his debts; and therefore, both his heirs and executors are liable for them, in a queſtion with creditors: but as ſucceſſion is by law divided into the heritable and the moveable eſtate, each of theſe ought, in a queſtion between the ſeveral ſucceſſors, to bear the burdens which naturally affect it. Action of relief is accordingly competent to the heir who has paid a moveable debt, againſt the executor; and *vice verſa*. This relief is not cut off by the deceaſed's having diſponed either his land-eſtate or his moveables, with the burden of his *whole* debts; for ſuch burden is not to be conſtrued as an alteration of the legal ſucceſſion, but merely as a farther ſecurity to creditors, unleſs the contrary ſhall be preſumed from the ſpecial ſtyle of the diſpoſition.

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IV. OF LAST HEIRS AND BASTARDS.

Where there is no heir, the king ſucceeds.

By our ancient practice, feudal grants taken to the vaſſal, and to a ſpecial order of heirs, without ſettling the laſt termination upon *heirs whatſoever*, returned to the ſuperior, upon failure of the ſpecial heirs therein contained; but now that feus are become patrimonial rights, the ſuperior is, by the general opinion, held to be fully diveſted by ſuch grant, and the right deſcends to the vaſſal's heirs at law. And even where a vaſſal dies without leaving any heir who can prove the remoteſt propinquity to him, it is not the ſuperior, as the old law ſtood, but the king, who ſucceeds as laſt heir, both in the heritable and moveable eſtate of the deceaſed, in conſequence of the rule, *Quod nullius eſt, cedit domino Regi.*

2. If the lands, to which the king ſucceeds, be holden immediately of himſelf, the property is conſolidated with the ſuperiority, as if reſignation had been made in the ſovereign's hands. If they are holden of a ſubject, the king, who cannot be vaſſal to his own ſubject, names a donatory; who, to complete his title, muſt obtain a decree of declarator; and thereafter he is preſented to the ſuperior, by letters of preſentation from the king under the quarter-ſeal, in which the ſuperior is charged to enter the donatory. The whole eſtate of the deceaſed is, in this caſe, ſubjected to his debts, and to the widow's legal proviſions. Neither the king nor his donatory is liable beyond the value of the ſucceſſion. A perſon who has no heir to ſucceed to him, cannot alien his heritage *in lecto*, to the prejudice of the king, who is intitled to ſet aſide ſuch deed, in the character of *ultimus heres*.

King ſu ceeds a *timus* h to the ſtard.

3. A baſtard can have no legal heirs, except thoſe of his own body; ſince there is no ſucceſſion but by the father, and a baſtard has no certain father. The king therefore ſucceeds to him, failing his lawful iſſue, as laſt heir. Though the baſtard, as abſolute proprietor of his own eſtate, can diſpoſe of his heritage in *liege pouſtie*, and of his moveables by any deed *inter vivos*; yet he is diſabled, *ex defectu natalium*, from bequeathing by teſtament, without letters of legitimation from the ſovereign. If the baſtard has lawful children, he may teſt, without ſuch letters, and name tutors and curators to his iſſue. Letters of legitimation, let their clauſes be ever ſo ſtrong, cannot enable the baſtard to ſucceed to his natural father, to the excluſion of lawful heirs.

Baſtard incapab of legal not of ſtined, ceſſion.

4. The legal rights of ſucceſſion, being founded in marriage, can be claimed only by thoſe who are born in lawful marriage; the iſſue therefore of an unlawful marriage are incapable of ſucceſſion. A baſtard is excluded, (1.) From his father's ſucceſſion; becauſe law knows no father who is not marked out by marriage. (2.) From all heritable ſucceſſion, whether by the father or mother; becauſe he cannot be pronounced lawful heir by the inqueſt, in terms of the brief. And, (3.) From the moveable ſucceſſion of his mother; for, though the mother be known, the baſtard is not her lawful child, and legitimacy is implied in all ſucceſſion conferred by law. A baſtard, though he cannot ſucceed *jure ſanguinis*, may ſucceed by deſtination, where he is ſpecially called to the ſucceſſion by an entail or teſtament.

Aliens not ſu in feud rights;

5. Certain perſons, though born in lawful marriage, are incapable of ſucceſſion. Aliens are, from their allegiance to a foreign prince, incapable of ſucceeding in *feudal rights*, without naturalization. Children born in a foreign ſtate, whoſe fathers were natural born ſubjects, and not attainted, are held to be natural born ſubjects.

Papiſts.

ſubjects. Perſons educated in, or profeſſing, the Popiſh religion, if they ſhall neglect, upon their attaining the age of fifteen, to renounce its doctrines by a ſigned declaration, cannot ſucceed in *heritage;* but muſt give place to the next Proteſtant heir, who will hold the eſtate irredeemably, if the Popiſh heir does not, within ten years after incurring the irritancy, ſign the *formula* preſcribed by the ſtatute 1700, *c.* 3.

CHAP. III.

Of ACTIONS.

HITHERTO of *Perſons* and *Rights*, the two firſt objects of law: *Actions* are its third object, whereby perſons make their rights effectual.

SECT. I. *Nature, diviſion,* &c. *of Actions.*

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action,
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AN action may be defined, A demand regularly made and inſiſted in, before the judge competent, for the attaining or recovering of a right; and it ſuffers ſeveral diviſions, according to the different natures of the rights purſued upon.

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ons.

2. Actions are either real or perſonal. A real action is that which ariſes from a right in the thing itſelf, and which therefore may be directed againſt all poſſeſſors of that thing: thus, an action for the recovery, even of a moveable ſubject, when founded on a *jus in re*, is in the proper acceptation real; but real actions are, in vulgar ſpeech, confined to ſuch as are directed againſt heritable ſubjects. A perſonal action is founded only on an obligation undertaken for the performance of ſome fact, or the delivery of ſome ſubject; and therefore can be carried on againſt no other than the perſon obliged, or his heirs.

3. Actions, again, are either ordinary or reſciſſory. All actions are, in the ſenſe of this diviſion, ordinary, which are not reſciſſory. Reſciſſory actions are divided, (1.) Into actions of proper improbation. (2.) Actions of reduction improbation. (3.) Actions of ſimple reduction. Proper improbations, which are brought for declaring writings falſe or forged, are noticed below, N° clxxxvi. 32.

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Reduction-improbation is an action, whereby a perſon who may be hurt or affected by a writing, inſiſts for producing or exhibiting it in court, in order to have it ſet aſide, or its effect aſcertained, under the certification that the writing, if not produced, ſhall be declared falſe and forged. This certification is a fiction of law, introduced that the production of writings may be the more effectually forced, and therefore it operates only in favour of the purſuer. Becauſe the ſummons in this action proceeds on alleged grounds of falſhood, his majeſty's advocate, who is the public proſecutor of crimes, muſt concur in it.

4. As the certification in this proceſs draws after it ſo heavy conſequences, two terms are aſſigned to the defenders for production. After the ſecond term is elapſed, intimation muſt be made judicially to the defender, to ſatiſfy the production within ten days; and till theſe are expired, no certification can be pronounced. Certification cannot paſs againſt deeds recorded in the books of ſeſſion, if the defender ſhall, before the ſecond term, offer a condeſcendence of the dates of their regiſtration, unleſs falſehood be objected: in which caſe, the original muſt be brought from the record to the court. But an extract from the inferior court is no bar to certification; the principal writing muſt be laid before the court of ſeſſion on a proper warrant.

Simple reduction.

5. In an action of ſimple reduction the certification is only temporary, declaring the writings called for, null, until they be produced; ſo that they recover their full force after production, even againſt the purſuer himſelf; for which reaſon, that proceſs is now ſeldom uſed. Becauſe its certification is not ſo ſevere as in reduction-improbation, there is but one term aſſigned to the defender for producing the deeds called for.

Grounds of reduction.

6. The moſt uſual grounds of reduction of writings are, the want of the requiſite ſolemnities; that the granter was minor, or interdicted, or inhibited; or that he ſigned the deed on death-bed, or was compelled or frightened into it, or was circumvented; or that he granted it in prejudice of his lawful creditors.

7. In reductions on the head of force, or fear, or fraud and circumvention, the purſuer muſt libel the particular circumſtances from which his allegation is to be proved. Reduction is not competent upon every degree of force or fear; it muſt be ſuch as would ſhake a man of conſtancy and reſolution. Neither is it competent, on that fear which ariſes from the juſt authority of huſbands or parents over their wives or children, nor upon the fear ariſing from the regular execution of lawful diligence by caption, provided the deeds granted under that fear relate to the ground of debt contained in the diligence; but if they have no relation to that debt, they are reducible *ex metu*.

8. Alienations granted by debtors after contracting of lawful debts, in favour of conjunct or confident perſons, without juſt and neceſſary cauſes, and without a juſt price really paid, are null. One is deemed a prior creditor, whoſe ground of debt exiſted before the right granted by the debtor; though the written voucher of the debt ſhould bear a date poſterior to it. Perſons are accounted conjunct, whoſe relation to the granter is ſo near, as to bar them from judging in his cauſe. Confident perſons are thoſe who appear to be in the granter's confidence, by being employed in his affairs, or about his perſon; as a doer, ſteward, or domeſtic ſervant.

9. Rights, though gratuitous, are not reducible, if the granter had, at the date thereof, a ſufficient fund for the payment of his creditors. Proviſions to children are, in the judgment of law, gratuitous; ſo that their effect, in a queſtion with creditors, depends on the ſolvency of the granter: but ſettlements to wives, either in marriage-contracts, or even after marriage, are onerous, in ſo far as they are rational; and conſequently are not reducible, even though the granter was inſolvent. This rule holds alſo in rational tochers contracted to huſbands: But it muſt, in all caſes, be qualified with this limitation, *if the inſolvency of the granter was not publicly known;* for if it was, fraud is preſumed in the receiver of the right, by contracting with the bankrupt.

10. The receiver of the deed, if he be a conjunct or confident perſon, muſt aſtruct or ſupport the onerous cauſe of his right, not merely by his own oath, but by ſome circumſtances or adminicles. But where a right is granted to a ſtranger, the narrative of it expreſſing an onerous cauſe, is ſufficient *per ſe* to ſecure it againſt reduction.

11. All voluntary payments or rights made by a bankrupt to one creditor, to diſappoint the more timeous diligence of another, are reducible at the inſtance of that creditor who has uſed the prior diligence. A creditor, though his diligence be but begun by citation, may inſiſt in a reduction of all poſterior voluntary rights granted to his prejudice; but the creditor who neglects to complete his begun diligence within a reaſonable time, is not intitled to reduce any right granted by the debtor, after the time that the diligence is conſidered as abandoned.

12. A prohibited alienation, when conveyed by the receiver to another who is not privy to the fraud, ſubſiſts in the perſon of the *bona fide* purchaſer. In the caſe of moveable rights, this nullity is receivable by exception; but it muſt be declared by reduction, where the right is heritable.

13. By act 1696, *c.* 5. all alienations by a bankrupt, within ſixty days before his bankruptcy, to one creditor in preference to another, are reducible, at the inſtance even of ſuch co-creditors as had not uſed the leaſt ſtep of diligence. A bankrupt is there deſcribed by the following characters; diligence uſed againſt him by horning and caption; and inſolvency, joined either with impriſonment, retiring to the ſanctuary, abſconding, or forcibly defending himſelf from diligence. It is ſufficient that a caption is raiſed againſt the debtor, though it be not executed, provided he has retired to ſhun it. It is provided, that all heritable bonds or rights on which ſeiſin may follow, ſhall be reckoned, in a queſtion with the granter's other creditors upon this act, to be of the date of the ſeiſin following thereon. But this act was found to relate only to ſecurities for former debts, and not to *nova debita*.

Actions either *rei perſecutoriæ*, or penal.

14. Actions are divided into *rei perſecutoriæ*, and *pœnales*. By the firſt, the purſuer inſiſts barely to recover the ſubject that is his, or the debt due to him: and this includes the damage ſuſtained; for one is as truly a ſufferer in his patrimonial intereſt by that damage, as by the loſs of the ſubject itſelf. In penal actions, which always ariſe *ex delicto*, ſomething is alſo demanded by way of penalty.

Spuilzie.

15. Actions of ſpuilzie, ejection, and intruſion, are penal. An action of ſpuilzie is competent to one diſpoſſeſſed of a moveable ſubject violently, or without order of law, againſt the perſon diſpoſſeſſing: not only for being reſtored to the poſſeſſion of the ſubject, if extant, or for the value, if it be deſtroyed, but alſo for the violent profits, in caſe the action be brought within three years from the ſpoliation. Ejection and intruſion are, in heritable ſubjects, what ſpuilzie is in moveables. The difference between the two firſt is, that in ejection, violence is uſed; whereas the intruder enters into the void poſſeſſion, without either a title from the proprietor, or the warrant of a judge. The actions ariſing from all the three are of the ſame general nature.

Contravention of law-borrows.

16. The action of contravention of law-borrows is alſo penal. It proceeds on letters of law-borrows, (from *borgh* a cautioner), which contain a warrant to charge the party complained upon, that he may give ſecurity, not to hurt the complainer in his perſon, family, or eſtate. Theſe letters do not require the previous citation of the party complained upon, becauſe the caution which the law requires is only for doing what is every man's duty; but, before the letters are executed againſt him, the complainer muſt make oath that he dreads bodily harm from him. The penalty of contravention is aſcertained to a ſpecial ſum, according to the offender's quality; the half to be applied to the fiſk, and the half to the complainer. Contravention is not incurred by the uttering of reproachful words, where they are not accompanied, either with acts of violence, or at leaſt a real injury; and as the action is penal, it is elided by any probable ground of excuſe.

Penal a tions, w ther tr miſſible gainſt t purſuer.

17 Penalties are the conſequences of delict, or tranſgreſſion; and as no heir ought to be accountable for the delict of his anceſtor, farther than the injured perſon has really ſuffered by it, penal actions die with the delinquent, and are not tranſmiſſible againſt heirs. Yet the action, if it has been commenced and litiſconteſted in the delinquent's lifetime, may be continued againſt the heir, though the delinquent ſhould die during the dependence. Some actions are *rei perſecutoriæ* on the part of the purſuer, when he inſiſts for ſimple reſtitution; which yet may be penal in reſpect of the defender; *e. g.* the action on the paſſive title of vitious intromiſſion, by which the purſuer frequently recovers the debt due to him by the deceaſed, though it ſhould exceed the value of the goods intermeddled with by the defenders.

Action petitor

18. The moſt celebrated diviſion of actions in our law is into *petitory*, *poſſeſſory*, and *declaratory*. *Petitory* actions are thoſe, where ſomething is demanded from the defender, in conſequence of a right of property, or of credit in the purſuer: Thus, actions for reſtitution of moveables, actions of poinding, of forthcoming, and indeed all perſonal actions upon contracts or quaſi-contracts, are petitory. *Poſſeſſory* actions are thoſe which are founded, either upon poſſeſſion alone, as ſpuilzies; or upon poſſeſſion joined with another title, as removings; and they are competent either for getting into poſſeſſion, for holding it, or for recovering it; analogous to the interdicts, of the Roman law, *quorum bonorum*, *uti poſſidetis*, and *unde vi*.

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Of m tion,

16. An action of moleſtation is a poſſeſſory action, competent to the proprietor of a land-eſtate, againſt thoſe who diſturb his poſſeſſion. It is chiefly uſed in queſtions of commonty, or of controverted marches. Where a declarator of property is conjoined with a proceſs of moleſtation, the ſeſſion alone is competent to the action. Actions on brieves of perambulation, have the ſame tendency with moleſtations, *viz.* the ſettling of marches between conterminous lands.

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20. The actions of mails and duties is ſometimes petitory, and ſometimes poſſeſſory. In either caſe, it is directed againſt the tenants and natural poſſeſſors of land-eſtates, for payment to the purſuer of the rents remaining due by them for paſt crops, and of the full rent for the future. It is competent, not only to a proprietor whoſe right is perfected by ſeiſin, but to a ſimple diſponee, for a diſpoſition of lands includes a right to the mails and duties; and conſequently to an adjudger, for an adjudication is a judicial diſpoſition. In the petitory action, the purſuer, ſince he founds upon right, not poſſeſſion, muſt make the proprietor, from whom the tenants derive their right, party to the ſuit; and he muſt ſupport his claim by titles of property or diligences, preferable to thoſe in the perſon of

Petit

of his competitor. In the poſſeſſory, the purſuer who libels that he, his anceſtors or authors, have been ſeven years in poſſeſſion, and that therefore he has the benefit of a poſſeſſory judgment, need produce no other title than a ſeiſin, which is a title ſufficient to make the poſſeſſion of heritage lawful; and it is enough, if he calls the natural poſſeſſors, though he ſhould neglect the proprietor. A poſſeſſory judgment founded on ſeven years poſſeſſion, in conſequence either of a ſeiſin or a tack, has this effect, that though one ſhould claim under a title preferable to that of the poſſeſſor, he cannot compete with him in the poſſeſſion, till in a formal proceſs of reduction he ſhall obtain the poſſeſſor's title declared void.

21. A *declaratory* action is that, in which ſome right is craved to be declared in favour of the purſuer, but nothing ſought to be paid or performed by the defender, ſuch as declarators of marriage, of irritancy, of expiry, of the legal reverſion, &c. Under this claſs may be alſo comprehended reſciſſory actions, which, without any perſonal concluſion againſt the defender, tend ſimply to ſet aſide the rights or writings libelled, in conſequence of which a contrary right or immunity ariſes to the purſuer. Decrees upon actions that are properly declaratory confer no new right; they only declare what was the purſuer's right before, and ſo have a retroſpect to the period at which that right firſt commenced. Declarators, becauſe they have no perſonal concluſion againſt the defender, may be purſued againſt an apparent heir without a previous charge given him to enter to his anceſtor; unleſs where ſpecial circumſtances require a charge.

22. An action for proving the tenor, whereby a writing, which is deſtroyed or amiſſing, is endeavoured to be revived, is in effect declaratory. In obligations that are extinguiſhable barely by the debtor's retiring or cancelling them, the purſuer, before a proof of the tenor is admitted, muſt condeſcend on ſuch a *caſus amiſſionis*, or accident by which the writing was deſtroyed, as ſhews it was loſt when in the creditor's poſſeſſion; otherwiſe bonds that have been cancelled by the debtor on payment, might be reared up as ſtill ſubſiſting againſt him: But in writings which require contrary deeds to extinguiſh their effect, as aſſignations, diſpoſitions, charters, &c. it is ſufficient to libel that they were loſt, even *caſu fortuito*.

23. Regularly, no deed can be revived by this action, without ſome adminicle in writing, referring to that which is libelled; for no written obligation ought to be raiſed up barely on the teſtimony of witneſſes. If theſe adminicles afford ſufficient conviction that the deed libelled did once exiſt, the tenor is admitted to be proved by witneſſes, who muſt depoſe, either that they were preſent at ſigning the deed, or that they afterwards ſaw it duly ſubſcribed. Where the relative writings contain all the ſubſtantial clauſes of that which is loſt, the tenor is ſometimes ſuſtained without witneſſes. In a writing which is libelled to have contained uncommon clauſes, all theſe muſt appear by the adminicles. Actions of proving the tenor are, on account of their importance, appropriated to the court of Seſſion; and, by the old form, the teſtimony of the witneſſes could not be received but in preſence of all the judges.

Multiple-poinding.

24. The action of double or multiple poinding may be alſo reckoned *declaratory*. It is competent to a debtor, who is diſtreſſed, or threatened with diſtreſs, by two or more perſons claiming right to the debt, and who therefore brings the ſeveral claimants into the field, in order to debate and ſettle their ſeveral preferences, that ſo he may pay ſecurely to him whoſe right ſhall be found preferable. This action is daily purſued by an arreſtee, in the caſe of ſeveral arreſtments uſed in his hands for the ſame debt; or by tenants in the caſe of ſeveral adjudgers, all of whom claim right to the ſame rents. In theſe competitions, any of the competitors may bring an action of multiple-poinding in name of the tenants, or other debtors, without their conſent, or even though they ſhould diſclaim the proceſs; ſince the law has introduced it as the proper remedy for getting ſuch competitions determined: And while the ſubject in controverſy continues *in medio*, any third perſon who conceives he has a right to it, may, though he ſhould not be cited as a defender, produce his titles, as if he were an original party to the ſuit, and will be admitted for his intereſt in the competition.

Acceſſory actions.

25. Certain actions may be called *acceſſory*, becauſe they are merely preparatory or ſubſervient to other actions. Thus, exhibitions *ad deliberandum*, at the inſtance of an heir againſt the creditors or cuſtodiers of his anceſtor's writings, are intended only to pave the way for future proceſſes. An action of transference is alſo of this ſort, whereby an action, during the pendency of which the defender happens to die, is craved to be transferred againſt his repreſentative, in the ſame condition in which it ſtood formerly. Upon the purſuer's death his heir may inſiſt in the cauſe againſt the defender, upon producing, either a retour or a confirmed teſtament, according as the ſubject is heritable or moveable. Transferences being but incidental to other actions, can be pronounced by that inferior judge alone before whom the principal cauſe depended; but, where the repreſentatives of the deceaſed live in another territory, it is the ſupreme court muſt transfer. Obligations may now be regiſtered ſummarily after the creditor's death; which before was not admitted, without a ſeparate proceſs of regiſtration, to which the granter was neceſſarily to be made a party.

Transference.

Wakening.

26. A proceſs of wakening is likewiſe acceſſory. An action is ſaid to ſleep, when it lies over not inſiſted in for a year, in which caſe its effect is ſuſpended; but even then it may, at any time within the years of preſcription, be revived or wakened by a ſummons, in which the purſuer recites the laſt ſtep of the proceſs, and concludes that it may be again carried on as if it had not been diſcontinued. An action that ſtands upon any of the inner-houſe rolls cannot ſleep; nor an action in which decree is pronounced, becauſe it has got its full completion: Conſequently the decree may be extracted after the year, without the neceſſity of a wakening.

Tranſumpt.

27. An action of tranſumpt falls under the ſame claſs. It is competent to thoſe who have a partial intereſt in writings that are not in their own cuſtody, againſt the poſſeſſors thereof, for exhibiting them, that they may be tranſumed for their behoof. Though the ordinary title in this proceſs be an obligation by the defender to grant tranſumpts to the purſuer, it is ſufficient if the purſuer can ſhow that he has an intereſt in the writings; but in this caſe, he muſt tranſume them on his

on his own charges. Actions of tranſumpt may be purſued before any judge-ordinary. After the writings to be tranſumed are exhibited, full duplicates are made out, collated, and ſigned, by one of the clerks of court, which are called *tranſumpts*, and are as effectual as an extract from the regiſter.

Brieves.

28. Actions proceeded anciently upon brieves iſſuing from the chancery, directed to the juſticiary or judge-ordinary, who tried the matter by a jury, upon whoſe verdict judgment was pronounced: And to this day, we retain certain brieves, as of *inqueſt*, *terce*, *idiotry*, *tutory*, *perambulation*, and perhaps two or three others: But ſummonſes were, immediately upon the inſtitution of the College of Juſtice, introduced in the place of brieves. A ſummons, when applied to actions purſued before the ſeſſion, is a writ in the King's name, iſſuing from his ſignet upon the purſuer's complaint, authoriſing meſſengers to eite the defender to appear before the court and make his defences; with certification if he fail to appear, that decree will be pronounced againſt him in terms of the certificarion of the ſummons.

Summonſes

29. The days indulged by law to a defender, between his citation and appearance, to prepare for his defence, are called *induciæ legales*. If he is within the kingdom, 21 and 6 days, for the firſt and ſecond diets of appearance, muſt be allowed him for that purpoſe; and if out of it, 60 and 15. Defenders reſiding in Orkney or Zetland muſt be cited on 40 days. In certain ſummonſes which are privileged, the *induciæ* are ſhortened: Spuilzies and ejections proceed on 15 days; wakenings and transferences, being but incidental, on ſix; ſee the liſt of privileged ſummonſes, in act of ſederunt June 29. 1672. A ſummons muſt be executed, *i. e.* ſerved againſt the defender, ſo as the laſt diet of appearance may be within a year after the date of the ſummons; and it muſt be called within a year after that diet, otherwiſe it falls for ever. Offence againſt the authority of the court, acts of malverſation in office by any member of the college of juſtice, and acts of violence and oppreſſion committed during the dependence of a ſuit by any of the parties, may be tried without a ſummons, by a ſummary complaint.

Judiciæ legales.

30. Where an action is in part penal, *e. g.* a removing, ſpuilzie, &c. a purſuer who reſtricts his demand to, and obtains a decree merely for, reſtitution, cannot thereafter bring a new proceſs for the violent profits. Yet the ſame fact may be the foundation both of a criminal and civil action, becauſe theſe two are intended for different purpoſes; The one for ſatisfying the public juſtice, the other for indemnifying the private party: And though the defender ſhould be abſolved in the criminal trial, for want of evidence, the party injured may bring an action *ad civilem effectum*, in which he is intitled to refer the libel to the defender's oath.

Concourſe of actions.

31. One libel or ſummons may contain different concluſions on the ſame ground of right, reſciſſory, declaratory, petitory, &c. if they be not repugnant to each other: Nay, though different ſums be due to one, upon diſtinct grounds of debt, or even by different debtors, the creditor may inſiſt againſt them all in the ſame ſummons.

Accumulation of actions.

32. Defences are pleas offered by a defender for eliding an action. They are either dilatory, which do not enter into the cauſe itſelf, and ſo can only procure an abſolviture from the *lis pendens*: Or peremptory, which entirely cut off the purſuer's right of action. The firſt, becauſe they relate to the forms of proceeding, muſt be offered *in limine judicii*, and all of them at once. But peremptory defences may be proponed at any time before ſentence.

Defences.

33. A cauſe, after the parties had litigated it before the judge, was ſaid by the Romans to be litiſconteſted. By litiſconteſtation a judicial contract is underſtood to be entered into by the litigants, by which the action is perpetuated againſt heirs, even when it ariſes *ex delicto*. By our law, litiſconteſtation is not formed till an act is extracted, admitting the libel or defences to proof.

Litiſcont tation.

Sect. II. *Of Probation.*

clxxxi

All allegations by parties to a ſuit, muſt be ſupported by proper proof. Probation is either by writing, by the party's own oath, or by witneſſes. In the caſe of allegations, which may be proved by either of the three ways, a proof is ſaid to be admitted *prout de jure*; becauſe, in ſuch caſe, all the legal methods of probation are competent to the party: if the proof he brings by writing be lame, he may have recourſe either to witneſſes or to his adverſary's oath; but, if he ſhould firſt take himſelf to the proof by oath, he cannot thereafter uſe any other probation, for the reaſon aſſigned par. 3. and, on the contrary, a purſuer, who has brought a proof by witneſſes, on an extracted act, is not allowed to recur to the oath of the defender. Single combat, as a ſort of appeal to Providence, was, by our ancient law, admitted as evidence, in matters both civil and criminal. It was afterwards reſtricted to the caſe of ſuch capital crimes where no other proof could be had; ſome traces of this blind method of trial remained even in the reign of James VI. who, by 1600, *c.* 12. might authoriſe duels on weighty occaſions.

Probatio

prout de re;

by ſingl combat

2. As obligations or deeds ſigned by the party himſelf, or his anceſtors or authors, muſt be, of all evidence, the leaſt liable to exception; therefore every debt or allegation may be proved by proper evidence in writing. The ſolemnities eſſential to probative deeds have been already explained, Nº clxxiv. 3. *et ſeq.* Books of account kept by merchants, tradeſmen, and other dealers in buſineſs, though not ſubſcribed, are probative againſt him who keeps them; and, in caſe of furniſhings by a ſhop-keeper, ſuch books, if they are regularly kept by him, ſupported by the teſtimony of a ſingle witneſs, afford a *ſemiplena probatio* in his favour, which becomes full evidence by his own oath in ſupplement. Notorial inſtruments and executions by meſſengers bear full evidence, that the ſolemnities therein ſet forth were uſed, not to be invalidated otherwiſe than by a proof of falſehood; but they do not prove any other extrinſic facts therein averred, againſt third parties.

by writ

3. Regularly, no perſon's right can be proved by his own oath, nor taken away by that of his adverſary; becauſe theſe are the bare averments of parties in their own favour. But, where the matter in iſſue is referred by one of the parties to the oath of the other, ſuch oath, though made in favour of the deponent himſelf, is deciſive of the point; becauſe the reference is a virtual contract between the litigants, by which they are underſtood to put the iſſue of the cauſe upon what ſhall be

Probat oath of ty in ference

be depoſed: and this contract is ſo ſtrictly regarded, that the party who refers to the oath of the other cannot afterwards, in a civil action, plead upon any deed againſt the party depoſing, inconſiſtent with his oath. To obviate the ſnares that may be laid for perjury, he, to whoſe oath of verity a point is referred, may refuſe to depoſe, till his adverſary ſwear that he can bring no other evidence in proof of his allegation.

4. A defender, though he cannot be compelled to ſwear to facts in a libel properly criminal; yet may, in treſpaſſes, where the concluſion is limited to a fine, or to damages. In general, an oath of party cannot either hurt or benefit third parties; being, as to them, *res inter alios acta*.

5. An oath upon reference, is ſometimes qualified by ſpecial limitations reſtricting it. The qualities which are admitted by the judge as part of the oath, are called *intrinſic;* thoſe which the judge rejects or ſeparates from the oath, *extrinſic*. Where the quality makes a part of the allegation which is relevantly referred to oath, it is intrinſic. Thus, becauſe a merchant, ſuing for furniſhings after the three years, muſt, in order to make a relevancy, offer to prove by the defender's oath, not only the delivery of the goods, but that the price is ſtill due; therefore, though the defender ſhould acknowledge upon oath his having received the goods, yet, if he adds, that he paid the price, this laſt part, being a denial that the debt ſubſiſts, is intrinſic, ſince it is truly the point referred to oath. Where the quality does not import an extinction of the debt, but barely a counter-claim, or *mutua petitio*, againſt the purſuer, it is held as extrinſic, and muſt be proved *aliunde*. Neither can a defender who in his oath admits the conſtitution of a debt, get off by adjecting the quality of payment, where the payment ought by its nature to be vouched by written evidence.

6. Oaths of verity are ſometimes deferred by the judge to either party, *ex officio;* which becauſe they are not founded on any implied contract between the litigants, are not finally deciſive, but may be traverſed on proper evidence aftewards produced. Theſe oaths are commonly put by the judge for ſupplying a lame or imperfect proof, and are therefore called oaths in ſupplement. See par. 2.

7. To prevent groundleſs allegations, oaths of calumny have been introduced, by which either party may demand his adverſary's oath, that he believes the fact contained in his libel or defences to be juſt and true. As this is an oath, not of verity, but only of opinion, the party who puts it to his adverſary does not renounce other probation; and therefore no party is bound to give an oath of calumny, on recent facts of his own, for ſuch oath is really an oath of verity. Theſe oaths have not been ſo frequent ſince the act of ſederunt, Feb. 1. 1715, whereby any party, againſt whom a fact ſhall be alleged, is obliged, without making oath, to confeſs or deny it; and, in caſe of calumnious denial, is ſubjected to the expence that the other party has thereby incurred.

8. In all oaths, whether of verity or calumny, the citation carries, or at leaſt implies, a certification, that if the party does not appear at the day aſſigned for depoſing, he ſhall be held *pro confeſſo;* from a preſumption of his conſciouſneſs, that the fact upon which he declines to ſwear makes againſt him; but no party can be held *pro confeſſo*, if he be in the kingdom, without a previous perſonal citation uſed againſt him. Though an oath which reſolves into a *non memini*, cannot be ſaid to prove any point; yet where one ſo depoſes upon a recent fact, to which he himſelf was privy, his oath is conſidered as a diſſembling of the truth, and he is held *pro confeſſo*, as if he had refuſed to ſwear.

A *non memini* oath.

Oath *in litem*.

9. An oath *in litem*, is that which the judge defers to a purſuer, for aſcertaining either the quantity or the value of goods which have been taken from him by the defender without order of law, or the extent of his damages. An oath *in litem*, as it is the affirmation of a party in his own behalf, is only allowed where there is proof that the other party has been engaged in ſome illegal act, or where the public policy has made it neceſſary, (ſee N° clxxiii. 11.) This oath, as to the quantities, is not admitted, where there is a concurring teſtimony of witneſſes brought in proof of it. When it is put as to the value of goods, it is only an oath of credulity; and therefore it has always been ſubject to the modification of the court.

Probation by witneſſes, in what caſes rejected;

10. The law of Scotland rejects the teſtimony of witneſſes, (1.) In payment of any ſum above *L.* 100 *Scots*, all which muſt be proved either *ſcripto vel juramento*. (2.) In all gratuitous promiſes, though for the ſmalleſt trifle. (3.) In all contracts, where writing is either eſſential to their conſtitution, (ſee N° clxxiv. 2.) or where it is uſually adhibited, as in the borrowing of money. And it is a general rule, ſubject to the reſtrictions mentioned in the next par. that no debt or right, once conſtituted by writing, can be taken away by witneſſes.

in what admitted.

11. On the other part, probation by witneſſes is admitted to the extent of *L.* 100 *Scots*, in payments, nuncupative legacies, and verbal agreements which contain mutual obligations. And it is received to the higheſt extent, (1.) In all bargains which have known engagements naturally ariſing from them, concerning moveable goods. (2.) In facts performed in ſatisfaction, even of a written obligation, where ſuch obligation binds the party preciſely to the performance of them. (3.) In facts which with difficulty admit of a proof by writing, even though the effect of ſuch proof ſhould be the extinction of a written obligation, eſpecially if the facts import fraud or violence; thus, a bond is reducible *ex dolo*, on a proof by witneſſes. Laſtly, all intromiſſion by a creditor with the rents of his debtor's eſtate payable in grain, may be proved by witneſſes; and even intromiſſion with the ſilver-rent, where the creditor has entered into the total poſſeſſion of the debtor's lands.

What perſons rejected as witneſſes.

12. No perſon, whoſe near relation to another bars him from being a judge in his cauſe, can be admitted as a witneſs for him; but he may, againſt him, except a wife or child, who cannot be compelled to give teſtimony againſt the huſband or parent, *ob reverentiam perſonæ, et metum perjurii*. Though the witneſs, whoſe propinquity to one of the parties is objected to, be as nearly related to the other, the objection ſtands good.

13. The teſtimony of infamous perſons is rejected, *i. e.* perſons who have been guilty of crimes that law declares to infer infamy, or who have been declared infamous by the ſentence of a judge; but *infamia facti* does not diſqualify a witneſs. Pupils are inhabile wit-

neſſes; being, in the judgment of law, incapable of the impreſſions of an oath. The teſtimony of women is ſeldom admitted, where other witneſſes can be had. And in general witneſſes otherwiſe exceptionable may, where there is a penury of witneſſes ariſing from the nature or circumſtances of the fact, be received *cum nota;* that is, their teſtimony, though not quite free from ſuſpicion, is to be conjoined with the other evidence, and to have ſuch weight given it as the judge ſhall think it deſerves.

Purgation of witneſſes.

14. All witneſſes, before they are examined in the cauſe, are purged of partial counſel; that is, they muſt declare, that they have no intereſt in the ſuit, nor have given advice how to conduct it; that they have got neither bribe nor promiſe, nor have been inſtructed how to depoſe; and that they bear no enmity to either of the parties. Theſe, becauſe they are the points put to a witneſs before his making oath, are called *initialia teſtimonii.* Where a party can bring preſent proof of a witneſs's partial counſel, in any of the above particulars, he ought to offer it before the witneſs be ſworn; but, becauſe ſuch objection, if it cannot be inſtantly verified, will be no bar to the examination, law allows the party in that caſe to proteſt for *reprobator*, before the witneſs is examined; *i. e.* that he may be afterwards allowed to bring evidence of his enmity, or other inhability. Reprobator is competent even after ſentence, where proteſtation is duly entered; but in that caſe, the party inſiſting muſt conſign *L.* 100 *Scots*, which he forfeits if he ſuccumb. This action muſt have the concurrence of the king's advocate, becauſe the concluſion of it imports perjury; and for this reaſon, the witneſs muſt be made a party to it.

Diligence againſt witneſſes.

15. The interlocutory ſentence or warrant, by which parties are authoriſed to bring their proof, is either by way of act, or of incident diligence. In an act, the Lord Ordinary who pronounces it, is no longer judge in the proceſs; but in an incident diligence, which is commonly granted upon ſpecial points, that do not exhauſt the cauſe, the Lord Ordinary continues judge. If a witneſs does not appear at the day fixed by the warrant of citation, a ſecond warrant is granted of the nature of a caption, containing a command to meſſengers to apprehend and bring him before the court. Where the party to whom a proof is granted, brings none within the term allowed by the warrant, an interlocutor is pronounced, circumducing the term, and precluding him from bringing evidence thereafter. Where evidence is brought, if it be upon an act, the Lord Ordinary on the acts, after the term for proving is elapſed, declares the proof concluded; and thereupon a ſtate of the caſe is prepared by the Ordinary on concluded cauſes, which muſt be judged by the whole Lords; but if the proof be taken upon an incident diligence, the import of it may be determined by the Lord Ordinary in the cauſe.

Circumduction.

Preſumptions.

16. Where facts do not admit a direct proof, preſumptions are received as evidence, which, in many caſes, make as convincing a proof as the direct. Preſumptions are conſequences deduced from facts known or proved, which infer the certainty, or at leaſt a ſtrong probability, of another fact to be proved. This kind of probation is therefore called *artificial,* becauſe it requires a reaſoning to infer the truth of the point in queſtion, from the facts that already appear in proof. Preſumptions are either, 1. *juris et de jure;* 2. *juris;* or, 3. *hominis* or *judicis*. The firſt ſort obtains, where ſtatute or cuſtom eſtabliſhes the truth of any point upon a preſumption; and it is ſo ſtrong, that it rejects all proof that may be brought to elide it in ſpecial caſes. Thus, the teſtimony of a witneſs, who forwardly offers himſelf without being cited, is, from a preſumption of his partiality, rejected, let his character be ever ſo fair; and thus alſo, a minor, becauſe he is by law preſumed incapable of conducting his own affairs, is, upon that preſumption, diſabled from acting without the conſent of his curators, though he ſhould be known to behave with the greateſt prudence. Many ſuch preſumptions are fixed by ſtatute.

17. *Preſumptiones juris* are thoſe, which our law-books or deciſions have eſtabliſhed, without founding any particular conſequence upon them, or ſtatuting *ſuper præſumpto.* Moſt of this kind are not proper preſumptions inferred from poſitive facts, but are founded merely on the want of a contrary proof; thus, the legal preſumptions for freedom, for life, for innocence, &c. are in effect ſo many negative propoſitions, that ſervitude, death, and guilt, are not to be preſumed, without evidence brought by him who makes the allegation. All of them, whether they be of this ſort, or proper preſumptions, as they are only conjectures formed from what commonly happens, may be elided, not only by direct evidence, but by other conjectures, affording a ſtronger degree of probability to the contrary. *Præſumptiones hominis* or *judicis*, are thoſe which ariſe daily from the circumſtances of particular caſes; the ſtrength of which is to be weighed by the judge.

18. A *fictio juris* differs from a preſumption. Things are preſumed, which are likely to be true; but a fiction of law aſſumes for truth what is either certainly falſe, or at leaſt is as probably falſe as true. Thus an heir is feigned or conſidered in law as the ſame perſon with his anceſtor. Fictions of law muſt, in their effects, be always limited to the ſpecial purpoſes of equity for which they were introduced; ſee an example, N° clxxxiii. 3.

SECT. III. *Of Sentences and their Executions.*

PROPERTY would be moſt uncertain, if debateable points might, after receiving a definitive judgment, be brought again in queſtion, at the pleaſure of either of the parties: every ſtate has therefore fixed the character of final to certain ſentences or decrees, which in the Roman law are called *res judicatæ*, and which exclude all review or rehearing.

2. Decrees of the court of ſeſſion, are either *in foro contradictorio*, where both parties have litigated the cauſe, or in abſence of the defender. Decrees of the ſeſſion *in foro* cannot, in the general caſe, be again brought under the review of the court, either on points which the parties neglected to plead before ſentence (which we call *competent* and *omitted*), or upon points pleaded and found inſufficient (proponed and repelled.) But decrees, though *in foro*, are reverſible by the court, where either they labour under eſſential nullities; *e. g.* where they are *ultra petita*, or not conformable to their grounds and warrants, or founded on an error in calcul, *&c.*; or where the party againſt whom the decree is obtained has thereafter recovered

evidence ſufficient to overturn it, of which he knew not before.

3. As parties might formerly reclaim againſt the ſentences of the ſeſſion, at any time before extracting the decree, no judgment was final till extract; but now, a ſentence of the inner-houſe, either not reclaimed againſt within ſix ſederunt days after its date, or adhered to upon a reclaiming bill, though it cannot receive execution till extract, makes the judgment final as to the court of ſeſſion. And, by an order of the houſe of Lords, March 24. 1725, no appeal is to be received by them from ſentences of the ſeſſion, after five years from extracting the ſentence; unleſs the perſon entitled to ſuch appeal be minor, clothed with a huſband, *non compos mentis*, impriſoned, or out of the kingdom. Sentences pronounced by the Lord Ordinary have the ſame effect, if not reclaimed againſt, as if they were pronounced in preſence; and all petitions againſt the interlocutor of an Ordinary muſt be preferred within eight ſederunt days after ſigning ſuch interlocutor.

4. Decrees, in abſence of the defender, have not the force of *res judicatæ* as to him; for where the defender does not appear, he cannot be ſaid to have ſubjected himſelf by the judicial contract which is implied in litiſconteſtation: a party therefore may be reſtored againſt theſe, upon paying to the other his coſts in recovering them. The ſentences of inferior courts may be reviewed by the court of ſeſſion,—before decree, by advocation,—and after decree, by ſuſpenſion or reduction; which two laſt are alſo the methods of calling in queſtion ſuch decrees of the ſeſſion itſelf, as can again be brought under the review of the court.

5. Reduction is the proper remedy, either where the decree has already received full execution by payment, or where it decrees nothing to be paid or performed, but ſimply declares a right in favour of the purſuer. Suſpenſion is that form of law by which the effect of a ſentence condemnatory, that has not yet received execution, is ſtayed or poſtponed till the cauſe be again conſidered. The firſt ſtep towards ſuſpenſion is a bill preferred to the Lord Ordinary on the bills. This bill, when the deſire of it is granted, is a warrant for iſſuing letters of ſuſpenſion which paſs the ſignet; but, if the preſenter of the bill ſhall not, within 14 days after paſſing it, expedite the letters, execution may proceed on the ſentence. Suſpenſions of decrees *in foro* cannot paſs, but by the whole lords in time of ſeſſion, and by three in vacation time; but other decrees may be ſuſpended by any one of the judges.

6. As ſuſpenſion has the effect of ſtaying the execution of the creditor's legal diligence, it cannot, in the general caſe, paſs without caution given by the ſuſpender to pay the debt, in the event it ſhall be found due. Where the ſuſpender cannot, from his low or ſuſpected circumſtances, procure unqueſtionable ſecurity, the lords admit juratory caution, *i. e.* ſuch as the ſuſpender ſwears is the beſt he can offer; but the reaſons of ſuſpenſion are, in that caſe, to be conſidered with particular accuracy at paſſing the bill. Decrees in favour of the clergy, of univerſities, hoſpitals, or pariſh-ſchoolmaſters, for their ſtipends, rents, or ſalaries, cannot be ſuſpended, but upon production of diſcharges, or on conſignation of the ſums charged for. A charger, who thinks himſelf ſecure without a cautioner, and wants diſpatch, may, where a ſuſpenſion of his diligence is ſought, apply to the court to get the reaſons of ſuſpenſion ſummarily diſcuſſed on the bill.

Law of Scotland.

Suſpenſion, when competent.

7. Though he, in whoſe favour the decree ſuſpended is pronounced, be always called the charger, yet a decree may be ſuſpended before a charge be given on it. Nay, ſuſpenſion is competent even where there is no decree, for putting a ſtop to any illegal act whatſoever: thus, a building, or the exerciſe of a power which one aſſumes unwarrantably, is a proper ſubject of ſuſpenſion. Letters of ſuſpenſion are conſidered merely as a prohibitory diligence; ſo that the ſuſpender, if he would turn provoker, muſt bring an action of reduction. If upon diſcuſſing the letters of ſuſpenſion, the reaſons ſhall be ſuſtained, a decree is pronounced, ſuſpending the letters of diligence on which the charge was given *ſimpliciter*; which is called a *decree of ſuſpenſion*, and takes off the effect of the decree ſuſpended. If the reaſons of ſuſpenſion be repelled, the court find the letters of diligence orderly proceeded, *i. e.* regularly carried on; and they ordain them to be put to farther execution.

Extraction of decrees.

8. Decrees are carried into execution, by diligence, either againſt the perſon or againſt the eſtate of the debtor. The firſt ſtep of perſonal execution is by letters of horning, which paſs, by warrant of the court of ſeſſion, on the decrees of magiſtrates of boroughs, ſheriffs, admirals, and commiſſaries. If the debtor does not obey the will of the letters of horning within the days of the charge, the charger, after denouncing him rebel, and regiſtering the horning, may apply for letters of caption, which contain a command, not only to meſſengers, but to magiſtrates, to apprehend and impriſon the debtor. All meſſengers and magiſtrates, who refuſe their aſſiſtance in executing the caption, are liable *ſubſidiarié* for the debt; and ſuch ſubſidiary action is ſupported by the execution of the meſſenger employed by the creditor, expreſſing that they were charged to concur, and would not. Letters of caption contain an expreſs warrant to the meſſenger, in caſe he cannot get acceſs, to break open all doors and other lock-faſt places.

What perſons ſecured againſt caption.

9. Law ſecures peers, married women, and pupils, againſt perſonal execution by caption upon civil debts. No caption can be executed againſt a debtor within the precincts of the king's palace of Holyroodhouſe: but this privilege of ſanctuary afforded no ſecurity to criminals, as that did which was, by the canon law, conferred on churches and religious houſes. Where the perſonal preſence of a debtor, under caption, is neceſſary in any of our ſupreme courts, the judges are empowered to grant him a protection, for ſuch time as may be ſufficient for his coming and going, not exceeding a month.

Priſoners muſt be cloſely confined.

10. After a debtor is impriſoned, he ought not to be indulged the benefit of the air, not even under a guard; for creditors have an intereſt, that their debtors be kept under cloſe confinement, that, by the *ſqualor carceris*, they may be brought to pay their debt: and any magiſtrate or jailor, who ſhall ſuffer the priſoner to go abroad, without a proper atteſtation, upon oath, of the dangerous ſtate of his health, is liable *ſubſidiarié* for the debt. Magiſtrates are in like manner

liable, if they ſhall ſuffer a priſoner to eſcape, through the inſufficiency of their priſon: but, if he ſhall eſcape under night, by the uſe of inſtruments, or by open force, or by any other accident which cannot be imputed to the magiſtrates or jailor, they are not chargeable with the debt; provided they ſhall have, immediately after his eſcape, made all poſſible ſearch for him. Regularly, no priſoner for debt upon letters of caption, though he ſhould have made payment, could be releaſed without letters of ſuſpenſion, containing a charge to the jailor to ſet him at liberty; becauſe the creditor's diſcharge could not take off the penalty incurred by the debtor for contempt of the king's authority: but to ſave unneceſſary expence to debtors in ſmall debts, jailors are empowered to let go priſoners where the debt does not exceed 200 merks *Scots*, upon production of a diſcharge, in which the creditor conſents to his releaſe.

Form of liberating a priſoner.

Liberation upon a *ceſſio bonorum*;

11. Our law, from a conſideration of compaſſion, allows inſolvent debtors to apply for a releaſe from priſon, upon a *ceſſio bonorum*, *i. e.* upon their making over to the creditors all their eſtate real and perſonal. This muſt be inſiſted for by way of action, to which all the creditors of the priſoner ought to be made parties. The priſoner muſt, in this action, which is cogniſable only by the court of ſeſſion, exhibit a particular inventory of his eſtate, and make oath that he has no other eſtate than is therein contained, and that he has made no conveyance of any part of it, ſince his impriſonment, to the hurt of his creditors. He muſt alſo make oath, whether he has granted any diſpoſition of his effects before his impriſonment, and condeſcend on the perſons to whom, and on the cauſe of granting it; that the court may judge, whether, by any colluſive practice, he has forfeited his claim to liberty.

not competent to delinquents.

12. A fraudulent bankrupt is not allowed this privilege; nor a criminal who is liable in any aſſythment or indemnification to the party injured or his executors, though the crime itſelf ſhould be extinguiſhed by a pardon. A diſpoſition granted on a *ceſſio bonorum* is merely in farther ſecurity to the creditors, not in ſatisfaction or *in ſolutum* of the debts. If, therefore, the debtor ſhall acquire any eſtate after his releaſe, ſuch eſtate may be attached by his creditors, as if there had been no *ceſſio*, except in ſo far as is neceſſary for his ſubſiſtence. Debtors, who are ſet free on a *ceſſio bonorum*, are obliged to wear a habit proper to dyvours or bankrupts. The lords are prohibited to diſpenſe with this mark of ignominy, unleſs, in the ſummons and proceſs of *ceſſio*, it be libelled, ſuſtained, and proved, that the bankruptcy proceeds from misfortune. And bankrupts are condemned to ſubmit to the habit, even where no ſuſpicion of fraud lies againſt them, if they have been dealers in an illicite trade.

Dyvour's habit.

13. Where a priſoner for debt declares upon oath, before the magiſtrate of the juriſdiction, that he has not wherewith to maintain himſelf, the magiſtrate may ſet him at liberty, if the creditor, in conſequence of whoſe diligence he was impriſoned, does not aliment him within ten days after intimation made for that purpoſe. But the magiſtrate may, in ſuch caſe, detain him in priſon, if he chuſes to bear the burden of the aliment rather than releaſe him. The ſtatute authoriſing this releaſe, which is uſually called the *act of grace*, is limited to the caſe of priſoners for civil debts.

Aliment.

Act of grace.

Executi againſt debtor's ſtate.

14. Decrees are executed againſt the moveable eſtate of the debtor by arreſtment or poinding; and againſt his heritable eſtate, by inhibition, or adjudication. If one be condemned, in a removing or other proceſs, to quit the poſſeſſion of lands, and refuſes, notwithſtanding a charge, letters of ejection are granted of courſe, ordaining the ſheriff to eject him, and to enter the obtainer of the decree into poſſeſſion. Where one oppoſes by violence the execution of a decree, or of any lawful diligence, which the civil magiſtrate is not able by himſelf and his officers to make good, the execution is enforced *manu militari*.

Decree bitral.

Submiſ

15. A decree-arbitral, which is a ſentence proceeding on a ſubmiſſion to arbiters, has ſome affinity with a judicial ſentence, though in moſt reſpects the two differ. A ſubmiſſion is a contract entered into by two or more parties who have diſputable rights or claims, whereby they refer their differences to the final determination of an arbiter or arbiters, and oblige themſelves to acquieſce in what ſhall be decided. Where the day within which the arbiters are to decide, is left blank in the ſubmiſſion, practice has limited the arbiters power of deciding to a year. As this has proceeded from the ordinary words of ſtyle, empowering the arbiters to determine betwixt and the day of next to come; therefore, where a ſubmiſſion is indefinite, without ſpecifying any time, like all other contracts or obligations, it ſubſiſts for 40 years. Submiſſions, like mandates, expire by the death of any of the parties-ſubmitters before ſentence. As arbiters are not veſted with juriſdiction, they cannot compel witneſſes to make oath before them, or havers of writings to exhibit them; but this defect is ſupplied by the court of ſeſſion, who, at the ſuit of the arbiters, or of either of the parties, will grant warrant for citing witneſſes, or for the exhibition of writings. For the ſame reaſon, the power of arbiters is barely to decide; the execution of the decree belongs to the judge. Where the ſubmitters conſent to the regiſtration of the decree-arbitral, performance may be enforced by ſummary diligence.

Power arbite

16. The power of arbiters is wholly derived from the conſent of parties. Hence where their powers are limited to a certain day, they cannot pronounce ſentence after that day. Nor can they ſubject parties to a penalty higher than that which they have agreed to in the ſubmiſſion. And where a ſubmiſſion is limited to ſpecial claims, ſentence pronounced on ſubjects not ſpecified in the ſubmiſſion is null, as being *ultra vires compromiſſi*.

Decr bitral far re cible.

17. But, on the other part, as ſubmiſſions are deſigned for a moſt favourable purpoſe, the amicable compoſing of differences, the powers thereby conferred on arbiters receive an ample interpretation. Decrees-arbitral are not reducible upon any ground, except corruption, bribery, or falſehood.

SECT. IV. *Of Crimes.*

clx

Cri

The word *crime*, in its moſt general ſenſe, includes every breach, either of the law of God, or of our country; in a more reſtricted meaning, it ſignifies ſuch tranſgreſſions of law as are puniſhable by courts of juſtice. Crimes were, by the Roman law, divided into public and private. Public crimes were thoſe that were expreſsly declared ſuch by ſome law or conſtitution, and

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and which, on account of their more atrocious nature and hurtful conſequences, might be proſecuted by any member of the community. Private crimes could be purſued only by the party injured, and were generally puniſhed by a pecuniary fine to be applied to his uſe. By the law of Scotland, no private party, except the perſon injured, or his next of his kin, can accuſe criminally: but the king's advocate, who in this queſtion repreſents the community, has a right to proſecute all crimes *in vindictam publicam*, though the party injured ſhould refuſe to concur. Smaller offences, as petty riots, injuries, &c. which do not demand the public vengeance, paſs generally by the appellation of *delicts*, and are puniſhed either by fine or impriſonment.

2. The eſſence of a crime is, that there be an intention in the actor to commit it; for an action in which the will of the agent has no part, is not a proper object either of rewards or puniſhments: hence ariſes the rule, *crimen dolo contrahitur*. Simple negligence does not therefore conſtitute a proper crime. Yet where it is extremely groſs, it may be puniſhed arbitrarily. Far leſs can we reckon in the number of crimes, thoſe committed by an idiot or furious perſon: but leſſer degrees of fatuity, which only darken reaſon, will not afford a total defence, though they may ſave from the *pœna ordinaria*. Actions committed in drunkenneſs are not to be conſidered as involuntary, ſeeing the drunkenneſs itſelf, which was the firſt cauſe of the action, is both voluntary and criminal.

3. On the ſame principle, ſuch as are in a ſtate of infancy, or in the confines of it, are incapable of a criminal action, dole not being incident to that age; but the preciſe age at which a perſon becomes capable of dole, being fixed neither by nature nor by ſtatute, is by our practice to be gathered by the judge, as he beſt can, from the underſtanding and manners of the perſon accuſed. Where the guilt of a crime ariſes chiefly from ſtatute, the actor, if he is under puberty, can hardly be found guilty; but, where nature itſelf points out its deformity, he may, if he is *proximus pubertati*, be more eaſily preſumed capable of committing it: yet, even in that caſe, he will not be puniſhed *pœna ordinaria*.

4. One may be guilty of a crime, not only by perpetrating it himſelf, but being acceſſory to a crime committed by another; which laſt is by civilians ſtyled *ope et conſilio*, and, in our law-phraſe, *art and part*. A perſon may be guilty, art and part, either by giving advice or counſel to commit the crime; or, 2. By giving warrant or mandate to commit it; or, 3. By actually aſſiſting the criminal in the execution. It is generally agreed by doctors, that, in the more atrocious crimes, the adviſer is equally puniſhable with the criminal; and that, in the ſlighter, the circumſtances ariſing from the adviſer's leſſer age, the jocular or careleſs manner of giving advice, &c. may be received as pleas for ſoftening the puniſhment. One who gives mandate to commit a crime, as he is the firſt ſpring of action, ſeems more guilty than the perſon employed as the inſtrument in executing it; yet the actor cannot excuſe himſelf under the pretence of orders which he ought not to have obeyed.

5. Aſſiſtance may be given to the committer of a crime, not only in the actual execution, but previous to it, by furniſhing him, intentionally, with poiſon, arms, or the other means of perpetrating it. That ſort of aſſiſtance which is not given till after the criminal act, and which is commonly called *abetting*, tho' it be of itſelf criminal, does not infer art and part of the principal crime; as if one ſhould favour the eſcape of a criminal knowing him to be ſuch, or conceal him from juſtice.

Puniſhment of crimes.

6. Theſe crimes that are, in their conſequences, moſt hurtful to ſociety, are puniſhed capitally, or by death; others eſcape with a leſſer puniſhment, ſometimes fixed by ſtatute, and ſometimes arbitrary, *i. e.* left to the diſcretion of the judge, who may exerciſe his juriſdiction, either by fine, impriſonment, or a corporal puniſhment. Where the puniſhment is left, by law, to the diſcretion of the judge, he can in no caſe extend it to death. The ſingle eſcheat of the criminal falls on conviction, in all capital trials, though the ſentence ſhould not expreſs it.

Blaſphemy.

7. Certain crimes are committed more immediately againſt God himſelf; others, againſt the ſtate; and a third kind, againſt particular perſons. The chief crime in the firſt claſs, cogniſable by temporal courts, is *blaſphemy*, under which may be included *atheiſm*. This crime conſiſts in the denying or vilifying the Deity, by ſpeech or writing. All who curſe God or any of the perſons of the bleſſed Trinity, are to ſuffer death, even for a ſingle act; and thoſe who deny him, if they perſiſt in their denial. The denial of a Providence, or of the authority of the holy Scriptures, is puniſhable capitally for the third offence.

8. No proſecution can now be carried on for witchcraft or conjuration. But all who undertake, from their ſkill in any occult ſcience, to *tell fortunes, or diſcover ſtolen goods*, are to ſuffer impriſonment for a year, ſtand in the pillory four times in that year, and find ſurety for their future good behaviour.

Treaſon.

9. Some crimes againſt the ſtate are levelled directly againſt the ſupreme power, and ſtrike at the conſtitution itſelf: others diſcover ſuch a contempt of law, as tends to baffle authority, or ſlacken the reins of government. *Treaſon, crimen majeſtatis*, is that crime which is aimed againſt the majeſty of the ſtate; and can be committed only by thoſe who are ſubjects of that ſtate either by birth or reſidence. Soon after the union of the two kingdoms in 1707, the laws of treaſon, then in force in England, were made ours by 7 *Ann. c.* 21. both with regard to the facts conſtituting that crime, to the forms of trial, the corruption of blood, and all the penalties and forfeitures conſequent on it.

10. It is high treaſon, by the law of England, to imagine the death of the King, Queen-conſort, or of the heir apparent of the crown; to levy war againſt the King, or adhere to his enemies; to counterfeit the king's coin, or his great or privy ſeal; to kill the chancellor, treaſurer, or any of the 12 judges of England, while they are doing their offices: which laſt article is by the forenamed act 7 *Ann.* applied to Scotland, in the caſe of ſlaying any judge of the ſeſſion or of juſticiary ſitting in judgment. Thoſe who waſh, clip, or lighten the proper money of the realm; who adviſedly affirm by writing or printing, that the Pretender has any right to the crown, that the king and parliament cannot limit the ſucceſſion to it, or who hold correſpondence with the Pretender, or any perſon em-

liable, if they ſhall ſuffer a priſoner to eſcape, through the inſufficiency of their priſon: but, if he ſhall eſcape under night, by the uſe of inſtruments, or by open force, or by any other accident which cannot be imputed to the magiſtrates or jailor, they are not chargeable with the debt; provided they ſhall have, immediately after his eſcape, made all poſſible ſearch for him. Regularly, no priſoner for debt upon letters of caption, though he ſhould have made payment, could be releaſed without letters of ſuſpenſion, containing a charge to the jailor to ſet him at liberty; becauſe the creditor's diſcharge could not take off the penalty incurred by the debtor for contempt of the king's authority: but to ſave unneceſſary expence to debtors in ſmall debts, jailors are empowered to let go priſoners where the debt does not exceed 200 merks *Scots*, upon production of a diſcharge, in which the creditor conſents to his releaſe.

Form of liberating a priſoner.

Liberation upon a *ceſſio bonorum*;

11. Our law, from a conſideration of compaſſion, allows inſolvent debtors to apply for a releaſe from priſon, upon a *ceſſio bonorum, i. e.* upon their making over to the creditors all their eſtate real and perſonal. This muſt be inſiſted for by way of action, to which all the creditors of the priſoner ought to be made parties. The priſoner muſt, in this action, which is cogniſable only by the court of ſeſſion, exhibit a particular inventory of his eſtate, and make oath that he has no other eſtate than is therein contained, and that he has made no conveyance of any part of it, ſince his impriſonment, to the hurt of his creditors. He muſt alſo make oath, whether he has granted any diſpoſition of his effects before his impriſonment, and condeſcend on the perſons to whom, and on the cauſe of granting it; that the court may judge, whether, by any colluſive practice, he has forfeited his claim to liberty.

not competent to delinquents.

Dyvour's habit.

12. A fraudulent bankrupt is not allowed this privilege; nor a criminal who is liable in any aſſythment or indemnification to the party injured or his executors, though the crime itſelf ſhould be extinguiſhed by a pardon. A diſpoſition granted on a *ceſſio bonorum* is merely in farther ſecurity to the creditors, not in ſatisfaction or *in ſolutum* of the debts. If, therefore, the debtor ſhall acquire any eſtate after his releaſe, ſuch eſtate may be attached by his creditors, as if there had been no *ceſſio*, except in ſo far as is neceſſary for his ſubſiſtence. Debtors, who are ſet free on a *ceſſio bonorum*, are obliged to wear a habit proper to dyvours or bankrupts. The lords are prohibited to diſpenſe with this mark of ignominy, unleſs, in the ſummons and proceſs of *ceſſio*, it be libelled, ſuſtained, and proved, that the bankruptcy proceeds from misfortune. And bankrupts are condemned to ſubmit to the habit, even where no ſuſpicion of fraud lies againſt them, if they have been dealers in an illicite trade.

Aliment.

Act of grace.

13. Where a priſoner for debt declares upon oath, before the magiſtrate of the juriſdiction, that he has not wherewith to maintain himſelf, the magiſtrate may ſet him at liberty, if the creditor, in conſequence of whoſe diligence he was impriſoned, does not aliment him within ten days after intimation made for that purpoſe. But the magiſtrate may, in ſuch caſe, detain him in priſon, if he chuſes to bear the burden of the aliment rather than releaſe him. The ſtatute authoriſing this releaſe, which is uſually called the *act of grace*, is limited to the caſe of priſoners for civil debts.

Executi againſt debtor's ſtate.

14. Decrees are executed againſt the moveable eſtate of the debtor by arreſtment or poinding; and againſt his heritable eſtate, by inhibition, or adjudication. If one be condemned, in a removing or other proceſs, to quit the poſſeſſion of lands, and refuſes, notwithſtanding a charge, letters of ejection are granted of courſe, ordaining the ſheriff to eject him, and to enter the obtainer of the decree into poſſeſſion. Where one oppoſes by violence the execution of a decree, or of any lawful diligence, which the civil magiſtrate is not able by himſelf and his officers to make good, the execution is enforced *manu militari*.

Decree bitral.

Submiſ

15. A decree-arbitral, which is a ſentence proceeding on a ſubmiſſion to arbiters, has ſome affinity with a judicial ſentence, though in moſt reſpects the two differ. A ſubmiſſion is a contract entered into by two or more parties who have diſputable rights or claims, whereby they refer their differences to the final determination of an arbiter or arbiters, and oblige themſelves to acquieſce in what ſhall be decided. Where the day within which the arbiters are to decide, is left blank in the ſubmiſſion, practice has limited the arbiters power of deciding to a year. As this has proceeded from the ordinary words of ſtyle, empowering the arbiters to determine betwixt and the   day of   next to come; therefore, where a ſubmiſſion is indefinite, without ſpecifying any time, like all other contracts or obligations, it ſubſiſts for 40 years. Submiſſions, like mandates, expire by the death of any of the parties-ſubmitters before ſentence. As arbiters are not veſted with juriſdiction, they cannot compel witneſſes to make oath before them, or havers of writings to exhibit them; but this defect is ſupplied by the court of ſeſſion, who, at the ſuit of the arbiters, or of either of the parties, will grant warrant for citing witneſſes, or for the exhibition of writings. For the ſame reaſon, the power of arbiters is barely to decide; the execution of the decree belongs to the judge. Where the ſubmitters conſent to the regiſtration of the decree-arbitral, performance may be enforced by ſummary diligence.

Powe arbite

16. The power of arbiters is wholly derived from the conſent of parties. Hence where their powers are limited to a certain day, they cannot pronounce ſentence after that day. Nor can they ſubject parties to a penalty higher than that which they have agreed to in the ſubmiſſion. And where a ſubmiſſion is limited to ſpecial claims, ſentence pronounced on ſubjects not ſpecified in the ſubmiſſion is null, as being *ultra vires compromiſſi*.

Decre bitral far re cible.

17. But, on the other part, as ſubmiſſions are deſigned for a moſt favourable purpoſe, the amicable compoſing of differences, the powers thereby conferred on arbiters receive an ample interpretation. Decrees-arbitral are not reducible upon any ground, except corruption, bribery, or falſehood.

Sect. IV. *Of Crimes.*

Cri

publ

The word *crime*, in its moſt general ſenſe, includes every breach, either of the law of God, or of our country; in a more reſtricted meaning, it ſignifies ſuch tranſgreſſions of law as are puniſhable by courts of juſtice. Crimes were, by the Roman law, divided into public and private. Public crimes were thoſe that were expreſsly declared ſuch by ſome law or conſtitution, and which, on account of their more atrocious nature and hurtful conſequences, might be proſecuted by any member of the community. Private crimes could be purſued only by the party injured, and were generally puniſhed by a pecuniary fine to be applied to his uſe. By the law of Scotland, no private party, except the perſon injured, or his next of his kin, can accuſe criminally: but the king's advocate, who in this queſtion repreſents the community, has a right to proſecute all crimes *in vindictam publicam*, though the party injured ſhould refuſe to concur. Smaller offences, as petty riots, injuries, &c. which do not demand the public vengeance, paſs generally by the appellation of *delicts*, and are puniſhed either by fine or impriſonment.

2. The eſſence of a crime is, that there be an intention in the actor to commit it; for an action in which the will of the agent has no part, is not a proper object either of rewards or puniſhments: hence ariſes the rule, *crimen dolo contrahitur*. Simple negligence does not therefore conſtitute a proper crime. Yet where it is extremely groſs, it may be puniſhed arbitrarily. Far leſs can we reckon in the number of crimes, thoſe committed by an idiot or furious perſon: but leſſer degrees of fatuity, which only darken reaſon, will not afford a total defence, though they may ſave from the *pœna ordinaria*. Actions committed in drunkenneſs are not to be conſidered as involuntary, ſeeing the drunkenneſs itſelf, which was the firſt cauſe of the action, is both voluntary and criminal.

3. On the ſame principle, ſuch as are in a ſtate of infancy, or in the confines of it, are incapable of a criminal action, dole not being incident to that age; but the preciſe age at which a perſon becomes capable of dole, being fixed neither by nature nor by ſtatute, is by our practice to be gathered by the judge, as he beſt can, from the underſtanding and manners of the perſon accuſed. Where the guilt of a crime ariſes chiefly from ſtatute, the actor, if he is under puberty, can hardly be found guilty; but, where nature itſelf points out its deformity, he may, if he is *proximus pubertati*, be more eaſily preſumed capable of committing it: yet, even in that caſe, he will not be puniſhed *pœna ordinaria*.

4. One may be guilty of a crime, not only by perpetrating it himſelf, but being acceſſory to a crime committed by another; which laſt is by civilians ſtyled *ope et conſilio*, and, in our law-phraſe, *art and part*. A perſon may be guilty, art and part, either by giving advice or counſel to commit the crime; or, 2. By giving warrant or mandate to commit it; or, 3. By actually aſſiſting the criminal in the execution. It is generally agreed by doctors, that, in the more atrocious crimes, the adviſer is equally puniſhable with the criminal; and that, in the ſlighter, the circumſtances ariſing from the adviſer's leſſer age, the jocular or careleſs manner of giving advice, &c. may be received as pleas for ſoftening the puniſhment. One who gives mandate to commit a crime, as he is the firſt ſpring of action, ſeems more guilty than the perſon employed as the inſtrument in executing it; yet the actor cannot excuſe himſelf under the pretence of orders which he ought not to have obeyed.

5. Aſſiſtance may be given to the committer of a crime, not only in the actual execution, but previous to it, by furniſhing him, intentionally, with poiſon, arms, or the other means of perpetrating it. That ſort of aſſiſtance which is not given till after the criminal act, and which is commonly called *abetting*, tho' it be of itſelf criminal, does not infer art and part of the principal crime; as if one ſhould favour the eſcape of a criminal knowing him to be ſuch, or conceal him from juſtice.

Puniſhment of crimes.

6. Theſe crimes that are, in their conſequences, moſt hurtful to ſociety, are puniſhed capitally, or by death; others eſcape with a leſſer puniſhment, ſometimes fixed by ſtatute, and ſometimes arbitrary, *i. e.* left to the diſcretion of the judge, who may exerciſe his juriſdiction, either by fine, impriſonment, or a corporal puniſhment. Where the puniſhment is left, by law, to the diſcretion of the judge, he can in no caſe extend it to death. The ſingle eſcheat of the criminal falls on conviction, in all capital trials, though the ſentence ſhould not expreſs it.

Blaſphemy.

7. Certain crimes are committed more immediately againſt God himſelf; others, againſt the ſtate; and a third kind, againſt particular perſons. The chief crime in the firſt claſs, cogniſable by temporal courts, is *blaſphemy*, under which may be included *atheiſm*. This crime conſiſts in the denying or vilifying the Deity, by ſpeech or writing. All who curſe God or any of the perſons of the bleſſed Trinity, are to ſuffer death, even for a ſingle act; and thoſe who deny him, if they perſiſt in their denial. The denial of a Providence, or of the authority of the holy Scriptures, is puniſhable capitally for the third offence.

8. No proſecution can now be carried on for witchcraft or conjuration. But all who undertake, from their ſkill in any occult ſcience, to *tell fortunes, or diſcover ſtolen goods*, are to ſuffer impriſonment for a year, ſtand in the pillory four times in that year, and find ſurety for their future good behaviour.

Treaſon.

9. Some crimes againſt the ſtate are levelled directly againſt the ſupreme power, and ſtrike at the conſtitution itſelf: others diſcover ſuch a contempt of law, as tends to baffle authority, or ſlacken the reins of government. *Treaſon, crimen majeſtatis*, is that crime which is aimed againſt the majeſty of the ſtate; and can be committed only by thoſe who are ſubjects of that ſtate either by birth or reſidence. Soon after the union of the two kingdoms in 1707, the laws of treaſon, then in force in England, were made ours by 7 *Ann. c.* 21. both with regard to the facts conſtituting that crime, to the forms of trial, the corruption of blood, and all the penalties and forfeitures conſequent on it.

10. It is high treaſon, by the law of England, to imagine the death of the King, Queen-conſort, or of the heir apparent of the crown; to levy war againſt the King, or adhere to his enemies; to counterfeit the king's coin, or his great or privy ſeal; to kill the chancellor, treaſurer, or any of the 12 judges of England, while they are doing their offices: which laſt article is by the forenamed act 7 *Ann.* applied to Scotland, in the caſe of ſlaying any judge of the ſeſſion or of juſticiary ſitting in judgment. Thoſe who waſh, clip, or lighten the proper money of the realm; who adviſedly affirm by writing or printing, that the Pretender has any right to the crown, that the king and parliament cannot limit the ſucceſſion to it, or who hold correſpondence with the Pretender, or any perſon employed

ployed by him, are alſo guilty of treaſon.

Pains of treaſon.

11. The forms of proceeding in the trial of treaſon, whether againſt peers or commoners, are ſet forth in a ſmall treatiſe, publiſhed by order of the houſe of lords in 1709, ſubjoined to a collection of ſtatutes concerning treaſon. By the conviction upon this trial, the whole eſtate of the traitor forfeits to the crown. His blood is alſo corrupted, ſo that, on the death of an anceſtor, he cannot inherit; and the eſtate which he cannot take, falls to the immediate ſuperior as eſcheat, *ob defectum heredis*, without diſtinguiſhing whether the lands hold of the crown, or of a ſubject. No attainder for treaſon ſhall, after the death of the Pretender and all his ſons, hurt the right of any perſon, other than that of the offender, during his natural life; the rights of creditors and other third parties in the caſe of forfeiture on treaſon, muſt be determined by the law of England.

Miſpriſion of treaſon.

12. *Miſpriſion of treaſon*, from *meprendre*, is the overlooking or concealing of treaſon. It is inferred by one's bare knowledge of the crime, and not diſcovering it to a magiſtrate or other perſon intitled by his office to take examinations; though he ſhould not in the leaſt degree aſſent to it. The foreſaid act 7 *An.* makes the Engliſh law of miſpriſion ours. Its puniſhment is, by the law of England, perpetual impriſonment, together with the forfeiture of the offender's moveables, and of the profits of his heritable eſtate, during his life; that is, in the ſtyle of our law, his ſingle and liferent eſcheat.

Sedition.

13. The crime of *ſedition* conſiſts in the raiſing commotions or diſturbances in the ſtate. It is either verbal or real. Verbal ſedition, or leaſing making, is inferred from the uttering of words tending to create diſcord between the king and his people. It is puniſhed either by impriſonment, fine, or baniſhment, at the diſcretion of the judge. Real ſedition is generally committed by convocating together any conſiderable number of people, without lawful authority, under the pretence of redreſſing ſome public grievance, to the diſturbing of the public peace. Thoſe who are convicted of this crime are puniſhed by the confiſcation of their goods; and their lives are at the king's will. If any perſons, to the number of 12, ſhall aſſemble, and being required by a magiſtrate or conſtable to diſperſe, ſhall nevertheleſs continue together for an hour after ſuch command, the perſons diſobeying ſhall ſuffer death and confiſcation of moveables.

Corruption in judges.

14. Judges, who, wilfully or through corruption, uſe their authority as a cover to injuſtice or oppreſſion, are puniſhed with the loſs of honour, fame, and dignity. Under this head may be claſſed *theſtbote* (from *bote*, compenſation), which is the taking a conſideration in money or goods from a thief to exempt him from puniſhment, or connive at his eſcape from juſtice. A ſheriff or other judge, guilty of this crime, forfeits his life and goods. And even a private perſon, who takes theftbote, ſuffers as the principal thief. The buying of diſputed claims, concerning which there is a pending proceſs, by any judge or member either of the ſeſſion, or of an inferior court, is puniſhed by the loſs of the delinquent's office, and all the privileges thereto belonging.

Deforcement.

15. Deforcement is the oppoſition given, or reſiſtance made, to meſſengers or other officers, while they are employed in executing the law. The court of ſeſſion is competent to this crime. It is puniſhable with the confiſcation of moveables, the one half to the king, and the other to the creditor at whoſe ſuit the diligence was uſed. Armed perſons, to the number of three or more, aſſiſting in the illegal running, landing, or exporting of prohibited or uncuſtomed goods, or any who ſhall reſiſt, wound, or maim any officer of the revenue in the execution of his office, are puniſhable with death and the confiſcation of moveables.

Breach arreſtm

16. *Breach of arreſtment*, (ſee N° lxxviii. 5.) is a crime of the ſame nature with deforcement, as it imports a contempt of the law and of our judges. It ſubjects to an arbitrary corporal puniſhment, and the eſcheat of moveables; with a preference to the creditor for his debt, and for ſuch farther ſum as ſhall be modified to him by the judge. Under this head of crimes againſt good government and police, may be reckoned the *foreſtalling of markets*; that is, the buying of goods intended for a public market, before they are carried there; which for the third criminal act, infers the eſcheat of moveables; as alſo ſlaying ſalmon in forbidden time, deſtroying plough-graith in time of tillage, ſlaying or houghing horſes or cows in time of harveſt, and deſtroying or ſpoiling growing timber; as to the puniſhment of which, ſee ſtatutes 1503, *c.* 72. —1587, *c.* 82. and 1689, *c.* 16—1. *Geo.* I. *St.* 2. *c.* 48.

Foreſt ling,

Mur

17. Crimes againſt particular perſons may be directed either againſt life, limb, liberty, chaſtity, goods, or reputation. *Murder* is the wilful taking away of a perſon's life, without a neceſſary cauſe. Our law makes no diſtinction betwixt premeditated and ſudden homicide; both are puniſhed capitally. Caſual homicide, where the actor is in ſome degree blameable; and homicide in ſelf-defence, where the juſt bounds of defence have been exceeded; are puniſhed arbitrarily: but the ſlaughter of night-thieves, houſe-breakers, aſſiſtants in maſterful depredations, or rebels denounced for capital crimes, may be committed with impunity. The crime of *demembration*, or the cutting off of a member, is joined with that of murder; but in practice, its puniſhment has been reſtricted to the eſcheat of moveables, and an aſſythment or indemnification to the party. *Mutilation*, or the diſabling of a member, is puniſhed at the diſcretion of the judge.

Self- der.

18. *Self-murder* is as highly criminal as the killing our neighbour; and for this reaſon, our law has, contrary to the rule, *crimina morte extinguuntur*, allowed a proof of the crime, after the offender's death, that his ſingle eſcheat might fall to the king or his donatory. To this end, an action muſt be brought, not before the juſticiary, but the ſeſſion, becauſe it is only intended *ad civilem effectum*, for proving and declaring the ſelf-murder; and the next of kin to the deceaſed muſt be made a party to it.

Par

19. The puniſhment of parricide, or of the murder of a parent, is not confined, by our law, to the criminal himſelf. All his poſterity in the right line are declared incapable of inheriting; and the ſucceſſion devolves on the next collateral heir. Even the curſing or beating of a parent infers death, if the perſon guilty be above 16 years; and an arbitrary puniſhment, if he be under it. A preſumptive or ſtatutory murder is conſtituted by 1690, *c.* 21. by which any woman who

ſhall conceal her pregnancy, during its whole courſe, and ſhall not call for, or make uſe of help in the birth, is to be reputed the murderer, if the child be dead, or amiſſing. This act was intended to diſcourage the unnatural practice of women making away with their children begotten in fornication, to avoid church-cenſures.

20. *Duelling*, is the crime of fighting in ſingle combat, on previous challenges given and received. Fighting in a duel, without licence from the king, is puniſhable by death; and whatever perſon, principal or ſecond, ſhall give a challenge to fight a duel, or ſhall accept a challenge, or otherwiſe engage therein, is puniſhed by baniſhment and eſcheat of moveables, though no actual fighting ſhould enſue.

21. *Haimſucken*, (from *haim*, home, and *ſocken*, to ſeek or purſue,) is the aſſaulting or beating of a perſon in his own houſe. The puniſhment of this crime is no where defined, except in the books of the Majeſty, which make it the ſame as that of a rape; and it is, like rape, capital by our practice. The aſſault muſt be made in the proper houſe of the perſon aſſaulted, where he lies and riſes daily and nightly, ſo that neither a public houſe, nor even a private, where one is only tranſiently, falls within the law.

22. Any party to a law-ſuit, who ſhall ſlay, wound, or otherwiſe invade his adverſary, at any period of time between executing the ſummons and the complete execution of the decree, or ſhall be acceſſory to ſuch invaſion, ſhall loſe his cauſe. The ſentence pronounced on this trial, againſt him who has committed the battery, is not ſubject to reduction, either on the head of minority, or on any other ground whatever: and if the perſon proſecuted for this crime ſhall be denounced for not appearing, his liferent, as well as ſingle eſcheat, falls upon the denunciation.

23. The crime of *wrongous impriſonment* is inferred, by granting warrants of commitment in order to trial, proceeding on informations not ſubſcribed, or without expreſſing the cauſe of commitment; by receiving or detaining priſoners on ſuch warrants; by refuſing to a priſoner a copy of the warrant of commitment; by detaining him in cloſe confinement, above eight days after his commitment; by not releaſing him on bail, where the crime is bailable; and by tranſporting perſons out of the kingdom, without either their own conſent, or a lawful ſentence. The perſons guilty of a wrongous impriſonment, are puniſhed by a pecuniary mulct, from L. 6000 down to L. 400 *Scots*, according to the rank of the perſon detained; and the judge, or other perſon guilty, is over and above ſubjected to pay to the perſon detained a certain ſum *per diem*, proportioned to his rank, and is declared incapable of public truſt. All theſe penalties may be inſiſted for by a ſummary action before the ſeſſion, and are ſubject to no modification.

24. *Adultery*, is the crime by which the marriage-bed is polluted. This crime could, neither by the Roman nor Jewiſh law, be committed, but where the guilty woman was the wife of another: by ours, it is adultery, if either the man or woman be married. We diſtinguiſh between ſimple adultery, and that which is notorious or manifeſt. Open and manifeſt adulterers, who continue incorrigible, notwithſtanding the cenſures of the church, are puniſhed capitally. This crime is diſtinguiſhed by one or other of the following characters; where there is iſſue procreated between the adulterers; or where they keep bed and company together notoriouſly; or where they give ſcandal to the church, and are, upon their obſtinate refuſing to liſten to their admonitions, excommunicated. The puniſhment of ſimple adultery, not being defined by ſtatute, is left to the diſcretion of the judge; but cuſtom has made the falling of the ſingle eſcheat one of its penalties.

Bigamy.

25. *Bigamy*, is a perſon's entering into the engagements of a ſecond marriage, in violation of a former marriage-vow ſtill ſubſiſting. Bigamy, on the part of the man, has been tolerated in many ſtates, before the eſtabliſhment of Chriſtianity, even by the Jews themſelves; but it is prohibited by the precepts of the goſpel, and it is puniſhed by our law, whether on the part of the man or of the woman, with the pains of perjury.

Inceſt.

26. *Inceſt*, is committed by perſons who ſtand within the degrees of kindred forbidden in *Lev.* xviii. and is puniſhed capitally. The ſame degrees are prohibited in affinity, as in conſanguinity, *Lev.* xviii. 13. *et ſeq.* As this crime is repugnant to nature, all children, whether lawful or natural, ſtand on an equal footing: *civilis ratio civilia jura corrumpere poteſt, non vero naturalia.* It is difficult indeed to bring a legal proof of a relation merely natural, on the ſide of the father; but the mother may be certainly known without marriage.

Rape.

26. There is no explicit ſtatute making rape, or the raviſhing of women, capital; but it is plainly ſuppoſed in act 1612. *c.* 4. by which the raviſher is exempted from the pains of death, only in the caſe of the woman's ſubſequent conſent, or her declaration that ſhe went off with him of her own free-will; and even then, he is to ſuffer an arbitrary puniſhment, either by impriſonment, confiſcation of goods, or a pecuniary fine.

Theft.

28. *Theft* is defined, A fraudulent intermeddling with the property of another, with a view of making gain. Our ancient law proportioned the puniſhment of the theft to the value of the goods ſtolen; heightening it gradually, from a ſlight corporal puniſhment to a capital, if the value amounted to thirty-two pennies Scots, which in the reign of David I. was the price of two ſheep. In ſeveral latter acts, it is taken for granted, that this crime is capital. But where the thing ſtolen is of ſmall value, we conſider it, not as theft, but as pickery, which is puniſhed either corporally or by baniſhment. The breaking of orchards, and the ſtealing of green wood, is puniſhed by a fine, which riſes as the crime is repeated.

Reſet of theft.

29. Theft may be aggravated into a capital crime, though the value of the thing ſtolen be trifling; as theft twice repeated, or committed in the night, or by landed men; or of things ſet apart for ſacred uſes. The receivers and concealers of ſtolen goods, knowing them to be ſuch, ſuffer as thieves. Thoſe who barely harbour the perſon of the criminal within 48 hours either before or after committing the crime, are puniſhed as partakers of the theft. Such as ſell goods belonging to thieves or lawleſs perſons who dare not themſelves come to market, are puniſhed with baniſhment and the eſcheat of moveables.

30. Theft attended with violence is called *robbery*;

Robbery, &c.

and in our old ſtatutes, *rief* or *ſtouthrief;* under which claſs may be included *ſorning*, or the taking of meat and drink by force, without paying for it. Stoutrhief came at laſt to be committed ſo audaciouſly, by bands of men aſſociated together, that it was thought neceſſary to veſt all our freeholders with a power of holding courts upon ſorners and rievers, and condemning them to death. Nay, all were capitally puniſhed, who, to ſecure their lands from depredation, payed to the rievers a yearly contribution, which got the name of *black-mail*. An act alſo paſſed, commanding to baniſhment a band of ſorners, who were originally from *Egypt*, called *gypſies*, and adjudging to death all that ſhould be reputed *Egyptians*, if found thereafter within the kingdom. Robbery committed on the ſeas, is called *piracy*, and is puniſhed capitally by the high admiral. Several of the facts which conſtitute this crime are ſet forth in a Britiſh ſtatute, 8 *Geo.* I. *c.* 24.

Falſehood.

31. *Falſehood*, in a large ſenſe, is the fraudulent imitation or ſuppreſſion of truth, to the damage of another. The lives and goods of perſons convicted of uſing falſe weights or meaſures were, by our old law, in the king's mercy; and their heirs could not inherit but upon a remiſſion. The lateſt ſtatute againſt this crime, puniſhes it by confiſcation of moveables. That particular ſpecies of falſehood, which conſiſts in the falſifying of writings, paſſes by the name of *forgery*. Our practice has now of a long time, agreeably to the Roman law, made this crime capital; unleſs the forgery be of executions, or other writings of ſmaller moment; in which caſe, it is puniſhed arbitrarily.

Forgery.

32. The writing muſt not only be fabricated, but put to uſe or founded on, in order to infer this crime. And though it be ſtrictly criminal, yet the trial of it is proper to the court of ſeſſion; but where improbation is moved againſt a deed by way of exception, the inferior judge, before the action lies, is competent to it *ad civilem effectum*. When it is pleaded as an exception, our practice, to diſcourage affected delays, obliges the defender, who moves it, to conſign L. 40 Scots; which he forfeits, if his plea ſhall appear calumnious.

33. Where a perſon, found guilty of forgery by the court of ſeſſion, is by them remitted to the juſticiary, an indictment is there exhibited againſt him, and a jury ſworn, before whom the decree of ſeſſion is produced, in place of all other evidence of the crime, in reſpect of which the jury find the pannel guilty; ſo that that decree being pronounced by a competent court, is held as full proof, or, in the ſtyle of the bar, as *probatio probata*.

Perjury.

34. *Perjury*, which is the judicial affirmation of a falſehood on oath, really conſtitutes the *crimen falſi;* for he who is guilty of it does, in the moſt ſolemn manner, ſubſtitute falſehood in the place of truth. To conſtitute this crime, the violation of truth muſt be deliberately intended by the ſwearer; and therefore reaſonable allowances ought to be given to forgetfulneſs or miſapprehenſion, according to his age, health, and other circumſtances. The breach of a promiſſory oath does not infer this crime; for he who promiſes on oath, may ſincerely intend performance when he ſwears, and ſo cannot be ſaid to call on God to atteſt a falſehood. Though an oath, however falſe, if made upon reference in a civil queſtion, concludes the cauſe, the perſon perjured is liable to a criminal trial; for the effect of the reference can go no further than the private right of the parties.

35. Notwithſtanding the miſchievous conſequences of perjury to ſociety, it is not puniſhed capitally, but by confiſcation of moveables, impriſonment for a year, and infamy. The court of ſeſſion is competent to perjury *incidenter*, when in any examination upon oath, taken in a cauſe depending before them, a perſon appears to have ſworn falſely; but in the common caſe, that trial is proper to the juſticiary. *Subornation of perjury* conſiſts in tampering with perſons who are to ſwear in judgment, by directing them how they are to depoſe; and it is puniſhed with the pains of perjury.

Stellio

36. The crime of *ſtellionate*, from *ſtellio*, includes every fraud which is not diſtinguiſhed by a ſpecial name; but is chiefly applied to conveyances of the ſame numerical right, granted by the proprietor to different diſponees. The puniſhment of ſtellionate muſt neceſſarily be arbitrary, to adapt it to the various natures and different aggravations of the fraudulent acts. The perſons guilty of that kind of it, which conſiſts in granting double conveyances, are by our law declared infamous, and their lives and goods at the king's mercy. The cogniſance of *fraudulent bankruptcy* is appropriated to the court of ſeſſion, who may inflict any puniſhment on the offender, that appears proportioned to his guilt, death excepted.

Uſur

37. The crime of *uſury*, before the reformation, conſiſted in the taking of *any* intereſt for the uſe of money; and now in taking an higher rate of intereſt than is authoriſed by law. It is divided into *uſura manifeſta*, or direct; and *velata*, or covered. One may be guilty of the firſt kind, either where he covenants with the debtor for more than the lawful intereſt on the loan-money; or where one receives the intereſt of a ſum before it it due, ſince thereby he takes a conſideration for the uſe of money before the debtor has really got the uſe of it. Where a debt is clogged with an uncertain condition, by which the creditor runs the hazard of loſing his ſum, he may covenant for an higher intereſt than the legal, without the crime of uſury; for there, the intereſt is not given merely in conſideration of the uſe of the money, but of the danger undertaken by the creditor.

38. Covered uſury, is that which is committed under the maſk, not of a loan, but of ſome other contract; *e. g.* a ſale, or an improper wadſet. And in general, all obligations entered into with an intention of getting more than the legal intereſt for the uſe of money, however they may be diſguiſed, are uſurious. As a farther guard againſt this crime, the taking more than the legal intereſt for the forbearance of payment of money, merchandiſe, or other commodities, by way of loan, exchange, or other contrivance whatever, or the taking a bribe for the loan of money, or for delaying its payment when lent, is declared uſury. Where uſury is proved, the uſurious obligation is not only declared void, but the creditor, if he has received any unlawful profits, forfeits the treble value of the ſums or goods lent. Uſury, when it is to be purſued criminally, muſt be tried by the juſticiary; but where the libel concludes only for voiding the debt or reſtitution, the ſeſſion is the proper court.

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39. *Injury*, in its proper acceptation, is the reproaching or affronting our neighbour. Injuries are either verbal or real. A verbal injury, when directed againſt a private perſon, conſiſts in the uttering contumelious words, which tend to expoſe our neighbour's character by making him little or ridiculous. It does not ſeem that the twitting one with natural defects, without any ſarcaſtical reflections, though it be inhuman, falls under this deſcription, as theſe imply no real reproach in the juſt opinion of mankind. Where the injurious expreſſions have a tendency to blacken one's moral character, or fix ſome particular guilt upon him, and are deliberately repeated in different companies, or handed about in whiſpers to confidents, it then grows up to the crime of ſlander: and where a perſon's moral caracter is thus attacked, the *animus injuriandi* is commonly inferred from the injurious words themſelves, unleſs ſpecial circumſtances be offered to take off the preſumption; *ex. gr.* that the words were uttered in judgement in one's own defence, or by way of information to a magiſtrate, and had ſome foundation in fact. Though the cognizance of ſlander is proper to the commiſſaries, who, as the *judices Chriſtianitatis*, are the only judges of ſcandal; yet for ſome time paſt, bare verbal injuries have been tried by other criminal judges, and even by the Seſſion. It is puniſhed either by a fine, proportioned to the condition of the perſons injuring and injured, and the circumſtances of time and place; or if the injury import ſcandal, by publicly acknowledging the offence; and frequently the two are conjoined. The calling one a bankrupt is not, in ſtrict ſpeech, a verbal injury, as it does not affect the perſon's moral character; yet as it may hurt his credit in the way of buſineſs, it founds him in an action of damages, which muſt be brought before the judge-ordinary. A real injury is inflicted by any fact by which a perſon's honour or dignity is affected; as ſtriking one with a cane, or even aiming a blow without ſtriking; ſpitting in one's face; aſſuming a coat of arms, or any other mark of diſtinction proper to another, &c. The compoſing and publiſhing defamatory libels may be reckoned of this kind. Real injuries are tried by the judge-ordinary, and puniſhed either by fine or impriſonment, according to the demerit of the offenders.

40. After having ſhortly explained the ſeveral crimes puniſhable by our law, this treatiſe may be concluded with a few obſervations on criminal juriſdiction, the forms of trial, and the methods by which crimes may be extinguiſhed. Criminal juriſdiction is founded, 1. *Ratione domicilii*, if the defender dwells within the territory of the judge. Vagabonds, who have no certain *domicile*, may be tried wherever they are apprehended.. 2. *Ratione delicti*, if the crime was committed within the territory. Treaſon is triable, by the Engliſh law, in any county that the king ſhould appoint; and, by a temporary act now expired, treaſon committed in certain Scots counties, was made triable by the court of Juſticiary, wherever it ſhould ſit.

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41. No criminal trial can proceed, unleſs the perſon accuſed is capable of making his defence. Abſents therefore cannot be tried; nor fatuous nor furious perſons, *durante furore*, even for crimes committed while they were in their ſenſes. For a like reaſon, minors who had no curators, could not, by the Roman law, be tried criminally; but our practice conſiders every perſon who is capable of dole, to be alſo ſufficiently qualified for making his defence in a criminal trial.

Commitment.

42. No perſon can be impriſoned in order to ſtand trial for any crime, without a warrant in writing expreſſing the cauſe, and proceeding upon a ſubſcribed information, unleſs in the caſe of indignities done to judges, riots, and the other offences ſpecially mentioned in 1701, *c.* 6. Every priſoner committed in order to trial, if the crime of which he is accuſed be not capital, is entitled to be releaſed upon bail, the extent of which is to be modified by the judge, not exceeding 12,000 merks Scots for a nobleman, 6000 for a landed gentleman, 2000 for every other gentleman or burgeſs, and 600 for any other inferior perſon. That perſons who, either from the nature of the crime with which they are charged, or from their low circumſtances, cannot procure bail, may not lie for ever in priſon untried, it is lawful for every ſuch priſoner, to apply to the criminal judge, that his trial may be brought on. The judge muſt, within 24 hours after ſuch application, iſſue letters directed to meſſengers, for intimating to the proſecutor to fix a diet for the priſoner's trial, within 60 days after the intimation, under the pain of wrongous impriſonment: And if the proſecutor does not inſiſt within that time, or if the trial is not finiſhed in forty days more when carried on before the Juſticiary, or in thirty when before any other judge; the priſoner is, upon a ſecond application, ſetting forth that the legal time is elapſed, entitled to his freedom, under the ſame penalty.

Precognition.

43. Upon one's committing any of the groſſer crimes, it is uſual for a juſtice of the peace, ſheriff, or other judge, to take a precognition of the facts, *i. e.* to examine thoſe who were preſent at the criminal act, upon the ſpecial circumſtances attending it, in order to know whether there is ground for a trial, and to ſerve as a direction to the proſecutor, how to ſet forth the facts in the libel; but the perſons examined may inſiſt to have their declarations cancelled, before they give teſtimony at the trial. Juſtices of the peace, ſheriffs, and magiſtrates of boroughs, are alſo authoriſed to receive informations, concerning crimes to be tried in the circuit-courts; which informations are to be tranſmitted to the juſtice-clerk 40 days before the ſitting of the reſpective courts. To diſcourage groundleſs criminal trials, all proſecutors, where the defender was abſolved, were condemned by ſtatute, in coſts, as they ſhould be modified by the judge, and beſides were ſubjected to a ſmall fine, to be divided between the fiſc and the defender: And where the king's advocate was the only purſuer, his informer was made liable. This ſufficiently warrants the preſent practice of condemning vexatious proſecutors in a pecuniary mulct, though far exceeding the ſtatutory ſum.

Form of trial.

44. The forms of trial upon criminal accuſations, differ much from thoſe obſerved in civil actions, if we except the caſe of ſuch crimes as the court of Seſſion is competent to, and of leſſer offences tried before inferior courts. The trial of crimes proceeds, either upon indictment, which is ſometimes uſed when the perſon to be tried is in priſon; or by criminal letters iſſuing

from the ſignet of the Juſticiary. In either caſe, the defender muſt be ſerved with a full copy of the indictment or letters, and with a liſt of the witneſſes to be brought againſt him, and of the perſons who are to paſs on the inqueſt, and 15 free days muſt intervene between his being ſo ſerved, and the day of appearance. When the trial proceeds upon criminal letters, the private proſecutor muſt give ſecurity, at raiſing the letters, that he will report them duly executed to the Juſticiary, in terms of 1535, *c.* 35.; and the defender, if he be not already in priſon, is, by the letters, required to give caution, within a certain number of days after his citation, for his appearance upon the day fixed for his trial: And if he gives none within the days of the charge, he may be denounced rebel, which infers the forfeiture of his moveables.

45. That part of the indictment, or of the criminal letters, which contains the ground of the charge againſt the defender, and the nature or degree of the puniſhment he ought to ſuffer, is called the *libel*. All libels muſt be ſpecial, ſetting forth the particular facts inferring the guilt, and the particular place where theſe facts were done. The time of committing the crime may be libelled in more general terms, with an alternative as to the month, or day of the month: but as it is not practicable, in moſt caſes, to libel upon the preciſe circumſtances of acceſſion that may appear in proof, libels againſt acceſſories are ſufficient, if they mentioned, in general, that the perſons proſecuted are guilty art and part.

46. The defender, in a criminal trial, may raiſe letters of exculpation, for citing witneſſes in proof of his defences againſt the libel, or of his objections againſt any of the jury or witneſſes; which muſt be executed to the ſame day of appearance with that of the indictment or criminal letters.

Diets of appearance.

47. The diets of appearance, in the court of Juſticiary, are peremptory: the criminal letters muſt be called on the very day to which the defender is cited; and hence, if no accuſer appears, their effect is loſt, *inſtantia perit*, and new letters muſt be raiſed. If the libel, or any of the executions, ſhall to the proſecutor appear informal, or if he be diffident of the proof, from the abſconding of a neceſſary witneſs, the court will, upon a motion made by him, deſert the diet *pro loco et tempore*; after which new letters become alſo neceſſary. A defender, who does not appear on the very day to which he is cited, is declared fugitive; in conſequence of which, his ſingle eſcheat falls. The defender, after his appearance in court, is called the *pannel*.

48. The two things to be chiefly regarded in a criminal libel, are, 1. The relevancy of the facts, *i. e.* their ſufficiency to infer the concluſion; 2. Their truth. The conſideration of the firſt belongs to the judge of the court; that of the other, to the jury or aſſize. If the facts libelled be found irrelevant, the pannel is diſmiſſed from the bar; if relevant, the court remits the proof thereof to be determined by the jury; which muſt conſiſt of 15 men picked out by the court from a greater number not exceeding 45, who have been all ſummoned, and given in liſt to the defender at ſerving him with a copy of the libel.

Probation of crimes.

49. Crimes cannot, like debts, be referred to the defender's oath; for no perſon is compellable to ſwear againſt himſelf, where his life, limb, liberty, or eſtate is concerned, nor even in crimes which infer infamy; becauſe one's good name is, in right eſtimation, as valuable as his life. There is one exception however to this rule in trying the crime of uſury, which may be proved by the uſurer's own oath, notwithſtanding the rule, *nemo tenetur jurare in ſuam turpitudinem*. Crimes therefore are in the general caſe proveable only by the defender's free confeſſion, or by writing, or by witneſſes. No extrajudicial confeſſion, unleſs it is adhered to by the pannel in judgment, can be admitted as evidence.

Socii cr nis.

50. All objections relevant againſt a witneſs in civil caſes are alſo relevant in criminal. No witneſs is admitted, who may gain or loſe by the event of the trial. *Socii criminis*, or aſſociates in the ſame crime, are not admitted againſt one another, except either in crimes againſt the ſtate, as treaſon; in occult crimes, where other witneſſes cannot be had, as forgery; or in thefts or depredations committed in the Highlands. The teſtimony of the private party injured may be received againſt the pannel, where the king's advocate is the only proſecutor, if, from the nature of the crime, there muſt needs be a penury of witneſſes, as in rape, robbery, &c.

Verdi aſſiſe.

51. After all the witneſſes have been examined in court, the jury are ſhut up in a room by themſelves, where they muſt continue, excluded from all correſpondence, till their verdict or judgment be ſubſcribed by the foreman (or chancellor), and clerk; and according to this verdict the court pronounces ſentence, either abſolving or condemning. It is not neceſſary, by the law of Scotland, that a jury ſhould be unanimous in finding a perſon guilty; the narroweſt majority is as ſufficient againſt the pannel, as for him. Juries cannot be puniſhed on account of an erroneous verdict, either for or againſt the pannel.

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52. Though the proper buſineſs of a jury be to inquire into the truth of the facts found relevant by the court, for which reaſon they are ſometimes called the *inqueſt*; yet, in many caſes, they judge alſo in matters of law or relevancy. Thus, though an objection againſt a witneſs ſhould be repelled by the court, the jury are under no neceſſity to give more credit to his teſtimony than they think juſt: And in all trials of art and part, where ſpecial facts are not libelled, the jury, if they return a general verdict, are indeed judges not only of the truth, but of the relevancy of the facts that are ſworn to by the witneſſes. A general verdict, is that which finds in general terms, that the pannel is guilty or not guilty, or that the libel or defences are proved or not proved. In a ſpecial verdict, the jury finds certain facts proved, the import of which is to be afterwards conſidered by the court.

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53. Criminal judges muſt now ſuſpend for ſome time the execution of ſuch ſentences as affect life or limb, that ſo condemned criminals, whoſe caſes deſerve favour, may have acceſs to apply to the king for mercy. No ſentence of any court of judicature, ſouth of the river Forth, importing either death or demembration, can be executed in leſs than 30 days; and, if north of it, in leſs than 40 days, after the date of the ſentence. But corporal puniſhments, leſs than death or diſmembring, *e. g.* whipping, pillory, *&c.* may be inflicted eight days after ſentence on this ſide Forth,

and twelve days after ſentence beyond it.

54. Crimes are extinguiſhed, 1. By the death of the criminal; both becauſe a dead perſon can make no defence, ſo that his trial is truly a judging upon the hearing of one ſide; and becauſe, though his guilt ſhould be ever ſo notorious, he is after death carried beyond the reach of human penalties: Such trials therefore can have no effect, but to puniſh the innocent heir, contrary to that moſt equitable rule, *culpa tenet ſuos auctores*. 2. Crimes may be extinguiſhed by a remiſſion from the ſovereign. But a remiſſion, tho' it ſecures the delinquent from the public reſentment, the exerciſe of which belongs to the Crown, cannot cut off the party injured from his claim of damages, over which the crown has no prerogative. Whoever therefore founds on a remiſſion, is liable in damages to the private proſecutor, in the ſame manner as if he had been tried and found guilty. Even general acts of indemnity paſſed in parliament, though they ſecure againſt ſuch penalties as law inflicts upon the criminal merely *per modum pœnæ*, yet do not againſt the payment of any pecuniary fine that is given by ſtatute to the party injured, nor againſt the demand of any claim competent to him in name of damages.

55. Leſſer injuries, which cannot be properly ſaid to affect the public peace, may be extinguiſhed, either by the private party's expreſsly forgiving him, or by his being reconciled to the offender, after receiving the injury. Hence ariſes the rule, *diſſimulatione tollitur injuria*. But where the offence is of a higher nature, the party injured, though he may paſs from the proſecution, in ſo far as his private intereſt is concerned, cannot preclude the king's advocate, or procurator-fiſcal, from inſiſting *ad vindictam publicam*.

Preſcription.

56. Crimes are alſo extinguiſhed by preſcription, which operates by the mere lapſe of time, without any act either of the ſoverign or of the private ſufferer. Crimes preſcribe in 20 years; but in particular crimes, the preſcription is limited by ſtatute to a ſhorter time. No perſon can be proſecuted upon the act againſt wrongous impriſonment, after three years. High treaſon, committed within his Majeſty's dominions, ſuffers likewiſe a triennial preſcription, if indictment be not found againſt the traitor within that time. All actions brought upon any penal ſtutute made or to be made, where the penalty is appropriated to the crown, expire in two years after committing the offence; and where the penalty goes to the Crown or other proſecutor, the proſecutor muſt ſue within one year, and the Crown within two years after the year ended. Certain crimes are, without the aid of any ſtatute, extinguiſhed by a ſhorter preſcription than 20 years. By our old law, in the caſes of rape, robbery, and hameſucken, the party injured was not heard, after a ſilence of 24 hours; from a preſumption, that perſons could not be ſo groſsly injured, without immediately complaining: And it is probable, that a proſecution for theſe crimes, if delayed for any conſiderable time, would be caſt even at this day, or at leaſt the puniſhment reſtricted. Leſſer injuries ſuffer alſo a ſhort preſcription; law *preſuming* forgiveneſs, from the nature of the offence, and the ſilence of the party. The particular ſpace of time ſufficient to eſtabliſh this preſumption muſt be determined by the judge, according to circumſtances.

LAW

Law-*Language*. In England all law-proceedings were formerly written, as indeed all public proceedings were, in Norman or law French, and even the arguments of the counſel and deciſions of the court were in the ſame barbarous dialect. An evident and ſhameful badge, it muſt be owned, of tyranny and foreign ſervitude; being introduced under the auſpices of William the Norman, and his ſons: whereby the obſervation of the Roman ſatyriſt was once more verified, that *Gallia cauſidicos docuit facunda Britannos*. This continued till the reign of Edward III.; who, having employed his arms ſucceſsfully in ſubduing the crown of France, thought it unbeſeeming the dignity of the victors to uſe any longer the language of a vanquiſhed country. By a ſtatute therefore, paſſed in the 36th year of his reign, it was enacted, that for the future all pleas ſhould be pleaded, ſhewn, defended, anſwered, debated, and judged, in the Engliſh tongue; but be entered and enrolled in Latin: In like manner as Don Alonſo X. king of Caſtile (the great-grandfather of our Edward III.) obliged his ſubjects to uſe the Caſtilian tongue in all legal proceedings; and as, in 1286, the German language was eſtabliſhed in the courts of the empire. And perhaps, if our legiſlature had then directed that the writs themſelves, which are mandates from the king to his ſubjects to perform certain acts or to appear at certain places, ſhould have been framed in the Engliſh language, according to the rule of our ancient law, it had not been very improper. But the record or enrollment of thoſe writs and the proceedings thereon, which was calculated for the benefit of poſterity, was more ſerviceable (becauſe more durable) in a dead and immutable language than in any flux or living one. The practiſers however, being uſed to the Norman language, and therefore imagining they could expreſs their thoughts more aptly and more conciſely in that than in any other, ſtill continued to take their notes in law French; and of courſe, when thoſe notes came to be publiſhed, under the denomination of *reports*, they were printed in that barbarous dialect; which, joined to the additional terrors of a Gothic black letter, has occaſioned many a ſtudent to throw away his Plowden and Littleton, without venturing to attack a page of them. And yet in reality, upon a nearer acquaintance, they would have found nothing very formidable in the language; which differs in its grammar and orthography as much from the modern French, as the diction of Chaucer and Gower does from that of Addiſon and Pope. Beſides, as the Engliſh and Norman languages were concurrently uſed by our anceſtors for ſeveral centuries together, the two idioms have naturally aſſimilated, and mutually borrowed from each other: for which reaſon the grammatical conſtruction of each is ſo very much the ſame, that I apprehend an Engliſhman (with a week's preparation) would underſtand the laws of Normandy, collected in their *grand couſtumier*, as well if not better than a Frenchman bred within the walls of Paris.

The Latin, which ſucceeded the French for the entry and enrollment of pleas, and which continued in

Law-Language.

uſe for four centuries, anſwers ſo nearly to the Engliſh (oftentimes word for word) that it is not at all ſurpriſing it ſhould generally be imagined to be totally fabricated at home, with little more art or trouble than by adding Roman terminations to Engliſh words. Whereas in reality it is a very univerſal dialect, ſpread throughout all Europe at the irruption of the northern nations; and particularly accommodated and moulded to anſwer all the purpoſes of the lawyers with a peculiar exactneſs and preciſion. This is principally owing to the ſimplicity, or (if the reader pleaſes) the poverty and baldneſs of its texture, calculated to expreſs the ideas of mankind juſt as they ariſe in the human mind, without any rhetorical flouriſhes, or perplexed ornaments of ſtyle: for it may be obſerved, that thoſe laws and ordinances, of public as well as private communities, are generally the moſt eaſily underſtood, where ſtrength and perſpicuity, not harmony or elegance of expreſſion, have been principally conſulted in compiling them. Theſe northern nations, or rather their legiſlators, tho' they reſolved to make uſe of the Latin tongue in promulging their laws, as being more durable and more generally known to their conquered ſubjects than their own Teutonic dialects, yet (either thro' choice or neceſſity) have frequently intermixed therein ſome words of a Gothic original; which is, more or leſs, the caſe in every country of Europe, and therefore not to be imputed as any peculiar blemiſh in our Engliſh legal latinity. The truth is, what is generally denominated *law-Latin* is in reality a mere technical language, calculated for eternal duration, and eaſy to be apprehended both in preſent and future times; and on thoſe accounts beſt ſuited to preſerve thoſe memorials which are intended for perpetual rules of action. The rude pyramids of Egypt have endured from the earlieſt ages, while the more modern and more elegant ſtructures of Attica, Rome, and Palmyra, have ſunk beneath the ſtroke of time.

As to the objection of locking up the law in a ſtrange and unknown tongue, this is of little weight with regard to records; which few have occaſion to read, but ſuch as do, or ought to, underſtand the rudiments of Latin. And beſides, it may be obſerved of the law-Latin, as the very ingenious Sir John Davis obſerves of the law-French, "that it is ſo very eaſy to be learned, that the meaneſt wit that ever came to the ſtudy of the law doth come to underſtand it almoſt perfectly in ten days without a reader."

It is true indeed, that the many terms of art, with which the law abounds, are ſufficiently harſh when Latinized (yet not more ſo than thoſe of other ſciences), and may, as Mr Selden obſerves, give offence "to ſome grammarians of ſqueamiſh ſtomachs, who would rather chooſe to live in ignorance of things the moſt uſeful and important, than to have their delicate ears wounded by the uſe of a word, unknown to Cicero, Salluſt, or the other writers of the Auguſtan age." Yet this is no more than muſt unavoidably happen when things of modern uſe, of which the Romans had no idea, and conſequently no phraſes to expreſs them, come to be delivered in the Latin tongue. It would puzzle the moſt claſſical ſcholar to find an appellation, in his pure Latinity, for a conſtable, a record, or a deed of feoffment: it is therefore to be imputed as much to neceſſity, as ignorance, that they were ſtyled in our forenſic dialect, *conſtabularius, recordum*, and *feoffamentum*. Thus again, another uncouth word of our ancient laws (for I defend not the ridiculous barbariſms ſometimes introduced by the ignorance of modern practiſers) the ſubſtantive *murdrum*, or the verb *murdrare*, however harſh and unclaſſical it may ſeem, was neceſſarily framed to expreſs a particular offence; ſince no other word in being, *occidere, interficere, necare*, or the like, was ſufficient to expreſs the intention of the criminal, or *quo animo* the act was perpetrated; and therefore by no means came up to the notion of murder at preſent entertained by our law; viz. a killing *with malice aforethought*.

A ſimilar neceſſity to this produced a ſimilar effect at Byzantium, when the Roman laws were turned into Greek for the uſe of the oriental empire: for, without any regard to Attic elegance, the lawyers of the imperial courts made no ſcruple to tranſlate *fidei commiſſarios*, φιδεικομμισσαριȣς; *cubiculum*, κȣβȣκλειον; *filium-familias*, παιδα-φαμιλιας; *repudium*, ρεπȣδιον; *compromiſſum*, κομπρομισσον; *reverentia et obſequium*, ρευερεντια και οβσεκȣιον; and the like. They ſtudied more the exact and preciſe import of the words, than the neatneſs and delicacy of their cadence. And it may be ſuggeſted, that the terms of the law are not more numerous, more uncouth, or more difficult to be explained by a teacher, than thoſe of logic, phyſics, and the whole circle of Ariſtotle's philoſophy; nay, even of the politer arts of architecture and its kindred ſtudies, or the ſcience of rhetoric itſelf. Sir Thomas More's famous legal queſtion contains in it nothing more difficult, than the definition which in his time the philoſophers currently gave of their *materia prima*, the groundwork of all natural knowledge; that it is *neque quid, neque quantum, neque quale, neque aliquid eorum quibus ens determinatur*; or its ſubſequent explanation by Adrian Heereboord, who aſſures us, that *materia prima non eſt corpus, neque per formam corporeitatis, neque per ſimplicem eſſentiam: eſt tamen ens, et quidem ſubſtantia, licet incompleta; habetque actum ex ſe entitativum, et ſimul eſt potentia ſubjectiva*. The law therefore, with regard to its technical phraſes, ſtands upon the ſame footing with other ſtudies, and requeſts only the ſame indulgence.

This technical Latin continued in uſe from the time of its firſt introduction, till the ſubverſion of our ancient conſtitution under Cromwell; when, among many other innovations in the law, ſome for the better and ſome for the worſe, the language of our records was altered and turned into Engliſh. But, at the reſtoration of king Charles, this novelty was no longer countenanced; the practiſers finding it very difficult to expreſs themſelves ſo conciſely or ſignificantly in any other language but the Latin. And thus it continued without any ſenſible inconvenience till about the year 1730, when it was again thought proper that the proceedings at law ſhould be done into Engliſh, and it was accordingly ſo ordered by ſtatute 4 Geo. II. c. 26. This was done, in order that the common people might have knowledge and underſtanding of what was alleged or done for and againſt them in the proceſs and pleadings, the judgment and entries in cauſe. Which purpoſe it is doubtful how well it has anſwered; but there is reaſon to ſuſpect, that the people are now, after many years experience, altogether as ignorant in matters of law as before.

fore. On the other hand, theſe inconveniences have already ariſen from the alteration; that now many clerks and attorneys are hardly able to read, much leſs to underſtand, a record even of ſo modern a date as the reign of George I. And it has much enhanced the expence of all legal proceedings: for ſince the practiſers are confined (for the ſake of the ſtamp-duties, which are thereby conſiderably increaſed) to write only a ſtated number of words in a ſheet; and as the Engliſh language, through the multitude of its particles, is much more verboſe than the Latin; it follows that the number of ſheets muſt be very much augmented by the change. The tranſlation alſo of technical phraſes, and the names of writs and other proceſs, were found to be ſo very ridiculous (a writ of *niſi prius*, *quare impedit*, *fieri facias*, *habeas corpus*, and the reſt, not being capable of an Engliſh dreſs with any degree of ſeriouſneſs) that in two years time a new act was obliged to be made, 6 Geo. II. c. 14. which allows all technical words to continue in the uſual language, and has thereby defeated every beneficial purpoſe of the former ſtatute.

Trial by Wager of LAW, *(vadiatio legis;)* a ſpecies of trial, in the Engliſh law, ſo called, as another ſpecies is ſtyled "wager of battel," *vadiatio duelli*, (ſee BATTEL): becauſe, as in the wager of battel, the defendant gave a pledge, gage, or *vadium*, or try the cauſe by battel; ſo here he was put in ſureties or *vadios*, that at ſuch a day he will make his law, that is, take the benefit which the law has allowed him, (ſee the article TRIAL.) For our anceſtors conſidered, that there were many caſes where an innocent man, of good credit, might be overborne by a multitude of falſe witneſſes; and therefore eſtabliſhed this ſpecies of trial, by the oath of the defendant himſelf: for if he will abſolutely ſwear himſelf not chargeable, and appears to be a perſon of reputation, he ſhall go free, and for ever acquitted of the debt, or other cauſe of action.

The manner of waging and making law is this. He that has waged, or given ſecurity, to make his law, brings with him into court eleven of his neighbours: a cuſtom, which we find particularly deſcribed ſo early as in the league between Alfred and Guthrun the Dane; for by the old Saxon conſtitution every man's credit in courts of law depended upon the opinion which his neighbours had of his veracity. The defendant then, ſtanding at the end of the bar, is admoniſhed by the judges of the nature and danger of a falſe oath. And if he ſtill perſiſts, he is to repeat this or the like oath: "Hear this, ye juſtices, that I do not owe unto Richard Jones the ſum of ten pounds, nor any penny thereof, in manner and form as the ſaid Richard hath declared againſt me. So help me God." And thereupon his eleven neighbours or compurgators ſhall avow upon their oaths, that they believe in their conſciences that he ſaith the truth; ſo that himſelf muſt be ſworn *de fidelitate*, and the eleven *de credulitate*.

In the old Swediſh or Gothic conſtitution, wager of law was not only permitted, as it is in *criminal* caſes, unleſs the fact be extremely clear againſt the priſoner; but was alſo abſolutely required, in many *civil* caſes: which an author of their own very juſtly charges as being the ſource of frequent perjury. This, he tells us, was owing to the Popiſh eccleſiaſtics, who introduced this method of purgation from their canon law; and, having ſown a plentiful crop of oaths in all judicial proceedings, reaped afterwards an ample harveſt of perjuries: for perjuries were puniſhed in part by pecuniary fines, payable to the coffers of the church. But with us in England wager of law is never *required*; and then only *admitted*, where an action is brought upon ſuch matters as may be ſuppoſed to be privately tranſacted between the parties, and wherein the defendant may be preſumed to have made ſatisfaction without being able to prove it. Therefore it is only in actions of debt upon ſimple contract, or for amercement, in actions of detinue, and of account, where the debt may have been paid, the goods reſtored, or the account balanced, without any evidence of either. And by ſuch wager of law (when admitted) the plaintiff is perpetually barred; for the law, in the ſimplicity of the ancient times, preſumed that no one would forſwear himſelf for any worldly thing. Wager of law, however, lieth in a real action, where the tenant alleges he was not legally ſummoned to appear, as well as in mere perſonal contracts.

The wager of law was never permitted but where the defendant bore a fair and unreproachable character; and it was alſo confined to ſuch caſes where a debt might be ſuppoſed to be diſcharged, or ſatisfaction made in private, without any witneſſes to atteſt it: and many other prudential reſtrictions accompanied this indulgence. But at length it was conſidered, that (even under all its reſtrictions) it threw too great a temptation in the way of indigent or profligate men: and therefore by degrees new remedies were deviſed, and new forms of action were introduced, wherein no defendant is at liberty to wage his law. So that now no plaintiff need at all apprehend any danger from the hardineſs of his debtor's conſcience, unleſs he voluntarily chooſes to rely on his adverſary's veracity, by bringing an obſolete, inſtead of a modern, action. Therefore, one ſhall hardly hear at preſent of an action of *debt* brought upon a ſimple contract: that being ſupplied by an action of *treſpaſs on the caſe* for the breach of a promiſe or *aſſumpſit*; wherein, though the ſpecific debt cannot be recovered, yet damages may, equivalent to the ſpecific debt. And, this being an action of treſpaſs, no law can be waged therein. So, inſtead of an action of *detinue* to recover the very thing detained, an action of treſpaſs on the caſe in *trover and converſion* is uſually brought; wherein, though the horſe or other ſpecific chattel cannot be had, yet the defendant ſhall pay damages for the converſion, equal to the value of the chattel; and for this treſpaſs alſo no wager of law is allowed. In the room of actions of *account* a bill in equity is uſually filed: wherein, though the defendant anſwers upon his oath, yet ſuch oath is not concluſive to the plaintiff; but he may prove every article by other evidence, in contradiction to what the defendant has ſworn. So that wager of law is quite out of uſe, being avoided by the mode of bringing the action; but ſtill it is not out of force. And therefore, when a new ſtatute inflicts a penalty, and gives an action of debt for recovering it, it is uſual to add, "in which no wager of law ſhall be allowed:" otherwiſe an hardy delinquent might eſcape any penalty of the law, by ſwearing he had never incurred, or elſe had diſcharged it.

Cuſtom-houſe Laws.

Cuſtom-Houſe Laws. The expedient of exacting duties on goods imported, or exported, has been adopted by every commercial nation in Europe. The attention of the Britiſh legiſlature has not been confined to the object of raiſing a revenue alone, but they have attempted, by duties, exemptions, drawbacks, bounties, and other regulations, to direct the national trade into thoſe channels that contribute moſt to the public benefit. And, in order to obtain every requiſite information, all goods, exported or imported, whether liable to duty or not, are required to be entered at the reſpective cuſtom-houſes; and, from theſe entries, accounts are regularly made up of the whole Britiſh trade, diſtinguiſhing the articles, their quantity and value, and the countries which ſupply or receive them.

The objects of the Britiſh legiſlature may be reduced to the following heads:

Firſt, To encourage the employment of Britiſh ſhipping and ſeamen, for the purpoſe of ſupplying our navy when public exigencies require.

Secondly, To increaſe the quantity of money in the nation, by prohibiting the exportation of Britiſh coin, by encouraging exportation, and diſcouraging importation, and by promoting agriculture, fiſheries, and manufactures. For theſe purpoſes, it is penal to entice certain manufacturers abroad, or export the tools uſed in their manufactures; the exportation of raw materials is, in moſt inſtances, prohibited; and their importation permitted free from duty, and ſometimes rewarded with a bounty. The exportation of ſome goods, manufactured to a certain length only, (for example white cloth), is loaded with a duty, but permitted duty-free when the manufacture is carried to its full extent. The importation of rival manufactures is loaded with heavy duties, or abſolutely prohibited. Theſe reſtrictions are moſt ſevere towards nations with which the balance of trade is ſuppoſed againſt us, or which are conſidered as our moſt formidable rivals in power or commerce.

Thirdly, To ſecure us plenty of neceſſaries for ſubſiſtence and manufacture, by diſcouraging the exportation of ſome articles that conſume by length of time, and regulating the corn-trade according to the exigencies of the ſeaſons.

Fourthly, To ſecure the trade of the colonies to the mother-country, and preſerve a mutual intercourſe, by encouraging the produce of their ſtaple-commodities, and reſtraining their progreſs in theſe manufactures which they receive from us in exchange.

To accompliſh theſe ends, a very complex ſyſtem of laws has been enacted; the outlines of which we ſhall lay before the reader. How far the means have contributed to the ends propoſed, and how far theſe ends themſelves are always wiſe; or, whether a trade encumbered by fewer reſtrictions, would not prove more beneficial, as well as more extenſive, may perhaps be called in queſtion: but the diſcuſſion of this belongs not to our plan.

1. Regulations concerning Importation.] The foundation of our commercial regulations is the famous act of navigation, which was firſt enacted during the time of the commonwealth, and adopted by the firſt parliament after the reſtoration. The ſubſtance of this act, and ſubſequent amendments, relating to goods imported, is as follows.

Cuſto hou La

Goods from Aſia, Africa, and America, may not be imported, except in Britiſh ſhips duly navigated, or ſhips belonging to the Britiſh plantations; and they can only be imported from the place of their production or manufacture, or the port where they are uſually firſt ſhipped for tranſportation:

Hamil Introd. Merch diſc.

Except goods from the Streights and Levant, which may be brought from the uſual places of lading in Britiſh ſhips; goods brought from Perſia, by perſons free of the Ruſſia Company, in barter for Britiſh goods ſent to Ruſſia, and from thence by land-carriage to Perſia, and Perſian raw ſilk, any how purchaſed, imported from Ruſſia in Britiſh ſhips; goods of the Spaniſh or Portugueſe plantations, imported from Spain or Portugal in Britiſh ſhips; gum-ſenega, from Europe, in Britiſh ſhips; bullion, cochineal, and indigo; ſpice, by licenſe; coarſe printed calicoes, cowries, and arrangoes, for the African market, by licence; and goods taken as prize.

The reſtriction on European goods is not univerſal, but extends to ſeveral of the bulkieſt articles. Ruſſian goods, maſts, timber, boards, ſalt, pitch, roſin, tar, hemp, flax, raiſins, figs, prunes, olives, oil, corn, ſugar, potaſhes, wine, and vinegar, may not be imported. except in ſhips belonging to Great Britain or Ireland, legally manned; nor Turky goods and currants, except in ſhips Britiſh built; or in ſhips belonging to the country where theſe goods are produced, or manufactured, or firſt ſhipped for exportation; and, if imported in foreign ſhips, they pay alien's duty.

In order to entitle a ſhip to the privileges of a Britiſh ſhip, it muſt belong entirely to Britiſh ſubjects; and the maſter, and three fourths of the mariners, muſt be Britiſh ſubjects, except in caſe of death, or unavoidable accidents. Corn may be exported, and entitled to bounty, if the maſter and two thirds of the mariners be Britiſh ſubjects. In time of war, the proportion of Britiſh mariners required is generally confined to one fourth; and the ſame proportion only is required in the Greenland fiſhery. Wool may not be exported to Ireland, except in ſhips wholly manned by Britiſh. Ships foreign built, though belonging to Britiſh, are ſubject to the ſame duties as ſhips belonging to foreigners. Ships employed in the Newfoundland fiſhery muſt carry one freſh man, (i. e. who has not been at ſea before), in five.

In order to prevent a ſhip from being deprived of the privileges belonging to Britiſh ſhips, no foreigner may purchaſe a ſhare without conſent of three-fourths of the owners. Ships foreign built muſt be regiſtered, and oath made concerning the property, before they be admitted to the privilege of Britiſh ſhips.

Commanders of ſhips of war muſt not allow any merchant-goods to be taken on board, unleſs by order of the admiralty, or goods taken out of ſhips in diſtreſs, under pain of being caſhiered. In theſe caſes, they muſt report the goods on board, and ſubmit to the ſame regulations that merchant-ſhips are ſubject to.

No merchant-goods may be imported or exported in any packet-boat, unleſs with the conſent of the chief officers of the cuſtoms.

Prohibited goods. The importation of cattle, beef, mutton, and port, except from Ireland, is declared a public nuiſance. Theſe articles are ordered to be ſeized at all hands, the cattle to be ſlain, and diſtributed among the poor, reſerving the hides and tallow to the ſeizer; and the pariſh is liable in penalties, if the ſeizer be neglected.

The following goods are prohibited, and the importers and venders are liable in penalties, from L. 200 to L. 50: and the goods, in ſome caſes, are appointed to be burned; in others, to be ſold for exportation. Gold and ſilver thread, lace, fringe, or other work, or work of copper, braſs, or any inferior metal; gold or ſilver wire, lace, brocade, embroidery. Needlework of thread or ſilk, except Eaſt India fringes of thread and ſilk; bone-lace of thread or ſilk, except of Flanders; cut-work, band-ſtrings. Buttons of all ſorts, wire for cards. Wrought ſilks except Italian, crapes and tiffanies, velvets, ſilk-ribbons, girdles, laces, or ſtockings, or ribbons, &c. mixed with ſilk, gloves, and mits of leather or ſilk, and thrown ſilk except Italian. Woollen-cloths. Malt, by the annual malt-bill. Cambrics and French lawns are prohibited to be uſed in Britain, and may be imported for re-exportation into London only, upon licenſe obtained from the commiſſioners of the cuſtoms, and ſecurity granted for re-exportation, in bales containing at leaſt 100 pieces, covered with cloth, and muſt be lodged in ware-houſes, under the joint keys of the proprietor and cuſtom-houſe officers. Wrought ſilks, Bengals, and ſtuffs mixed with ſilk or herba of Eaſt Indian, Perſian, or Chineſe manufacture, and calicoes painted, printed, ſtained, or dyed there, may be entered under like reſtrictions, on payment of the half ſubſidy only.

The following articles, chiefly of hardware, cutlery, and leathern-ware, may not be imported for ſale, and therefore can only be entered for re-exportation, or private uſe. Andirons, tennis-balls, counterfeit-baſons, ſacring-bells, * bits, bodkins, bruſhes, buſkins, hanging-candleſticks, playing-cards, wool-cards, * cauls, * chaps, caſkets, chaffing-diſhes, cheſs-men, combs, corſes, * daggers, dagger-blades, dice, dripping-pans, ewers, forcers, furs tawed, * girdles, goloches or corks, gridirons, hammers, * harneſs or girdles for horſes, hats, hilts, * knives, ladles, any thing wrought of tawed leather, * locks, pack-needles, painted wares, except paper and pictures, pattens, * pins, pinſons, points, purſes, rings of copper or latten gilt for curtains, * ſaddles, * ſcabbards, and ſheaths, ſciſſars, ſcummers, ſheers for taylors, ſhoes, * ſtirrups, tin-ware, tires of gold or ſilver, fire-tongs, moſt kinds of iron-wire, wares made thereof, woollen-caps. The articles marked with an * may, in no caſe, be imported for ſale; the others only from Ireland, or taken upon the ſeas, or wrecked. A longer liſt of like articles may not be imported by ſtrangers.

Ammunition, arms, gun-powder, and utenſils of war, may not be imported without the king's licence.

The following goods may not be imported from Germany on the Netherlands: olive-oil, pitch, tar, potaſhes, roſin, ſalt, ſpicery, (except by licenſe), tobacco and wines, (except Rheniſh wines, or Hungary wines from Hamburgh), alſo deal-boards and fir-timber, except of the growth of Germany, imported by Britiſh ſubjects, in ſhips built in and belonging to Britain.

Books, of which the copy-right is in private ſubjects, may not be imported under the penalty of 1 d. per ſheet, beſides forfeiture; and books firſt compoſed and printed in Britain, and reprinted abroad, may not be imported, unleſs they have not been printed at home for 20 years. Popiſh books may not be imported, under penalty of 40 s. each book; and Popiſh croſſes, and other ſuperſtitious things, under penalty of a premunire.

The importation of various other goods is reſtricted by particular regulations reſpecting the time and place of importation, the packages, the burden of the ſhip, and other circumſtances.

Spirits, tea, coffee, and cocoa-berries when manufactured into chocolate, are ſubject to exciſe or inland duties. The places where theſe goods are kept and ſold muſt be entered with and inſpected by the officers of exciſe. They may not be removed without a permit; ſpirits, if above a gallon; tea, coffee, or chocolate, if above 6 lb. Theſe permits are in force for a limited time only, and muſt be returned if not uſed. Dealers muſt keep accounts of their ſales open to the inſpection of the officers. The ſtock on hand is ſubject to their examination; and, if it does not correſpond with the credit or quantity wherewith they are chargeable, the dealers are liable in penalties.

Spirits may not be imported in caſks under 60 gallons, except from the Britiſh colonies for private uſe; coffee, in quantities leſs than 112 lb.; and it may not be re-exported otherwiſe than in the original packages, or in quantities leſs than 4 C. except to Ireland. Cocoa paſte and chocolate may not be imported. Chocholate muſt be manufactured in entered ware-houſes. and put up in ſtamped papers, on payment of the inland duty. Cocoa-berries may not be ſold in leſs quantities than 28 lb. at a time. Coffee from the plantations, accompanied with a certificate of the place of its growth, obtained on the oath of a planter, pays a ſmaller duty, and the parcels are marked with a particular ſtamp.

Rum, tea, coffee, and cocoa-berries, may be lodged in ware-houſes under joint keys, on payment of the cuſtoms only; and delivered, when ſold for home-conſumption, on payment of the inland-duties, or for exportation, on bond being granted to ſend them abroad; and, if tea, to Ireland, or the colonies only. When rum is thus lodged, ſecurity muſt be given to pay the inland-duty when ſold, or within 12 months if not ſold. Accounts of the quantities of ware-houſed goods are made up every 6 months, and the ſtock on hand examined.

Pepper may only be imported into London. It may be lodged in warehouſes, under joint keys, upon payment of the half ſubſidy; the other duties to be paid when delivered for ſale; and bond to be granted when delivered for exportation.

Spiceries, viz. cinnamon, cloves, mace, and nutmeg, may only be imported in Britiſh ſhips on licenſe firſt obtained; the bale of cinnamon to weigh 70 lb. the caſk of cloves, mace, or nutmeg, 300 lb. or upwards, unleſs from the Eaſt Indies.

Candles, ſoap, and ſtarch, may not be imported, except

cept in packages of 224 lib. or upwards, openly ſtowed in the hold of the ſhip.

Hats and bonnets of baſt ſtraw, chip-cane, or horſe-hair, in bales under 75 dozen, or materials for making ſuch hats, in packages under 224 lib.

Oak-bark may not be imported when the price is under L. 10 per load, or L. 2. 10 s. rinded bark.

Salt may not be imported otherwiſe than in bulk. Foreign ſalt, which is ſubject to a high exciſe, may be lodged in cellars, under joint keys, on payment of the cuſtoms only; and may be delivered from theſe cellars, upon bond, without payment of exciſe, if intended for curing fiſh of any kind, for exportation, or herrings for home conſumption. Theſe bonds are diſcharged, upon oath that the ſalt was applied to that purpoſe, and proof that ſuitable quantities of fiſh thus cured were exported, or of herrings entered for home-conſumption, or that the ſalt periſhed at ſea. Account is taken of the quantity on hand at the end of the fiſhing ſeaſon; and, if there be any deficiency, the owners are liable in the penalty of 10 s. per buſhel. Britiſh ſalt may be taken in duty-free by ſhips bound on a fiſhing voyage to Ireland, or the north ſeas, under which the coaſts of Scotland are comprehended, bonded and diſcharged as above.

Fiſh of the following kinds are prohibited to be imported in foreign ſhips, or bought of foreigners out of foreign ſhips. Herring, cod, pilchard, ſalmon, ling, grill, mackarel, whitings, haddocks, ſprats, cole-fiſh, gull-fiſh, congers, flat-fiſh, and all freſh fiſh except eels, ſtock-fiſh, anchovies, ſturgeon, botargo, cavear, lobſters, and turbets.

The herring-fiſhery is allowed free to all his majeſty's ſubjects. For encouragement, ſee SALT and FISHERY.

Corn. The object of the laws reſpecting the corn-trade is to encourage agriculture, by not only permitting the free exportation, but rewarding it with a bounty when the prices are low, and checking the importation by a heavy duty; and, to prevent ſcarcity, by prohibiting the exportation when the prices are high, and permitting importation at an eaſy duty. Various temporary laws have been enacted for theſe purpoſes, and ſometimes other expedients employed in times of ſcarcity, ſuch as prohibiting the diſtillery from corn, and manufacture of ſtearch. The prices which duties on importation, and bounties on exportation, were fixed by a ſtanding law, in 1773, are as follows:

Wheat under	48 s.	duty only 6 d. on import.	under 44 s.	bounty 5 s. on export.
Rye	32 s.	3 d.	28 s.	3 s.
Peaſe and beans	32 s.	3 d.		no bounty.
Oats	16 s.	2 d.	14 s.	2 s. 6 d.
Barley	24 s.	2 d.	22 s.	2 s. 6 d.

And, when wheat is imported at the low duties, wheat-flour may be imported on payment of 2 d. *per* Cwt. When the prices are higher than thoſe which entitle to bounty, exportation is prohibited, except for ſhip-proviſions, and 2500 quarters to Gibraltar, 3500 to Minorca, and 500 to St Helena, all from London; 5000 to Jerſey, &c. from Southampton; 2500 to the Iſle of Man, from Whitehaven and Liverpool; 200 quarters flour, 15 tons bread and beans, in any quantity, to Africa; 200 quarters wheat, and other corn, in any quantity, to Hudſon's Bay; 2000 quarters wheat, and other corn, in any quantity, to the Weſt Indies, from London; and corn of all kinds to Ireland, when there is an embargo on the exportation from that country. Corn from Ireland may always be re-tranſported to Ireland.

Corn imported, when ſubject to the high duties, may be lodged in ware-houſes till re-exported, or till the prices riſe to the limit of importation on the low duties.

The prices of corn are aſcertained in England by the quarter-ſeſſions; in Scotland by the ſheriffs, once in three months, viz. 1ſt February, May, Auguſt, and November, on the teſtimony of witneſſes; and the rate then fixed regulates the corn-trade for the enſuing three months: But the liberty to export, and bounty on exportation, by 14 Geo. III. is regulated by the prices at the neareſt market-town, and laſt market-day.

When barley is imported on payment of 2 d. duty, Indian maze may be imported on payment of 1 d.

Tobacco may not be imported, except in caſks containing at leaſt 450 lb.; and the duties on tobacco from the Britiſh colonies may be ſecured for 18 months except the old ſubſidy, or it may be lodged in ware-houſes, on the importer's bond, for 15 months. No drawback is allowed on re-exportation, except from the port where it was imported, and in the original packages: nor when manufactured in packages leſs than 300 lb. except cut or rolled. Tobacco from the Britiſh colonies muſt be attended with a manifeſt from the cuſtom-houſe there, containing the quantities and marks, which muſt be delivered to the cuſtom-houſe on the ſhip's arrival. Damaged tobacco, for which the proprietor refuſes to pay duty, may be cut off, and burned, (but not tobacco ſtems); and, if the damage be occaſioned by ſtreſs of weather at ſea, or accident after the ſhip's arrival, the proprietor is allowed ½ d. *per* lb. not exceeding 30 s. *per* hd. If, after cutting off what is damaged, the remainder be under 450 lb. it may be re-packed at the ſight of the officer. No tobacco, except of the Britiſh colonies, that has been manufactured here, and paid the duties, may be conſumed on board ſhips of war. Tobacco, removed by water, or by land, above 24 lb. or ſnuff, above 10 lb. muſt be attended with a certificate, and the packages muſt be marked with the kind of goods in large letters. Importers muſt deliver to the chief officers of the cuſtoms an account of the quantities ſold or delivered out to be manufactured, and muſt deliver annually an account of all the tobacco that has been 18 months in their poſſeſſion. Tobacco ſeized is to be burned, and the officers allowed 2 d. *per* lb. Tobacco ſtems may not be imported, and, if exported, are entitled to no draw-back. Tobacco may not be planted in Britain, except in phyſic-gardens, in ſmall quantities.

Linen, chequered, ſtripped, printed, painted, ſtained, or dyed, and ſail-cloth, muſt be marked with a ſtamp on payment of the duty. Linen printed, or ſail-cloth manu-

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manufactured at home, is marked with a different ſtamp. Theſe ſtamps are cut off on re-exportation. Every new ſhip muſt be provided with a complete ſet of ſails manufactured in Great Britain. If ſails be purchaſed abroad during a voyage, the ſhip-maſter muſt report them, and pay duty on his arrival.

Wine may not be imported in caſks containing leſs than 25 gallons, except from Tuſcany in open flaſks, and from the Levant, in flaſks or bottles; and no French, Spaniſh, or Portugueſe wine may be imported in caſks leſs than hogſheads. Wine imported into London, and Levant wine into Briſtol and Southampton, pay higher duties; and, when carried to theſe places, muſt pay the extra-duties, and be attended with a certificate. Damaged wine may be delivered to the cuſtom-houſe officers, who are to mix it with ſalt or vinegar; and it muſt be ſold to be diſtilled into brandy, or made into vinegar; the price, not exceeding L. 4 for French or German wine, or L. 8 for any other, is given to the proprietor, the overplus paid into the cuſtoms.

To guard more effectually againſt clandeſtine trade, the importation of ſome articles is only permitted in ſhips of a certain burden, whoſe operations are not eaſily concealed. Spirits muſt be imported in ſhips of 100 tons, or upwards, except rum, and ſpirits of Britiſh plantations, which are only reſtricted to 70 tons; tea, tobacco, and ſnuff, 50 tons; ſalt, 40 tons. Tobacco and rum may not be exported in ſhips under 70 tons.

Duties. All goods imported are liable to duties, except ſuch as are expreſsly exempted. The revenue of cuſtoms † is of great antiquity in Britain, but was new modelled at the reſtoration of Charles II. A ſubſidy of tonnage on wines, and of poundage, or 1 s. *per* pound value of other goods, was granted during the king's life, and, after ſeveral prolongations, rendered perpetual. A book of rates was compoſed for aſcertaining theſe values; and articles not rated pay duty according to the value, as affirmed upon oath, by the importer, except Eaſt India goods, which pay according to the value as ſold at candle. If the goods be valued too low by the importer, the cuſtom-houſe officer may ſeize them, upon paying to the proprietor the value he ſwore to, and 10 *per cent.* for profit; ſuch goods to be ſold, and the overplus paid into the cuſtoms. Another book of rates was publiſhed, under ſanction of parliament, 11th George I. containing articles omitted in the former ones; and various additional duties have been impoſed; ſome on all goods, ſome on particular kinds; ſome according to the rates, ſome unconnected with the rates; ſome with an allowance of certain abatements, ſome without any allowance; the greater part to be paid down in ready money, and a few for which ſecurity may be granted; often with variations, according to the ſhip's place, and circumſtances of importation. The number of branches now amounts to upwards of 50; and ſometimes more than 10 are chargeable on the ſame articles. By this means, the revenue of the cuſtoms has become a ſubject of much intricacy, eſpecially to the officers, who muſt diſtinguiſh the different branches which are appropriated by law to different purpoſes.

Goods muſt be landed in lawful ports, between the hours of 6 and 6 in ſummer, and in day-light in winter, and in preſence of an officer. Shipmaſters muſt proceed directly to the place of unloading, and make report at the cuſtom-houſe, upon oath, of the burden and lading of their ſhip. The proprietors may enter their goods within 20 days, by delivering to the collector five bills of entry, which contain a note of the kinds of goods, quantities, and packages, and paying the duties, or granting ſecurity, in caſes where it is admitted. A warrant is then delivered to the landwaiter, to permit them to be landed; and they are examined, before removal, to try their correſpondence, in quantity and quality, with the entry. If the merchant has entered too little, he is allowed to make a ſecond or poſt-entry for the difference. If he has entered too much, he may obtain a return of the overplus, upon ſhowing ſatisfactory reaſon for the over entry. If he be not acquainted with the quality of the goods, which is ſometimes the caſe in conſignments, he may obtain a warrant, called a *bill of ſight*, for landing and inſpecting them before entry, on depoſiting as much money as the duties will probably amount to. If the goods be damaged, the principal officers may appoint two ſkillful neutral perſons, to aſcertain the extent of the damage; and a proportional abatement is allowed in the duties. Goods not entered within 20 days may be carried to the cuſtom-houſe, for ſecurity of the cuſtoms; and ſmall parcels of fine goods ſooner: ſuch goods to be ſold by auction, if not relieved in 6 months; and the overplus, after paying duty and charges, given to the proprietor. A ſhip may break bulk at any lawful port; and duty is only paid for the goods unloaded there; but, when it proceeds to another port, report muſt be made of the goods entered before. When all the goods are entered and unloaded, if the entries correſpond with the ſhipmaſter's report, he is entitled to certain allowances called *portage*, the ſhip is cleared, and the officers diſmiſſed.

Goods taken out of a ſtranded ſhip are liable to the ſame duties, and entitled to the ſame draw-back, as goods regularly entered. Goods taken in, or put out at ſea, within four leagues of the coaſt, except for a lawful reaſon declared at the firſt port of delivery, are forfeited, with penalties. Ships under 50 tons burden, hovering within two miles of the coaſt, may be compelled to give bond to proceed to foreign parts, otherwiſe the goods may be landed, and duties paid; or, if prohibited, forfeited. Goods taken and condemned as lawful prizes pay duty as other goods, and ſometimes have been permitted, by temporary acts, to be ware-houſed, or, though rated, to pay duty *ad valorem*. Prize military ſtores pay no duty. Theſe bonds are relieved in the ſame manner as bonds for goods entitled to bounty or drawback.—Of which afterwards.

Penalties. The payment of duties, and obſervance of other laws, are inforced, by many penalties, againſt the owners of the goods, the ſhipmaſter, the officers, and all acceſſories. Goods attempted to be landed clandeſtinely, or taken out at ſea within four leagues of the coaſt; or found on board a ſhip after clearance, or not reported, and found on board concealed, though before clearance; and tea and ſpirits found on board hovering veſſels, are forfeited. Sometimes the additional penalty of double or treble the value, ſome-

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times a fixed ſum, is incurred; porters, and others, aſſiſting at running goods, are liable to fine and impriſonment; boats and carts employed are forfeited. Cuſtomable and prohibited goods, found in a boat, on the water, or bringing from the water-ſide, or found, by credible information, in any houſe, may be ſent to the king's warehouſe till claimed, and proof made that they have paid duty, or been bought in lawful trade; the *onus probandi* to lie on the claimer. Perſons lurking near the ſea to aſſiſt at running uncuſtomed goods, may be committed to the houſe of correction.

Shipmaſters concurring in prohibited trade, or neglecting any of the forms preſcribed by law, are liable to fines; and, in ſome caſes, the ſhip is forfeited. Among the offences which ſubject to that penalty, are the following: Importing goods againſt the act of navigation, deals, or other prohibited goods, from Germany and the Netherlands; foreign fiſh; cattle, Britiſh and Iriſh ſalt, irregularly ſhipped, ſpirits in ſhips under 40 tons, ſpiceries, without delivering the licenſe to the cuſtom-houſe, or hops clandeſtinely; exporting coals clandeſtinely; exporting wool or tallow; permitting goods to be taken in or out at ſea within four leagues of the coaſt; tranſgreſſing the privileges of the Eaſt-India or South-Sea Companies; neglecting the forms and regulations preſcribed for trading to Ireland, and the colonies, of which afterwards; hovering ſhips, under 50 tons burthen. In ſome caſes, the ſhips are appointed to be burned, unleſs they can be uſeful in his majeſty's ſervice. When the prohibition depends on the place of growth, the *onus probandi* lies on the defendant. Offences are cognizable by the court of exchequer, and often by the juſtices of peace, or commiſſioners of cuſtoms or appeals, by particular ſtatutes.

Offences attended with violence are more ſeverely puniſhed. Perſons employed in ſmuggling, wearing diſguiſes, carrying arms, or reſiſting officers, are liable to tranſportation by ſeveral ſtatutes; and by 9 Geo. II. any perſons, three or more, carrying on illicite trade, or reſcuing ſeized goods or priſoners, or any perſons ſo employed having their faces blacked or wearing a vizard maſk or other diſguiſe, and every perſon maiming, ſhooting, or dangerouſly wounding any officer in the execution of his duty, are to ſuffer death as felons. On the other hand, rewards are given to thoſe who ſuffer in ſupport of the revenue.

Counterfeiting ſtamps, or cuſtom-houſe writings, is declared felony.

The duties payable by aliens are generally higher than by Britiſh, and they are excluded altogether from ſome branches of trade. See ALIEN.

Goods duty-free. The following goods may be imported duty-free:—Diamonds, pearls, and precious ſtones; flax, lintſeed, linen rags, beaver-wool, wool for clothiers, and linen yarn unbleached. The following drugs for dyers, if regularly entered: Agaric, annotto, antimonium crudum, aquafortis, arſenic, bay-berries, Brazil wood, Braziletto wood, cochineal, cream-of tartar, fuſtic, galls, gum-arabic, indigo, iſinglaſs, litmus, logwood, madder, Nicorago wood, orchil, orchelia, or Spaniſh-weed, pomegranate pills, red-wood, ſafflore, ſal ammoniac, ſal gem, Japan wood, red Saunders, ſumach, ſtick-lake, turnſole, valonia, verdigreaſe.

The following goods from America: Wood and timber, cotton, wool, rice, ſago, vermicelli, ſhort ſilk, pig and bar iron, aſhes.

The following from Ireland: cattle, horſes, butter, cheeſe, beef, pork, mutton, hemp, raw calve-ſkins, thread, cotton, woollen or bay yarn, and woollen ſtuffs by licence.

Oil, whale-blubber, whale-fins, and ſkins, taken by ſhips employed in the Britiſh whale-fiſhery.

Bounties on importation. From America.	L.	s.	d.
Maſts, yards, and boltſprits, per ton of 40 feet	1	—	—
Tar, per ton of 8 barrels	2	4	—
—— made from trees ſtripped a year before, according to certain directions, and certified	4	—	—
Pitch and turpentine per ton, contained in 8 barrels	1	—	—
Hemp and flax per ton, till 1785	4	—	—
Raw ſilk, into certain ports, L. 100 value, till 1784	20	—	—
till 1791	15	—	—
Indigo, whoſe value is ¾ of the beſt French, per lib.	—	—	6
Staves, pipe ſtaves of certain ſizes, per 1200, till 1780	2	—	—
hhd. ſtaves per 1800, till 1780	2	—	—
barrel ſtaves per 2400, ditto	2	—	—
heads per 3600, ditto	2	—	—
Trees from Scotland, fit for maſts, yards, and boltſprits, per ton	1	00	00

Goods from the plantations, entitled to bounty, muſt be attended with a certificate concerning the place of their growth, and muſt be examined by the proper officers when loaded, whether they be good, merchantable, and otherwiſe ſuitable to the deſcriptions which entitle to bounty, and a certificate of their quality muſt be granted.

2. REGULATIONS concerning EXPORTATION.] Goods of moſt kinds may be exported duty free, when regularly entered; and thoſe that have paid duty on importation are generally entitled to draw-back of part, ſometimes of the whole, when re-exported within three years, upon certificate that the duties were paid on importation, and oath of their identity. In ſome caſes, a bounty is given on manufactured goods, when the materials from which they were manufactured have paid duty on importation; and manufactures ſubject to exciſe have generally the whole or part of the exciſe-duty returned. Some bounties are alſo granted, in favour of certain branches of trade, although they have not contributed, in any ſhape, to the revenue.

No goods, except fiſh, may be loaded for exportation, till the maſter has entered his ſhip outwards. The exporter muſt make out four bills of entry, and deliver them to the collectors, and pay down the duties, if any be due. Upon this he receives a cocquet, certifying the entry and payment, and then may ſhip the goods in preſence of the ſearcher, who certifies the quantity on the back of the cocquet. When all the goods are ſhipped, the ſhipmaſter goes to the cuſtom-houſe, and makes report, upon oath, concerning the burthen, property, and crew, of his ſhip, and the

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goods on board, which are inſerted in the report, from the indorſements on the cocquets. He then receives his cocquets, and is cleared outward. If more goods be afterwards taken in, they may be added to the report. If the ſhip proceeds to any other port, to take in more goods, ſhe muſt take out a new clearance at each port, and muſt ſpecify the goods taken in at the former ones.

Goods liable to duty, ſhipped before entry, or goods prohibited to be exported, are forfeited. If it be proven that goods have been clandeſtinely exported, the proprietors forfeit double value.

Goods intitled to bounty or drawback, or prohibited to be conſumed, may be examined before or after ſhipping, and, if found leſs in quantity, or different in quality, from what they were entered for, they are forfeited, with penalties. Bonds are taken, in caſe of bounties, and in ſome caſes of drawbacks, that the goods ſhall not be re-landed in Great-Britain, the dangers of the ſeas excepted. Theſe bonds are relieved by certificate from the magiſtrates of the place where they are unloaded, or of a Britiſh conſul, or two creditable Britiſh merchants, or by proof that they were loſt at ſea. In caſe of exportation to Ireland, they are relieved by certificate from the cuſtom-houſe, at the port of delivery there.

Debentures are made out at the cuſtom-honſe for the drawbacks and bounties. Theſe contain a declaration of the exporter concerning the quantities and kinds of goods, and circumſtances that entitle them to bounty, taken on oath, before the principal officers; a certificate by the officers on duty, that the goods were ſhipped in conformity, and the ſhip legally navigated; an intimation that an oath or bond has been taken, not to re-land them; and a note of the amount of the bounty or drawback. The collector of the cuſtoms may pay the bounty himſelf, if he has money in his hands pertaining to the fund from which it is appointed to be paid. If otherwiſe, he certifies the ſame to the commiſſioners of the cuſtoms, who order payment in courſe. Goods ſent to Ireland receive no drawback, till certificates be returned of their being landed there.

Goods prohibited to be exported. White aſhes, horns, unwrought hides of black cattle, (except calfſkins dreſſed with the hair,) tallow, clocks, watches, caſes, and dial-plates, unleſs fit for uſe, with the maker's name; coin without the king's licenſe, (except foreign coin, upon licenſe); bullion, unleſs certificate be produced that it is not molten from Britiſh coin or plate. Theſe metals: braſs, copper, latten, bell-metal, pan-metal, gun-metal, and ſhruff-metal, (except lead and tin, or copper and mundic, made of Britiſh ore, and foreign copper in bars. Gun-powder, when the price exceeds 5 l. per barrel. Engines for knitting ſtockings; tools and utenſils for cotton, linen, woollen, and ſilk manufactures. Wool, ſheep, woolfells, mortlings, ſhortlings, woollen-yarn, wool-flocks; ſlight manufactures of wool that may be reduced to wool again; fuller's earth, fulling clay, and tobacco-pipe clay.

The woollen manufacture is conſidered as the moſt important, and is highly favoured by our laws. The exportation of the materials is therefore declared a common nuiſance, and prohibited under very ſtrict regulations and ſevere penalties. Wool may not be carried by land, except in the day-time, having the word WOOL marked on each package; it may not be ſhipped coaſtwiſe, except on licenſe previouſly obtained; and it muſt be entered at the cuſtom-houſe before it be brought within five miles of the ſea-ſhore, and bond muſt be granted to re-land it in Britain, which can only be diſcharged by certificate from the port of delivery. The penalties for exporting wool are, forfeiture of ſhip and cargo, with treble value, and three years impriſonment. If wool exported be not diſcovered, the inhabitants of the place are liable for treble value. In Kent and Suſſex, the ſhearers of wool, within 10 miles of the ſea, muſt give notice to the officer of the number of fleeces, and part where lodged, within three days, and it cannot be removed without a permit. Purchaſers of wool, within 15 miles of the ſea, muſt give ſecurity to ſell it in the inland country, or manufacture it themſelves; and wool carried within 15 miles of the ſea, without being entered, is forfeited, with high penalties. Armed veſſels are appointed to cruize at proper ſtations, to ſearch all ſhips ſuſpected of exporting wool. Moſt of theſe regulations extend to wool, fells, &c. Exporting ſheep is puniſhed with the loſs of the left-hand for the firſt offence, and with death for the ſecond. The following articles are excepted from the prohibition: Lamb-ſkins ready dreſſed, limited quantities from Southampton to Jerſey, &c.; wool-fells and wedders for ſhips uſe; foreign wool may be re-exported, but in Britiſh ſhips only. White woollen cloths pay duty on exportation; but dyed cloths, and other woollen manufactures, are exported duty-free.

Bounties on Goods exported.	L.	s.	d.
Refined ſugar manufactured in Great-Britain from brown ſugar of the colonies, per C.	—	9	—
Corn. See p. 4142.			
Sail-cloth, Britiſh-made, per yard -	—	—	2
Linen, Britiſh, or Iriſh, 24 inches broad, or upwards, under 5 d. per yard -	—	—	—½
—— from 5 d. to 6 d. - -	—	—	1
—— from 6 d. to 1 s. - -	—	—	2
Checquered linen, 25 inches broad, not exceeding 1 s. 6 d. nor under 7 d.	—	—	—½
Diaper, not exceeding 1 s. 6 d. -	—	—	1½
But printed linen has no bounty.			
Silk ſtuffs of Britiſh manufacture, and ſilk ribbons, per ℔. ——	—	3	—
Ditto, mixed with gold and ſilver -	—	4	—
Ditto, of ſilk and Gogram yarn -	—	—	8
Ditto, mixed with cotton - -	—	1	—
Ditto, mixed with worſted -	—	—	6
But mixed ſtuffs muſt have at leaſt ⅓ of the warp ſilk, and the value muſt be double the bounty.			
Silk ſtockings, gloves, fringes, laces, and ſewing ſilk - - -	—	1	3
Gold thread, lace, or fringe, per lb.	—	6	—
Silver ditto —— ——	—	5	—
Cordage, not of American hemp, exported to foreign places in Europe, per C.	—	2	4¾
Gun-powder, per barrel, qt. 1 C.	—	4	6
Spirits from barley, malt, or other corn, when barley is under 24 s. per qr. (beſides drawback of exciſe) per ton -	1	10	—

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Fleſh and fiſh, viz.

Beef and pork, per barrel - -	—	5	—
Pilchards or ſcads, per caſk of 50 gallons	—	7	—
Cod, ling, and flake, 14 inches and upwards, per 100 —— ——	—	5	—
—— wet, the barrel of 32 gallons	—	7	—
—— dried, called haberdines, per C.	—	3	—
Salmon, per barrel of 42 gallons -	—	4	6
White herrings, per barrel of 32 gallons	—	2	8
Full red-herrings, per ditto - -	—	1	9
Clean ſhotten red-herrings, per ditto	—	1	—
Dried red ſprats, the laſt - -	—	1	—

The following bounties are alſo granted on ſhips employed at the fiſheries:

Herring-Fiſhery. Decked veſſels, from 20 to 80 tons, taking on board 12 buſhels of ſalt for each laſt, and 6 men for every 20 tons, repairing to Yarmouth, Whitehaven, Leith, Inverneſs, Braſſey-ſound, Campbeltown, Oban, or Kirkwall, from 22 June to 24 October, granted 1771, for ſeven years, and to the end of the then next ſeſſion of parliament; 30 s. per ton.

Newfoundland Cod-fiſhery. Veſſels of 50 tons, or upwards, manned with 15 men, catching 10,000 fiſh, landing at Newfoundland, and making another trip, and returning to the ſame port with another cargo; granted 1775, for 11 years,

Firſt 25 veſſels, each -	L.	40	—	—
Next 100 veſſels, each - -		20	—	—

Whale-Fiſhery. In Greenland ſeas, Davis's Straits, and parts adjacent, a bounty granted 1771, of 40 s. per ton to 1776, 30 s. to 1780, and 20s. to 1787, on ſhips of 200 tons, carrying 28 men, beſides the maſter and ſurgeon, ſix months proviſions, four boats, 20 harpoon-irons, and 40 lines of 120 fathoms; and, for every 50 tons more, one boat, ſix men, and 10 lines, and taking one apprentice for every 50 tons. Theſe ſhips muſt continue at the fiſhing till 10th Auguſt, unleſs their loading be compleated ſooner, and muſt belong entirely to the place where fitted out. No bounty is allowed for more than 400 tons on one ſhip.

A bounty was granted in 1775, to continue 11 years, for encouraging the whale-fiſhery on the coaſt of Newfoundland and Labrador, the river St Lawrence, and bay of Chaleur. The five ſhips that take the greateſt quantity of blubber, being equipped as for the Greenland fiſhery, are entitled to the following ſums:

Firſt greateſt quantity ——	L.	500
Second —— ——		400
Third —— —— ——		300
Fourth —— —— ——		200
Fifth —— —— ——		100

A like bounty was granted in 1776, to continue for the ſame term of years, in favour of the whale-fiſhery on the American coaſt, ſouth of latitude 44°. The ſhips employed in theſe fiſheries to be Britiſh-built, manned by ¾ Britiſh ſubjects, belonging to ſubjects reſiding in Britain or Ireland, and muſt take one apprentice for every 50 tons.

When naval ſtores are imported on bounty, or iron from America, duty-free, pre-emption muſt be offered to the commiſſioners of the navy.

3. Regulations **COASTWISE.**] The coaſting trade may only be carried on by Britiſh ſhips legally navigated; and ſhips foreign built, though belonging to Britiſh ſubjects, are liable to a duty of 5s. per ton.

Goods carried coaſtwiſe muſt be attended with a coaſt cocquet or ſufferance; and goods imported from foreign places, and afterwards ſhipped coaſtwiſe, muſt be accompanied with a certificate, containing a deſcription of their quantity, quality, and value, which muſt be delivered to the cuſtom-houſe at the port of diſcharge, that the officers may examine if they correſpond. Such goods, not attended with a certificate, or not taken in at the place where certified, are forfeited. Upon deliverance of the certificate, a warrant is granted for landing them. Foreign goods, taken at ſea, or at any other port than that from which certified, are forfeited. Bond muſt be granted by the ſhip-maſter to deliver the goods at ſome Britiſh port, and return certificate within ſix months.

4. **EAST INDIES.**] Goods from India muſt be landed in Britain, without breaking bulk; and, when a ſhip ſails for India, bond muſt be granted for that purpoſe, and the goods muſt be publicly ſold by inch of candle. Private traders, without the licence, are liable to heavy penalties. Goods reſhipped from homeward bound Indiamen before their arrival, or put on board outward bound ones after their departure, are forfeited with treble value.

Britiſh ſubjects are prohibited, under high penalties, from taking any concern in foreign Eaſt India companies.

The company may export ammunition for their own defence, duty free, not exceeding L. 300 in duty per annum.

They may import, on licence, for the African trade, coarſe printed calicoes, cowries, and arrangoes; and, if they do not ſupply the market, the treaſury may grant licenſe to others.

5. **IRELAND.**] The commercial laws of Britain, with regard to Ireland, impoſe certain reſtrictions, but, on the other hand, eſtabliſh many privileges which are not extended to foreign nations.

A petition was preſented by parliament to king William, requeſting him to diſcourage the woollen manufacture of Ireland, as interfering with the Britiſh, and to encourage the linen manufacture there. On the principle of that petition, many of the following regulations have been enacted.

Ships built in, or belonging to Ireland, have the ſame freedom of trade, by the act of navigation, as thoſe of Britain. Iriſh beef, pork, cattle, butter, cotton-yarn manufactured there, hemp, flax, and manufactures thereof, may be imported into Britain duty free; and various articles, formerly enumerated, may be imported, which are prohibited from other places. The bounties on the whale-fiſhery extend to that country. The ſame draw-backs are generally allowed for goods exported there as to foreign countries; and it is permitted to export 30 tons of gum-ſenaga annually duty free.

All Iriſh goods, except woollen and cotton manufactures, glaſs, hops, gun-powder, and coals, and all Britiſh goods from Ireland, except woollen manufactures and glaſs, may be exported from Ireland or America, but this permiſſion does not extend to any goods which pay duty in Britain, till an equal duty be laid on by the Iriſh parliament: nor to bar-iron, and iron-wares, till ſubjected to duties; bar-iron L. 2, 10s. and ſlit-iron L. 3, 3s. per ton; nor to goods which have any bounty on exportation from Ireland.

Proviſions, lines, and nets, for Newfoundland fiſhery, and cloathing and accoutrements for the forces in Iriſh pay in America, may be exported from Ireland.

On the other hand, wrought ſilks, muſlins, and calicoes, of Perſia, or the Eaſt Indies, and the enumerated goods and ſugars of the Britiſh plantations, ſpirits and molaſſes of foreign plantations, and hops and glaſs, may only be imported from Britain. Hops receive no drawback on exportation there. Glaſs of Britiſh manufacture only is permitted to be imported, and it may not be re-exported.

Wool, and woollen manufactures, might not be exported from Ireland, except to Britain; and woollen manufactures might only be exported from certain ports in Ireland, to certain ports in the weſt coaſt of England, on licence previouſly obtained.

Theſe reſtrictions, however, were conſidered by the Iriſh as very oppreſſive; and accordingly, after many complaints, an act was paſſed in their favour, which received the royal aſſent on the 23d of December 1779. This act repealed part of that of 10 and 11 Wil. III. ("to prevent the exportation of wool out of the kingdoms of Ireland and England into foreign parts, and for the encouragement of the woollen manufacture in the kingdom of England,") and ſo much of any other act or acts of parliament made in Great Britain, which prohibit, or in any manner reſtrain, the exportation of cloth, bays, kerſeys, ſays, friezes, druggets, cloth-ſerges, ſhalloons, or any other drapery-ſtuffs or woollen manufactures whatſoever, made up or mixed with wool or wool-flocks, from the kingdom of Ireland into foreign parts; alſo ſo much of an act 29 Geo. II. ("for granting to his majeſty ſeveral rates and duties, and for obviating ſome doubts about making out orders at the exchequer for the moneys advanced upon the credit of the ſalt-duties granted and continued to his majeſty by an act of the laſt ſeſſion of parliament") as relate to the exportation of glaſs, glaſs-bottles, or glaſs of any kind or denomination whatever, from or out of the kingdom of Ireland.

6. COLONIES.] The eſtabliſhment of colonies may prove beneficial, in various reſpects, to the mother-country. They ſupply us with commodities which cannot be produced at home; they afford employment and ſubſiſtence to our ſupernumerary hands; they open new markets for our manufactures; and increaſe the number of our ſhipping and ſeamen. When their territories are extenſive and fertile, they muſt increaſe in population and riches; and, if the connection can be preſerved, will promote the ſtrength of the nation, by contributing to its forces and revenue, for the common benefit. See COLONY.

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When a colony is firſt eſtabliſhed, agriculture is the natural employment of the ſettlers. Their lands are generally uncleared, and thinly inhabited; and their induſtry is exerted to its beſt advantage in the production of commodities that yield a price in Europe, and are exchanged for manufactures already brought to perfection there. Such will be the ſtate of things at firſt, though no reſtrictions be interpoſed. The Britiſh legiſlature has attempted to prolong this kind of intercourſe beyond its natural period. Deſirous to poſſeſs the whole advantages of their trade, and jealous of the favourite woollen manufacture, we have impoſed many reſtrictions on their commerce, and ſome on their manufactures; but, in return, beſides the benefit of protection, we have encouraged the ſtaple articles of their produce, by various bounties and privileges.

The duties and commercial reſtrictions impoſed on the colonies, have furniſhed an oſtenſible cauſe for the revolt of America. As theſe laws are ſtill obſerved in the colonies ſubject to Britain, and require to be ſtated, in order to direct our judgment how far the grievances complained of by the revolted colonies were well founded, we have drawn out the following abſtract:

No goods may be imported into, or exported from the plantations in Aſia, Africa, or America, except in ſhips built in Britain, Ireland, or the plantations, or prize-ſhips, manned by Britiſh ſubjects, duly regiſtered, and legally navigated.

The following goods, enumerated in the act of navigation, and ſubſequent acts, may not be exported from the plantations, except to ſome other plantation, or to Europe: tobacco, cotton wool, indigo, ginger, fuſtic and other dyeing woods, molaſſes, hemp, copper ore, beaver-ſkins and other furs, pitch, tar, turpentine, maſts, yards, and boltſprits, coffee, pymento, cocoa nuts, whale-fins, raw-ſilk, pot and pearl aſhes. Rice and ſugars are enumerated in the liſt, but are now under different regulations.

Rice may be ſhipped in Carolina, Georgia, and Florida, directly for places ſouth of Cape Finiſterre, upon licence taken out in Britain, bond being granted that none of the other enumerated goods will be taken in, and that the ſhip will proceed directly with the rice, according to the licence, and return to Europe before it goes again to the plantations. The quantities of rice are indorſed on the licence, and the half-ſubſidy paid in Britain by the perſon who grants the bond, on a return of the quantity tranſmitted from America. The maſter, on his return, muſt produce a certificate from the Britiſh conſul, or two creditable merchants, that the rice was delivered, and no other enumerated goods on board.

Sugar may be ſent to foreign countries, without being landed in Britain, the major part of whoſe owners reſide in Britain, and the reſt in the colony, upon licenſe taken out in Britain, and bond granted that no enumerated goods ſhall be laden. If the ſugar be deſtined for places north of Cape Fineſterre, the ſhip muſt touch at Britain, and make entry of its cargo; but need not be unloaded, unleſs fraud be ſuſpected. If its deſtination be ſouth of Cape Finiſterre, it may proceed directly; but the ſhip muſt return to Europe within 8 months after unloading, and before making another voyage to the plantations; and the maſter muſt produce a certificate of the landing of the ſugar, and make entry of the quantity, but without payment of any duty.

Iron may not be imported to Europe, except to Ireland; and none of the non-enumerated may be imported to any country ſouth of Cape Finiſterre, except the bay of Biſcay.

When a ſhip ſails from Britain to the colonies, bond muſt be granted, to the extent of L. 1000 if under

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100 tons burden, and L. 2000 if above it; that, in caſe it take in any of the enumerated commodities, it will proceed directly to Britain, or ſome other plantation; and, in caſe it takes in non-enumerated commodities, it will proceed to places where theſe goods may be lawfully exported, and return certificate of their delivery within 18 months. When ſhips arrive at the colonies from other places, a like bond muſt be granted to the governor.

No European goods may be imported into the colonies from any other place than Britain, except wine from Madeira and the Azores, belonging to the Britiſh, ſalt for the fiſheries, and goods that are permitted from Ireland.

Veſſels hovering on the coaſts of the plantations, without coquets, and foreign veſſels, are forfeited.

The following is a table of the Britiſh duties payable in the colonies:

	L.	s.	d.
Foreign white ſugar imported, per Cwt.	1	2	—
Foreign ſugar and pannelles, per Cwt.	—	5	—
Foreign indigo, per lb.	—	—	6
Foreign rum, or ſpirits, per gallon	—	—	9
Madeira wine, per ton	7	—	—
Spaniſh and Portugal wine, per ton	—	10	—
Molaſſes, Britiſh or foreign, per gall.	—	—	1
Coffee, from colony to colony, per Cwt	—	7	—
Pymento do. per lb.	—	—	—½
Tobacco do. per lb.	—	—	—½
Indigo do. per lb.	—	—	2
Logwood do. per Cwt.	5	—	—
Other dying wood, from colony to colony, per Cwt.	—	10	—
Ginger do. per Cwt.	—	1	—
Cocoa nuts do. per lb.	—	—	2

Foreign indigo, and cotton wool, may be imported to the Weſt Indies duty free.

Duties on glaſs, tea, paper, and painter's colours, were impoſed in 1767, and all repealed, except 3 d. per lb. on tea, which gave occaſion for thoſe diſturbances that have produced the preſent unhappy ſeparation.

The whole of the old ſubſidy is generally retained on goods exported to America. One half thereof is generally drawn back on goods exported to other places.

The colonies are prohibited to erect ſlit mills, to export wool or woollen manufactures, or tranſport them by ſea from one colony to another, and to tranſport hats, by ſea or land-carriage, from one colony to another.

In return for theſe duties and reſtrictions, the colonies are favoured with various mercantile privileges. Many of their commodities are admitted into Britain duty free; and almoſt all of them on eaſier duties than from foreign countries. Bounties are granted on their naval ſtores, indigo, and ſilk. Large ſums have been granted for their eſtabliſhment, and continue to be granted in favour of thoſe whoſe circumſtances require it. And the planting of tobacco is ſeverely prohibited in Britain, that theirs may be without a rival.

The general policy of Britain, in confining the advantages granted to the colonies, to the encouragement of their produce only, has, in one inſtance, been diſpenſed with. Dominica [lately taken by the French], and Jamaica, being conveniently ſituated for trading to the French Weſt Indies and the Spaniſh main, free ports have been opened for that purpoſe, and the reſtrictions of the act of navigation, in ſome meaſure, relaxed.

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Cattle, and all goods of foreign plantations, might be imported into the free ports of Dominica, in foreign ſhips not having more than one deck, except tobacco, coffee, cocoa, and manufactures.

The following goods from the Britiſh plantations might not be imported into Dominica; copper-ore, cotton, wool, ginger, fuſtic, dyeing-wood, hemp, indigo, molaſſes, beaver ſkins, ſugar, coffee, cocoa, hides, ſkins, pot and pearl aſhes, raw ſilk, and whale-fins.

Negroes imported in Britiſh ſhips, and all other Britiſh or plantation goods, legally imported, may be exported in foreign one-decked veſſels, except tar, turpentine, and tobacco; but cotton, wool, and other enumerated goods, muſt be imported to Britain, according to the act of navigation.

No veſſels with Weſt Indian produce, except live cattle, may proceed from Dominica to the other Weſt Indian iſlands; and no European, nor Eaſt India goods, may be exported from thence to the Britiſh plantations; nor any American produce liable to duty, without certificate that it is the produce of that iſland. Dominica timber might be exported, ſubject to the regulations of the act of navigation.

Sugars might be imported from Dominica for re-exportation, and ware-houſed, on payment of 3 d. per cwt. duty; and other goods, on payment of half old ſubſidy, not drawn back, to be re-exported in ſhips of 70 tons.

American goods from Dominica, except certified to be the produce of that iſland, paid French duties.

Foreign plantation goods may be imported into the free ports in Jamaica, except ſugar, coffee, pymento, molaſſes, ginger, tobacco, and manufactures.

Mercantile LAWS. The laws relating to commercial and maritime affairs approach nearer to uniformity through the different countries of Europe, than thoſe on other ſubjects. Some of the fundamental regulations have been taken from the Roman law; others have been ſuggeſted by experience, during the progreſs of commerce; and the whole have been gradually reduced to a ſyſtem, and adopted into the laws of trading nations, but with ſome local varieties and exceptions.

The Britiſh legiſlature has enacted many ſtatutes reſpecting commerce; yet, the greater part of our mercantile law is to be collected from the deciſions of our courts of juſtice, founded on the cuſtom of merchants. A proof of ſuch cuſtom, where no direct ſtatute interferes, determines the controverſy, and becomes a precedent for regulating like caſes afterwards. The exiſtence of a cuſtom not formerly recognized, is, in England, determined by a jury.

The moſt common mercantile contracts are thoſe between buyer and ſeller; between factor and employer; between partners; between the owners, maſters, mariners, and freighters of ſhips; between inſurers and the owners of the ſubject inſured; and between the

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parties concerned in tranſacting bills of exchange. See FACTORAGE, SALE, PARTNERSHIP, INSURANCE, BILL, &c. and the next article.

Maritime LAWS. The moſt ancient ſyſtem of maritime laws is that of Rhodes, which was in force during the time of the Grecian empire, and afterwards incorporated into the Roman law. Although, in ſome parts, not applicable to the preſent ſtate of trade, and, in others, now hardly intelligible, it contains the ground-work of the moſt equitable and beneficial rules obſerved in modern commerce. A like ſyſtem was ſet forth by Richard I. of England, called the *Statutes of Oleron*; and another, by the town of Wiſby, in the iſland of Gothland. From theſe ſyſtems, improved and enlarged in the courſe of time, our general maritime law is derived. The juriſdiction of matters purely maritime belongs, in England, to the court of admiralty, which proceeds on the civil law; but their proceedings are ſubject to the controul, and their deciſions to the review, of the ſuperior courts.

We ſhall here conſider, the obligations which ſubſiſt between the maſters or owners of ſhips, the freighters, the mariners, and the furniſhers of proviſions or repairs.

1. *Maſters and Freighters.* A charter-party is a contract between the maſter and freighters, in which the ſhip and voyage is deſcribed, and the time and conditions of performing it are aſcertained.

The freight is moſt frequently determined for the whole voyage, without reſpect to time. Sometimes it depends on the time.

In the former caſe, it is either fixed at a certain ſum, for the whole cargo; or ſo much per ton, barrel-bulk, or other weight or meaſure; or ſo much per cent. on the value of the cargo. This laſt is common on goods ſent to America; and the invoices are produced to aſcertain the value.

The burden of the ſhip is generally mentioned in the contract, in this manner, *one hundred tons, or thereby*; and the number mentioned ought not to differ above 5 tons, at moſt, from the exact meaſure. If a certain ſum be agreed on for the freight of the ſhip, it muſt all be paid, although the ſhip, when meaſured, ſhould prove leſs, unleſs the burden be *warranted*. If the ſhip be freighted for *tranſporting* cattle, or ſlaves, at ſo much a head, and ſome of them die on the paſſage, freight is only due for ſuch as are delivered alive; but, if for *lading* them, it is due for all that were put on board.

When a whole ſhip is freighted, if the maſter ſuffers any other goods beſides thoſe of the freighter to be put on board, he is liable for damages.

It is common to mention the number of days that the ſhip ſhall continue at each port to load or unload. The expreſſion uſed is, *work weather days*; to ſignify, that Sundays, holidays, and days when the weather ſtops the work, are not reckoned. If the ſhip be detained longer, a daily allowance is often agreed on, in name of *demurrage*.

If a ſhip be freighted by the month, the time that the freight commences may be mentioned in the contract, otherwiſe it is computed from the time it begins to load.

If the voyage be compleated in terms of the agreement, without any miſfortune, the maſter has a right to demand payment of the freight, before he delivers the goods. But if the ſafe delivery be prevented by any fault or accident, the parties are liable, according to the following rules:

If the merchant does not load the ſhip within the time agreed on, the maſter may engage with another, and recover damages.

If the merchant loads the ſhip, and recalls it after it has ſet ſail, he muſt pay the whole freight; but, if he unloads it before it ſets ſail, he is liable for damages only.

If a merchant loads goods which it is not lawful to export, and the ſhip be prevented from proceeding on that account, he muſt pay the freight notwithſtanding.

If the ſhipmaſter be not ready to proceed on the voyage at the time agreed on, the merchant may load the whole, or part of the cargo, on board another ſhip, and recover damages; but chance, or notorious accident, by the marine law, releaſes the maſter from damages.

If an embargo be laid on the ſhip before it ſails, the charter-party is diſſolved, and the merchant pays the expence of loading and unloading; but, if the embargo be only for a ſhort limited time, the voyage ſhall be performed when it expires, and neither party is liable for damages.

If the ſhip be diſabled, by any accident, from compleating the voyage, without any fault in the maſter, he may load the goods on board another ſhip, to the port of deſtination, with conſent of the owner; and, if that conſent be refuſed, he is entitled to freight on the goods landed at the port he is forced into, or he may repair his ſhip, if it can be done within a ſhort time, (within 3 days at moſt, according to the laws of the Hanſe towns), and proceed. If he do not carry the goods to the port of deſtination, he is entitled to freight, *pro rata*, in proportion to the part of the voyage performed; and the proportion is determined by comparing the number of days he ſailed before the accident, with the number in which he might probably have compleated the voyage. [Locke, *et alii*, againſt Lyde, Mich. term, C. B. 33. Geo. II.]

If the ſhipmaſter ſails to any other port than that agreed on, without neceſſity, he is liable for damages; if thro' neceſſity, he muſt ſail to the port agreed on, at his own expences.

If a ſhip be taken by the enemy, and re-taken or ranſomed, the charter-party continues in force.

If the maſter transfers the goods from his own ſhip to another, without neceſſity, and they periſh, he is liable for the value; but if his own ſhip be in imminent danger, the goods may be put on board another ſhip, at the riſk of the owner.

If a ſhip be freighted out and home, and a ſum agreed on for the whole voyage, nothing is due till it return; and the whole is loſt, if the ſhip be loſt on the return.

If a certain ſum be ſpecified for the homeward voyage, it is due, although the factor abroad ſhould have no goods to ſend home.

In the caſe of a ſhip freighted to Madeira, Carolina, and home, a particular freight fixed for the homeward

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ward voyage, and an option reſerved for the factor at Carolina to decline it, unleſs the ſhip arrived before 1ſt of March; the ſhipmaſter, foreſeeing he could not arrive there within that time, and might be diſappointed of a freight, did not go there at all. He was found liable in damages, as the obligation was abſolute on his part, and conditional only on the other.

If the goods be damaged without fault of the ſhip or maſter, the owner is not obliged to receive them and pay freight, but he muſt either receive the whole, or abandon the whole; he cannot chooſe thoſe that are in beſt order, and reject the others. If the goods be damaged through the inſufficiency of the ſhip, the maſter is liable for the ſame; but, if it be owing to ſtreſs of weather, he is not accountable. It is cuſtomary for ſhipmaſters, when they ſuſpect damage, to take a *proteſt againſt wind and weather* at their arrival. But, as this is the declaration of a party, it does not bear credit, unleſs ſupported by collateral circumſtances.

If part of the goods be thrown over-board, or taken by the enemy, the part delivered pays freight.

The ſhipmaſter is accountable for all the goods received on board, by himſelf or mariners, unleſs they periſh by the act of God, or of the king's enemies. Though they ſhould be ſeized by an armed rabble, he is liable: on this principle, that, otherwiſe, he might defraud the public, by combining with thieves, and the ſecurity of commerce would be deſtroyed.

Shipmaſters are not liable for leakage on liquors; nor accountable for the contents of packages, unleſs packed and delivered in their preſence.

Upon a principle of equity, that the labourer is worthy of his hire, differences ariſing with regard to freight, when the caſe is doubtful, ought rather to be determined in favour of the ſhipmaſter.

2. *Ship and Owners with Creditors.* When debts are contracted for proviſions or repairs to a ſhip, or ariſe from a failure in any of the abovementioned obligations, the ſhip and tackle, and the owners, are liable for the debt, as well as the maſter. The ſhip and tackle may be condemned by the court of admiralty; and the owners may be ſued at common law.

By the mercantile law, the owners are liable in all caſes, without limitation; but, by ſtatute, they are not liable for embezzlement beyond their value of ſhip, tackle, and freight.

A ſhipmaſter may pledge his ſhip for neceſſary repairs during a voyage: and this hypothecation is implied, by the maritime law, when ſuch debts are contracted. This regulation is neceſſary, and is therefore adopted by all commercial nations; for, otherwiſe, the maſter might not find credit for neceſſary repairs, and the ſhip might be loſt. If repairs be made at different places, the laſt are preferable.

The relief againſt the ſhip is competent to the court of admiralty in England, only when repairs are furniſhed during the courſe of a voyage; for the neceſſity of the caſe extends no further. If a ſhip be repaired at home, (e. g. upon the river Thames), the creditor is only entitled to relief at common law.

The creditor may ſue either the maſters or owners; but, if he undertook the work on the ſpecial promiſe of the one, the other is not liable.

If the maſter buys proviſions on credit, the owners are liable for the debt, tho' they have given him money to pay them.

If a ſhip be mortgaged, and afterwards loſt at ſea, the owners muſt pay the debt; for the mortgage is only an additional ſecurity, tho' there be no expreſs words to that purpoſe in the covenant.

If a ſhip be taken by the enemy, and ranſomed, the owners are liable to pay the ranſom, tho' the ranſomer die in the hands of the captors.

3. *Owners and Mariners.* If a ſhip be loſt before it comes to a port of delivery, the ſeamen loſe all their wages; and, if loſt afterwards, they loſe their wages from the laſt port of delivery. If they run away, they loſe all. In a voyage to the Newfundland fiſhery, and from thence with the cargo to Europe, the port of deſtination in Europe is reckoned the firſt port of delivery. In a voyage to the Eaſt Indies, and home, the ſhip being loſt on the return, the ſeamen were found entitled to their wages for the voyage outward, and half the time of loading and unloading.

The maſter may retain the ſeamens wages to reimburſe himſelf for damage ſuſtained by their default.

Shipmaſters going to foreign places muſt make an agreement with the mariners, (except apprentices,) in writing; and they are liable in penalties if they deſiſt or refuſe to proceed. Their wages muſt be paid within a month after their arrival, or when diſmiſſed.

4. *Owners of the ſhip with each other.* By the common law of England, a few of the owners have a right to ſtop a voyage which the major part propoſe. By the laws of the admiralty, they cannot ſtop the voyage, but may compel the owners to give their ſtipulation for the ſafe return of the ſhip, and ſue thereon, if it be loſt.

5. *Owners of ſhip and cargo with each other.* There is a mutual obligation which ſubſiſts between all the owners of a ſhip and cargo. In time of danger, it is often neceſſary to incur a certain loſs of part for the greater ſecurity of the reſt; to cut a cable; to lighten the ſhip, by throwing part of the goods over-board; to run it aſhore; or the like: and, as it is unreaſonable that the owners of the thing expoſed for the common ſafety ſhould bear the whole loſs, it is defrayed by an equal contribution among the proprietors of the ſhip, cargo, and freight. This is the famous *Lex Rhodia de jactu*, and is now called a *general average.*

The cuſtom of valuing goods which contribute to a general average, is not uniform in all places. They are generally valued at the price they yield at the port of deſtination, charges deducted; and goods thrown over-board are valued at the price they would have yielded there. Sailors wages, cloaths and money belonging to paſſengers, and goods belonging to the king, pay no general average; but proprietors of gold and ſilver, in caſe of goods being thrown over-board, contribute to the full extent of their intereſt.

The following particulars are charged as general average: Damage ſuſtained in an engagement with the enemy; attendance on the wounded, and rewards given for ſervice in time of danger, or gratuities to the widows or children of the ſlain; ranſom; goods given to the enemy in the nature of ranſom; charges of bringing the ſhip to a place of ſafety when in danger from the enemy, or waiting for convoy; charges of quarentine; goods thrown over-board; maſts or rigging cut; holes cut in the ſhip to clear it of water; pilotage, when a lake is ſprung; damage, when volutarily run a-ground, and expence of bringing it afloat; goods loſt by being put in a lighter; the long-boat loſt in lightening the ſhip in time of danger; hire of cables and anchors; charges of laying in ballaſt, victualling, and guarding the ſhip when detained; charges at law, in reclaiming the ſhip and cargo; intereſt and commiſſion on all theſe deburſements.

Though goods put on board a lighter, and loſt, are charged as a general average; yet, if the lighter be ſaved, and the ſhip with the reſt of the goods be loſt, the goods in the lighter belong to their reſpective proprietors, without being liable to any contribution.

If part of the goods be plundered by a pirate, the proprietor or ſhipmaſter is not entitled to any contribution.

The eſſential circumſtances that conſtitute a general average are theſe: The loſs muſt be the effect of a voluntary action; and the object of that action the common ſafety of the whole. Quarentine, which is allowed, ſeems not to fall within this deſcription.

6. *Owners and Re-captors.* When a ſhip is taken and carried *infra præſidia hoſtium*, and remains there for 24 hours, it has been held, by the maritime law, that the property was completely veſted in the enemy; and, if afterwards re-taken, the property did not return to the former owners, but remained with the recaptors. But it is otherwiſe determined by the Britiſh ſtatute.

If it be re-taken by the king's ſhips, it ſhall be reſtored to the former owners, on paying one eighth part of the value for ſalvage. If re-taken by a private ſhip within 24 hours, it ſhall pay an eighth part; if within 48 hours, a fifth part; if within 96 hours, a third part; and if above 96 hours, a half.

Thoſe who reſcue a ſhip or goods from any hazard, are entitled to a reaſonable allowance, in name of ſalvage; and may retain what they have ſaved till the ſalvage be paid.

7. *Quarentine.* See QUARENTINE.

8 *Wrecks.* See WRECK.

9. *Impreſs.* See IMPRESSING.

10. *Inſurance.* See INSURANCE.

Game-LAWS. See the article GAME.

Game-Laws.

Sir William Blackſtone, treating of the alterations in our laws, and mentioning franchiſes granted of chaſe and free warren, as well to preſerve the breed of animals, as to indulge the ſubject; adds, "From a ſimilar principle to which, though the foreſt-laws are now mitigated, and by degrees grown entirely obſolete; yet from this root has ſprung a *baſtard ſlip*, known by the name of the *game-law*, now arrived to and wantoning in its higheſt vigour: both founded upon the ſame unreaſonable notion of permanent property in wild creatures; and both productive of the ſame tyranny to the commons: but with this difference, that the foreſt-laws eſtabliſhed only one mighty hunter throughout the land; *the game-laws have raiſed a little Nimrod in every manor.* And in one reſpect the ancient law was much leſs unreaſonable than the modern; for the king's grantee of a chaſe or free-warren, might kill game in every part of his franchiſe; but now, though a freeholder of leſs than L. 100 a-year *is forbidden to kill partridge upon his own eſtate*, yet nobody elſe (not even the lord of the manor, unleſs he hath a grant of free warren) can do it without *committing a treſpaſs* and *ſubjecting himſelf to an action*."

Under the article GAME, the deſtroying ſuch beaſts and fowls as are ranked under that denomination, was obſerved (upon the old principles of the foreſt-law) to be a treſpaſs and offence in all perſons alike, who have not authority from the crown to kill game (which is royal property) by the grant of either a free warren, or at leaſt a manor of their own. But the laws called the *game-laws* have alſo inflicted additional puniſhments (chiefly pecuniary) on perſons guilty of this general offence, unleſs they be people of ſuch rank or fortune as is therein particularly ſpecified. All perſons therefore, of what property or diſtinction ſoever, that kill game out of their own territories, or even upon their own eſtates, without the king's licence expreſſed by the grant of a franchiſe, are guilty of the firſt original offence of encroaching on the royal prerogative. And thoſe indigent perſons who do ſo, without having ſuch rank or fortune as is generally called a *qualification*, are guilty, not only of the original offence, but of the aggravations alſo created by the ſtatutes for preſerving the game: which aggravations are ſo ſeverely puniſhed, and thoſe puniſhments ſo implacably inflicted, that the offence againſt the king is ſeldom thought of, provided the miſerable delinquent can make his peace with the lord of the manor. The only rational footing upon which this offence, thus aggravated, can be conſidered as a crime, is, that in low and indigent perſons it promotes idleneſs, and takes them away from their proper employments and callings: which is an offence againſt the public police and œconomy of the commonwealth.

The ſtatutes for preſerving the game are many and various, and not a little obſcure and intricate; it being remarked, that in one ſtatute only, 5 Ann. c. 14. there is falſe grammar in no fewer than ſix places, beſides other miſtakes: the occaſion of which, or what denomination of perſons were probably the penners of theſe ſtatutes, it is unneceſſary here to inquire. It may be in general ſufficient to obſerve, that the *qualifications* for killing game, as they are uſually called, or more properly the exemptions from the penalties inflicted by the ſtatute-law, are, 1. The having a freehold eſtate of 100l. *per annum*; there being fifty times the property required to enable a man to kill a partridge, as to vote for a knight of the ſhire: 2. A leaſehold for 99 years of 150l. *per annum*: 3. Being the ſon and heir apparent of an eſquire (a very looſe and vague deſcription) or perſon of ſuperior degree: 4. Being the owner, or keeper, of a foreſt, park, chaſe, or warren. For unqualified perſons tranſgreſſing theſe laws, by killing game, keeping engines for that purpoſe, or even having game in their cuſtody, or for perſons (however qualified) that kill game, or have it in poſſeſſion, at unſeaſonable times of the year, or unſeaſonable hours of the day or night, on Sundays or on Chriſtmas day, there are various penalties aſſigned, corporal and pecuniary, by different ſtatutes (after-mentioned), on any of which, but only on one at

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a time, the juſtices may convict in a ſummary way, or (in moſt of them) proſecutions may be carried on at the aſſizes. And, laſtly, by ſtatute 28 Geo. II. c. 12. no perſon, however qualified to kill, may make merchandize of this valuable privilege, by ſelling or expoſing to ſale any game, on pain of like forfeiture as if he had no qualification.

The ſtatutes above referred to are as follow. No perſon ſhall take pheaſants or partridges with engines in another man's ground, without licence, on pain of 10l. ſtat. 11 Hen. 7. c. 13. If any perſon ſhall take or kill any pheaſants or partridges, with any net in the night-time, they ſhall forfeit 20s. for every pheaſant, and 10s. for every partridge taken; and hunting with ſpaniels in ſtanding corn, incurs a forfeiture of 40s. 23 Eliz. c. 10. Thoſe who kill any pheaſant, partridge, duck, heron, hare, or other game, are liable to a forfeiture of 20s. for every fowl and hare; and ſelling, or buying to ſell again, any hare, pheaſant, &c. the forfeiture is 10s. for each hare, &c. 1 Jac. 1. c. 17. Alſo pheaſants or partridges are not to be taken between the firſt of July and the laſt of Auguſt, on pain of impriſonment for a month, unleſs the offenders pay 20s. for every pheaſant, &c. killed: and conſtables, having a juſtice of peace's warrant, may ſearch for game and nets, in the poſſeſſion of perſons not qualified by law to kill game or to keep ſuch nets, 7 Jac. 1. c. 11. Conſtables, by a warrant of a juſtice of peace, are to ſearch houſes of ſuſpected perſons for game: and if any game be found upon them, and they do not give a good account how they came by the ſame, they ſhall forfeit for every hare, pheaſant, or partridge, not under 5s. nor exceeding 20s. And inferior tradeſmen hunting, &c. are ſubject to the penalties of the act, and may likewiſe be ſued for treſpaſs. If officers of the army or ſoldiers kill game without leave, they forfeit 5l. an officer, and 10s. a ſoldier; 4 & 5 W. and M. c. 23. Higglers, chapmen, carriers, inn-keepers, victuallers, &c. having in their cuſtody hare, pheaſant, partride, heath-game, &c. (except ſent by ſome perſon qualified to kill game) ſhall forfeit for every hare and fowl 5l. to be levied by diſtreſs and ſale of their goods, being proved by one witneſs, before a juſtice; and for want of diſtreſs ſhall be committed to the houſe of correction for three months: one moiety of the forfeiture to the informer, and the other to the poor. And ſelling game, or offering the ſame to ſale, incurs the like penalty; wherein hare and other game found in a ſhop, &c. is adjudged an expoſing to ſale: killing hares in the night is liable to the ſame penalties: and if any perſons ſhall drive wild-fowls with nets, between the firſt day of July and the firſt of September, they ſhall forfeit 5s. for every fowl; 5 Ann. c. 14. 9 Ann. c. 25. If any unqualified perſon ſhall keep a gun, he ſhall forfeit 10l.; and perſons being qualified may take guns from thoſe that are not, and break them; 22 & 22 Car. II. c. 25. and 33 H. VIII. c. 6. One juſtice of peace, upon examination and proof of the offence, may commit the offender till he hath paid the forfeiture of 10l. And perſons, not qualified by law, keeping dogs, nets, or other engines to kill game, being convicted thereof before a juſtice of peace, ſhall forfeit 5l. or be ſent to the houſe of correction for three months; and the dogs, game, &c. ſhall be taken from them, by the ſtatute 5 Ann. If a perſon hunt upon the ground of another, ſuch other perſon cannot juſtify killing of his dogs, as appears by 2 Roll. Abr. 567. But it was otherwiſe adjudged Mich. 33 Car. II. in C. B. 2 Cro. 44. and ſee 3. Lev. xxviii. In actions of debt, *qui tam*, &c. by a common informer on the ſtatute 5 Ann. for 15l. wherein the plaintiff declared on two ſeveral counts, one for 10l. for killing two partridges, the other for 5l. for keeping an engine to deſtroy the game, not being qualified, &c. the plaintiff had a verdict for 5l. only: this action was brought by virtue of the ſtat. 8 Geo. I. See ſtat. 9 Geo. I. c. 22. See likewiſe 24 Geo. II. c. 34. for the better preſervation of the game in Scotland. By the ſtat. 26 Geo. II. c. 2. all ſuits and actions brought by virtue of ſtat. 8 Geo. I. c. —— for the recovery of any pecuniary penalty, or ſum of money, for offences committed againſt any law for the better preſervation of the game, ſhall be brought before the end of the ſecond term after the offence committed.

By 28 Geo. II. c. 12. perſons ſelling, or expoſing to ſale, any game, are liable to the penalties inflicted by 5 Ann. c. 14. on higglers, &c. offering game to ſale: and game found in the houſe or poſſeſſion of a poulterer, ſaleſman, fiſhmonger, cook, or paſtry-cook, is deemed expoſing thereof to ſale.

By 2 Geo. III. c. 19. after the the 1ſt June 1762, no perſon may take, kill, buy or ſell, or have in his cuſtody, any partridge, between 12th February and 1ſt September, or pheaſant between 1ſt February and 1ſt October, or heath-fowl between 1ſt January and 20th Auguſt, or grouſe between 1ſt December and 25th July, in any year; pheaſants taken in their proper ſeaſon, and kept in mews, or breeding places, excepted: and perſons offending in any of the caſes aforeſaid, forfeit 5l. per bird, to the proſecutor, to be recovered, with full coſts, in any of the courts at Weſtminſter. By this act, likewiſe, the whole of the pecuniary penalties under the 8 Geo. I. c. 19. may be ſued for, and recovered to the ſole uſe of the proſecutor, with double coſts; and no part thereof to go to the poor of the pariſh.

By 5 George III. c. 14. perſons convicted of entering warrens in the night-time, and taking or killing coneys there, or aiding or aſſiſting therein, may be puniſhed by tranſportation, or by whipping, fine, or impriſonment. Perſons convicted on this act, not liable to be convicted under any former act. This act does not extend to the deſtroying coneys in the day-time, on the ſea and river-banks in the county of Lincoln, &c. No ſatisfaction to be made for damages occaſioned by entry, unleſs they exceed 1s. It may not be improper to mention an act lately made and not yet repealed, viz. 10 Geo. III. c. 19. for preſervation of the game, which ſhews the importance of the object. It is thereby enacted, That if any perſon kill any hare, &c. between ſun-ſetting and ſun-riſing, or uſe any gun, &c. for deſtroying game, ſhall for the firſt offence be impriſoned for any time not exceeding ſix nor leſs than three months: if guity of a ſecond offence, after conviction of a firſt, to be impriſoned for any time not exceeding twelve months nor leſs than ſix; and ſhall alſo, within three days after the time of his commitment either for the firſt or for any other offence, be once publicly whipped.

Military Law. See Military and Marine.

LAWBURROWS, in Scots law. See Law, Part III. N° clxxxiii. 16.

LAWENBURG, Dutchy, a territory of Germany, in the circle of Lower Saxony, bounded by the duchy of Holſtein on the north and weſt, by the duchy of Mecklenburg on the eaſt, and by the duchy of Lunenburgh, from which it is ſeparated by the river Elbe, on the Weſt; being about 85 miles long, and 20 broad. The chief towns are Lawenburg, Mollen, Wittenburg, and Ratzeburg. It belongs to the elector of Hanover.

Lawenburg, a city of Germany in the circle of Lower Saxony, and capital of a duchy of the ſame name. It is a ſmall but populous town, ſituated on the Elbe, under the brow of a very high hill, from whence there is a delightful proſpect over the adjacent country. It has a caſtle on an eminence, and is convenient for trade. E. Long. 10. 51. N. Lat. 53. 36.

Lawenburg, a town of Germany in Farther Pomerania, and the chief place of a territory of the ſame name, belonging to the elector of Brandenburg.

LAWES (Henry), a celebrated muſician, and the Purcell of his time. He was a ſervant to Charles I. in his public and private muſic, and ſet ſome of the works of almoſt every poet of eminence in that reign. The comus of Milton, and ſeveral of the lyrics of Waller, were ſet by him; and both theſe poets have done him honour in their verſes. He compoſed a conſiderable number of pſalm-tunes in the *Cantica Sacra*, for three voices and an organ; and many more of his compoſitions are to be ſeen in a work called *Select airs and dialogues*; alſo in the *Treaſury of muſic*, and the *Muſical companion*. He died in 1662.

Lawes (William), was brother to the former, and a moſt capital muſician. He made above 30 ſeveral ſorts of muſic for voices and inſtruments; nor was there any inſtrument then in uſe, but he compoſed to it as aptly as if he had ſtudied that alone. In the muſic ſchool at Oxford are two large manuſcript volumes of his works in ſcore for various inſtruments. He was a commiſſary under general Gerard in the civil war, and, to the great regret of the king, was killed at the ſiege of Cheſter in 1645.

LAWLESS court, a court ſaid to be held annually on King's Hill at Rochford in Eſſex, on the Wedneſday morning after Michaelmas-day at cock-crowing, where they whiſper, and have no candle, nor any pen and ink, but only a coal. Perſons who owe ſuit, or ſervice, and do not appear, forfeit double their rent every hour they are miſſing.

This ſervile attendance, Camden informs us, was impoſed on the tenants for conſpiring at the like unſeaſonable hour to raiſe a commotion. The court belongs to the honour of Raleigh, and to the earl of Warwick; and is called *lawleſs*, from its being held at an unlawful hour.

LAWINGEN, a town of Germany, in the circle of Suabia; formerly imperial, but now ſubject to the duke of Neuburg. Here the duke of Bavaria, in 1704, fortified his camp to defend his country againſt the Britiſh forces and their allies commanded by the duke of Marlborough, who forced their intrenchments. It is ſeated on the Danube, in E. Long. 10. 29. N. Lat. 38. 32.

LAWN, a ſpacious plain in a park, or adjoining to a noble ſeat. As to the dimenſions of a lawn: In a large park, it ſhould be as extenſive as the ground will permit; and, if poſſible, it ſhould never be leſs than 50 acres: but in gardens of a moderate extent, a lawn of 10 acres is ſufficient; and in thoſe of the largeſt ſize, 15 acres. The beſt ſituation for a lawn, is in the front of the houſe: and here, if the houſe front the eaſt, it will be extremely convenient; but the moſt deſirable aſpect for a lawn, is that of the ſouth-eaſt. As to the figure of the lawn, ſome recommend an exact ſquare, others an oblong ſquare, ſome an oval, and others a circular figure: but neither of theſe are to be regarded. It ought to be ſo contrived, as to ſuit the ground; and as there ſhould be trees planted for ſhade on the boundaries of the lawn, ſo the ſides may be broken by irregular plantations of trees, which, if there are not ſome good proſpects beyond the lawn, ſhould bound it on every ſide, and be brought round pretty near to each end of the houſe. If in theſe plantations round the lawn, the trees are placed irregularly, ſome breaking much forwarder on the lawn than others, and not crowded too cloſe together, they will make a better appearance than any regular plantations can poſſibly do; and if there are variety of trees, properly diſpoſed, they will have a good effect; but only thoſe which make a fine appearance, and grow large, ſtraight, and handſome, ſhould be admitted here. The moſt proper trees for this purpoſe, are the elm, oak, cheſnut, and beech; and if there are ſome clumps of ever-green trees intermixed with the others, they will add to the beauty of the whole, eſpecially in the winter-ſeaſon; the beſt ſorts for this purpoſe, are lord Weymouth's pine, and the ſilver and ſpruce firs.

Lawn, in manufactures, a fine ſort of linen, remarkable for being uſed in the ſleeves of biſhops.

LAWRENCE (St), the largeſt river in north America, proceeding from the lake Ontario, from which it runs a courſe of 700 miles to the Atlantic ocean. It is navigable as far as Quebec, which is above 400 miles; but beyond Montreal it is ſo full of ſhoals and rocks, that it will not admit large veſſels without danger, unleſs the channel be very well known.

LAWSONIA, Egyptian privet; a genus of the monogynia order, belonging to the octandria claſs of plants. There are two ſpecies, the inermis and ſpinoſa, both natives of India. Some authors take the firſt to be the plant termed by the Arabians *henna*, or *alhenna*; the pulveriſed leaves of which are much uſed by the eaſtern nations for dying their nails yellow: but others, Dr Haſſelquiſt in particular, attribute that effect to the leaves of the other ſpecies of Egyptian privet which bears prickly branches. It is probable, that neither ſet of writers are miſtaken, and that the ſhrub in queſtion is a variety only of the thorny lawſonia, rendered mild by culture.

Alhenna grows naturally and is cultivated throughout India, as alſo in Egypt, Paleſtine, and Perſia. In thoſe countries, ſays Haſſelquiſt, it flowers from May to Auguſt. The leaves being pulverized, are made with water into a paſte, which the inhabitants of thoſe countries bind on the nails of their hands and feet, keeping it on all night. The deep yellow colour that is thus obtained is conſiderably permanent, not requiring to be renewed for ſeveral weeks. It would ſeem, that this cuſtom is very ancient in Egypt; the nails of ſome mummies being found dyed in this manner. The dried flowers of henna afford a fragrant ſmell, which, it is affirmed, women with child cannot bear.

LAWYER, ſignifies a counſellor, or one that is learned or ſkilled in the law. See COUNSELLOR, BARRISTER, and SERJEANT.

LAY, in French poetry, denotes a ſhort poem, ſomething like our ballads.

LAY-*Brothers*, among the Romaniſts, thoſe pious but illiterate perſons, who devote themſelves in ſome convent to the ſervice of the religious. They wear a different habit from that of the religious; but never enter into the choir, nor are preſent at the chapters; nor do they make any other vow except of conſtancy and obedience. In the nunneries there are alſo lay-ſiſters.

LAY-*Man*, one who follows a ſecular employment, and has not entered into holy orders.

LAYERS, in gardening, are tender ſhoots or twigs of trees, laid or buried in the ground, till, having ſtruck root, they are ſeparated from the parent-tree, and become diſtinct plants.—The propagating trees by *layers* is done in the following manner: The branches of the trees are to be ſlit a little way, and laid under the mould for about half a foot; the ground ſhould be firſt made very light, and after they are laid they ſhould be gently watered. If they will not remain eaſily in the poſition they are put in, they muſt be pegged down with wooden hooks: the beſt ſeaſon for doing this is, for ever-greens, toward the end of Auguſt, and, for other trees, in the beginning of February. If they are found to have taken root, they are to be cut off from the main plant the ſucceeding winter, and planted out. If the branch is too high from the ground, a tub of earth is to be raiſed to a proper height for it. Some pare off the rhind, and others twiſt the branch before they lay it, but this is not neceſſary. The end of the layer ſhould be about a foot out of the ground; and the branch may be either tied tight round with a wire, or cut upwards from a joint, or cut round for an inch or two at the place, and it is a good method to pierce ſeveral holes thro' it with an awl above the part tied with the wire.

LAYING THE LAND, in navigation, the ſtate of motion which increaſes the diſtance from the coaſt, ſo as to make it appear lower and ſmaller, a circumſtance which evidently ariſes from the intervening convexity of the ſurface of the ſea. It is uſed in contradiſtinction to *raiſing* the land, which is produced by the oppoſite motion of approach towards it. See LAND.

LAZAR-HOUSE, or LAZARETTO, a public building, in the nature of an hoſpital, to receive the poor, and thoſe afflicted with contagious diſtempers. In ſome places, lazarettos are appointed for the performance of quarentine; in which caſe, thoſe are obliged to be confined in them who are ſuſpected to have come from places infected with the plague.

LAZULI, or *Lapis* LAZULI, is a blue ſtone, generally intermixed with white veins and gold-coloured ſpots. Wallerius conſiders this ſtone as a ſpecies of jaſper; and Cronſtedt, more juſtly, as a ſpecies of that order of earths which have been lately called *zeolites*. Mr Margraaf, and alſo Mr Cronſtedt, have made experiments on this ſtone, carefully cleanſed from all white, pyritous, or heterogeneous matters. From theſe experiments we learn, 1. That this ſtone is ſoluble in acids without efferveſcence; and when it has been previouſly calcined, it forms gelatinous maſſes with acids. 2. That by calcination it is not deprived of its blue colour, till at leaſt that operation has been long continued. 3. By a violent fire it is fuſible, and forms a frothy glaſs, ſometimes whitiſh, and ſometimes of a duſky yellow-colour, but always clouded with blue ſpots. 4. Fuſed with nitre, and thrown red-hot into water, it tinged the water with a blue colour, which diſappeared in ſome hours. By this operation the ſtone loſt its blue colour. 5. Some of this ſtone, powdered and mixed with glaſs frit, produced a tranſparent citron-coloured glaſs. With borax, it produced a glaſs of a chryſolite-colour. 6. It gave no ſigns of its containing copper, notwithſtanding it has been conſidered as an ore of copper by moſt authors. 7. It ſhowed marks of iron, by forming a blue precipitate, like Pruſſian blue, when a phlogiſticated alkali was added to a ſolution of this ſtone in acids. 8. Margraaf ſays, that by adding vitriolic acid to ſolutions of this ſtone in nitrous and marine acids, a white precipitate was formed, which he ſuppoſes was calcareous earth. Nevertheleſs, Mr Cronſtedt affirms, that this ſtone does not efferveſce with acids. Perhaps the calcareous earth was not eſſential, but only accidental. 9. Cronſtedt ſays, that a precipitate is formed by adding a fixed alkali to a ſolution of this ſtone in vitriolic acid, which, being ſcorified with borax, yields a regulus of ſilver. He ſays, that by ſcorification with lead, two ounces of ſilver have been obtained from a hundred pounds of the ſtone. Mr Margraaf does not mention that he found any ſilver, or that he ſearched for any. Perhaps it is only accidental. The fine blue ſubſtance called *ultramarine* is prepared from lapis lazuli in the following manner, according to Wallerius. The ſtone, firſt finely levigated and mixed with linſeed oil, is to be added to a paſte, made by mixing together equal parts of yellow wax, colophony, and pitch, that is, half a pound of each, with half an ounce of linſeed oil, two ounces of turpentine, and two ounces of maſtic. To three or four parts of this paſte one part of the levigated ſtone, mixed with linſeed-oil, is to be added; and after the mixture has been digeſted together during three or four weeks, it is to be thrown into hot-water, and ſtirred till the blue colour ſeparates and diffuſes in the water, which is then to be poured off. The blue matter is allowed to ſettle; and, when dry, is the ultramarine required.

The lapis lazuli is found in many parts of the world; but that of Aſia and Africa is much ſuperior both in beauty and real value to the Bohemian and German kind, which is too often ſold in its place.

LEAD. See CHEMISTRY, n° 151, 204, 248, 280, 397. and METALLURGY.

Black LEAD, a mineral dug in Britain, and, as Dr Woodward obſerves in the preface to his Method of Foſſils, more plentiful and of a better kind there than in any other part of the world. According to Dr Plott's account in the Philoſophical Tranſactions, n° 240, it is found only in Keſwych in Cumberland; and is there called *wadt* or *kellow*, by which laſt name an earth like the black chalk is diſtinguiſhed in other places.

The colour of black-lead, rather a deep, ſhining, bluiſh-grey, than a black, may be ſeen, diluted a little, in the black melting-pots when broken or the ſurface ſcraped off, and entire in the genuine ſort of black pencils. It differs not a little in goodneſs, ſome ſorts marking paper freely, and others very difficultly or ſcarce at all. It is ſmooth, and as it were unctuous to the touch; and hence is uſed ſometimes inſtead of oil or ſoap for giving ſlipperineſs to the rubbing parts of machines. Acids neither diſſolve it nor alter its colour or unctuoſity.

Black-lead has not been found to contain any of the metal from which it receives its name, and its compoſition appears to be of a very ſingular kind. From its known reſiſtance to vehement degrees of fire, whether urged by itſelf in cloſe veſſels, or made with clay into melting pots, and placed among the burning fuel, it ſhould ſeem that it could not partake largely of any volatile ſubſtance, and it has been generally ſuppoſed to conſiſt chiefly of a talcky earth. But Mr Quiſt relates, in a curious paper of experiments on black-lead publiſhed in the Swediſh tranſactions for 1754, that having expoſed many different ſpecimens of this mineral to a ſtrong heat, on a ſcorifying diſh under a muffle, they all yielded ſulphureous fumes and flowers in abundance; and that there remained behind, from one ſort, only a fifth part of its weight, and from another no more than a 20th part, of a yellow or brown calx, which, being treated with inflammable fluxes, yielded ſeven tenths of its weight of a metallic maſs, which ſeemed to be a mixture of iron and tin. Agreeably to theſe experiments, in Cronſtedt's Mineralogy black-lead is claſſed among the ſulphureous minerals, and called *ſulphur ſatiated with iron and tin*.

Dr Lewis kept 168 grains of the fineſt black lead uſed by our pencil-makers in a moderately ſtrong red heat on a ſcorifying diſh for three hours, with the common precaution of covering the veſſel for a time, leſt the matter ſhould crackle, and ſome particles be thrown off from it in ſubſtance. He found it reduced to about 120 grains, and all the pieces changed on the outſide to a ruſty ſparkling brown calx; of which a conſiderable part was attracted by a magnetic bar, the internal parts continuing of the ſame colour as at firſt. Being then broken into ſmaller pieces, and expoſed to a like heat for two hours, it ſuffered the ſame change as before, and was reduced to about 60 grains. Being further broken, and calcined with a moderate red heat for 10 hours, it was diminiſhed to 30 grains; and, by a repetition of the operation, to 12 grains, or $\frac{1}{14}$ of its original weight.

The remarkable diſſipation in theſe experiments, of a ſubſtance which in cloſe veſſels reſiſts intenſe fires, may be ſomewhat illuſtrated by the known property of charcoal, which when excluded from the action of the air, whether by being incloſed in a veſſel, or mixed with clay into a maſs, remains unconſumed and unaltered in the fire. Maſſes of black-lead ſeem to calcine and ſuffer a diſſipation only on the ſurface; the internal part remaining long unchanged, unleſs the maſs be broken, or the calx rubbed off, ſo that freſh ſurfaces may be expoſed to the air. The common black-lead melting-pots made of clay, and the coarſer kinds of black-lead powdered, like thoſe made of clay and charcoal powder, loſe their external blackneſs with part of their weight, and thus have their ſtaining quality deſtroyed by ſtrong fire.

Black-LEAD *Pencils*. Black-lead, in fine powder, ſtirred into melted ſulphur, unites with it ſo uniformly and in ſuch quantity, that though the compound remains fluid enough to be poured into moulds, it looks nearly like the coarſer ſorts of black-lead themſelves. Probably the way which prince Rupert is ſaid to have had, mentioned in the third volume of Dr Birch's hiſtory of the Royal Society, of making black-lead run like a metal in a mould, ſo as to ſerve for black-lead again, conſiſted in mixing it with ſulphur or ſulphureous bodies.

On this principle the German black-lead pencils are ſaid to be made; and many of thoſe which are hawked about by certain perſons among us, are prepared in the ſame manner: their melting or ſoftening, when held in a candle, or applied to a red-hot iron, and yielding a bluiſh flame with a ſtrong ſmell of burning brimſtone, betrays their compoſition; for black-lead itſelf yields no ſmell or fume, and ſuffers no apparent alteration in that heat. Pencils made with ſuch additions are of a very bad kind: they are hard, brittle, and do not caſt or make a mark freely either on paper or wood, rather cutting or ſcratching them, than leaving a coloured ſtroke.

The true Engliſh pencils, (which Vogel in his Mineral Syſtem, and ſome other foreign writers, imagine to be prepared alſo by melting the black-lead with ſome additional ſubſtances, and caſting it into a mould) are formed of black-lead alone, ſawed into ſlips, which are fitted into a groove made in a piece of wood, and another ſlip of wood glued over them: the ſofteſt wood, as cedar, is made choice of, that the pencil may be the eaſier cut; and a part at one end, too ſhort to be conveniently uſed after the reſt has been worn and cut away, is left unfilled with the black-lead, that there may be no waſte of ſo valuable a commodity. Theſe pencils are greatly preferable to the others, though ſeldom ſo perfect as could be wiſhed, being accompanied with ſome degree of the ſame inconveniences, and being very unequal in their quality, on account of different ſorts of the mineral being fraudulently joined together in one pencil, the forepart being commonly pretty good, and the reſt of an inferior kind. Some, to avoid theſe imperfections, take the finer pieces of black-lead itſelf, which they ſaw into ſlips, and fix for uſe in port-crayons. This is doubtleſs the ſureſt way of obtaining black-lead crayons whoſe goodneſs can be depended upon.

Milled LEAD. See CHEMISTRY, n° 400.

Poiſon of LEAD. See POISON.

LEAF, a part of a plant extended into length and breadth in ſuch a manner as to have one ſide diſtinguiſhable from the other. This is Miller's definition. Linnæus denominates leaves "the organs of motion, or muſcles of the plant."—The leaves are not merely ornamental to plants; they ſerve very uſeful purpoſes, and make part of the organs of vegetation.

The

Leaf.

The greater number of plants, particularly trees, are furniſhed with leaves: in muſhrooms, and ſhrubby horſe-tail, they are totally wanting. Ludwig defines leaves to be fibrous and cellular proceſſes of the plant, which are of various figures, but generally extended into a plain membranaceous or ſkinny ſubſtance. They are of a deeper green than the foot-ſtalks on which they ſtand, and are formed by the expanſion of the veſſels of the ſtalk, among which, in ſeveral leaves, the proper veſſels are diſtinguiſhed by the particular taſte, colour, and ſmell, of the liquors contained within them.

By the expanſion of the veſſels of the ſtalk, are produced ſeveral ramifications or branches, which, croſſing each other mutually, form a kind of net; the meſhes or interſtices of which are filled up with a tender cellular ſubſtance, called the *pulp*, *pith*, or *parenchyma*. This pulpy ſubſtance is frequently conſumed by certain ſmall inſects, whilſt the membranous net remaining untouched, exhibits the genuine ſkeleton of the leaf.

The net in queſtion is covered externally with an epidermis or ſcarf-ſkin, which appears to be a continuation of the ſcarf-ſkin of the ſtalk, and perhaps of that of the ſtem. M. Deſauſſure, a judicious naturaliſt, has attempted to prove, that this ſcarf-ſkin, like that of the petals, is a true bark, compoſed itſelf of an epidermis and cortical net; theſe parts ſeem to be the organs of perſpiration, which ſerve to diſſipate the ſuperfluous juices.

The cortical net is furniſhed, principally on the ſurface of the leaf, with a great number of ſuckers or abſorbent veſſels, deſtined to imbibe the humidity of the air. The upper ſurface, turned towards heaven, ſerves as a defence to the lower, which looks downward; and this diſpoſition is ſo eſſential to the vegetable œconomy, that, if a branch is overturned in ſuch a manner as to deſtroy the natural direction of the leaves, they will, of themſelves, in a very ſhort time, reſume their former poſition; and that as often as the branch is thus overturned.

Leaves, then, are uſeful and neceſſary organs; trees periſh when totally diveſted of them. In general, plants ſtript of any of their leaves, cannot ſhoot vigorouſly: witneſs thoſe which have undergone the depredations of inſects; witneſs, likewiſe, the very common practiſe of ſtripping off ſome of the leaves from plants, when we would ſuſpend their growth, or diminiſh the number of their ſhoots. This method is ſometimes obſerved with corn and the eſculent graſſes; and, in cold years, is practiſed on fruit-trees and vines, to render the fruit riper and better coloured: but in this caſe it is proper to wait till the fruits have acquired their full bulk, as the leaves contribute greatly to their growth, but hinder, when too numerous, that exquiſite rectifying of the juices, which is ſo neceſſary to render them delicious and palatable.

When vegetation ceaſes, the organs of perſpiration and inſpiration become ſuperfluous. Plants, therefore, are not always adorned with leaves: they produce new ones every year; and every year the greater part are totally diveſted of them, and remain naked during the winter. See PLANT.

LEAF, in clocks and watches, an appellation given to the notches of their pinions.

Gold-l

Gold-LEAF, uſually ſignifies fine gold beaten into plates of an exceeding thinneſs, which are well known in the arts of gilding, &c. The preparation of gold-leaf, according to Dr Lewis, is as follows.

“The gold is melted in a black-lead crucible, with ſome borax, in a wind-furnace, called by the workmen a *wind-hole:* as ſoon as it appears in perfect fuſion, it is poured out into an iron ingot mould, ſix or eight inches long, and three quarters of an inch wide, previouſly greaſed, and heated, ſo as to make the tallow run and ſmoke, but not to take flame. The bar of gold is made red-hot, to burn off the unctuous matter, and forged on an anvil into a long plate, which is further extended, by being paſſed repeatedly between poliſhed ſteel rollers, till it becomes a ribbon as thin as paper. Formerly the whole of this extenſion was procured by means of the hammer, and ſome of the French workmen are ſtill ſaid to follow the ſame practice: but the uſe of the flatting-mill both abridges the operation, and renders the plate of more uniform thickneſs. The ribbon is divided by compaſſes, and cut with ſheers into equal pieces, which conſequently are of equal weights: theſe are forged on an anvil till they are an inch ſquare; and afterwards well nealed, to correct the rigidity which the metal has contracted in the hammering and flatting. Two ounces of gold, or 960 grains, the quantity which the workmen uſually melt at a time, make 150 of theſe ſquares, whence each of them weighs ſix grains and two-fifths; and as 902 grains of gold make a cubic inch, the thickneſs of the ſquare plates is about the 766th part of an inch.

“In order to the further extenſion of theſe pieces into fine leaves, it is neceſſary to interpoſe ſome ſmooth body between them and the hammer, for ſoftening its blow, and defending them from the rudeneſs of its immediate action: as alſo to place between every two of the pieces ſome proper intermedium, which, while it prevents their uniting together, or injuring one another, may ſuffer them freely to extend. Both theſe ends are anſwered by certain animal membranes.

“The gold-beaters uſe three kinds of membranes; for the outſide cover, common parchment made of ſheep-ſkin; for interlaying with the gold, firſt the ſmootheſt and cloſeſt vellum, made of calf-ſkin; and afterwards the much finer ſkins of ox-gut, ſtript off from the large ſtraight gut ſlit open, curiouſly prepared on purpoſe for this uſe, and hence called *gold-beaters ſkin*. The preparation of theſe laſt is a diſtinct buſineſs, practiſed by only two or three perſons in the kingdom, ſome of the particulars of which I have not ſatisfactorily learned. The general proceſs is ſaid to conſiſt, in applying one upon another, by the ſmooth ſides, in a moiſt ſtate, in which they readily cohere and unite inſeparably; ſtretching them on a frame, and carefully ſcraping off the fat and rough matter, ſo as to leave only the fine exterior membrane of the gut; beating them between double leaves of paper, to force out what unctuoſity may remain in them; moiſtening them once or twice with an infuſion of warm ſpices; and laſtly, drying and preſſing them. It is ſaid, that ſome calcined gypſum, or plaſter-of-Paris, is rubbed with a hare's foot both on the vellum and the ox-gut ſkins, which fills up ſuch minute holes as may happen in them, and prevents the gold-leaf from ſticking, as it would do to the ſimple animal-membrane. It is obſervable, that, notwithſtanding the vaſt extent to which the gold is beaten between theſe ſkins, and the great tenuity of the ſkins themſelves, yet they ſuſtain continual repetitions of the proceſs for ſeveral months, without extending or growing thinner. Our workmen find, that, after 70 or 80 repetitions, the ſkins, though they contract no flaw, will no longer permit the gold to extend between them; but that they may be again rendered fit for uſe by impregnating them with the virtue which they have loſt, and that even holes in them may be repaired by the dextrous application of freſh pieces of ſkin: a microſcopical examination of ſome ſkins that had been long uſed plainly ſhewed theſe repairs. The method of reſtoring their virtue is ſaid in the *Encyclopédie* to be, by interlaying them with leaves of paper moiſtened with vinegar white-wine, beating them for a whole day, and afterwards rubbing them over as at firſt with plaſter-of-Paris. The gold is ſaid to extend between them more eaſily, after they have been uſed a little, than when they are new.

“ The beating of the gold is performed on a ſmooth block of black marble, weighing from 200 to 600 pounds, the heavier the better; about nine inches ſquare on the upper ſurface, and ſometimes leſs, fitted into the middle of a wooden frame, about two feet ſquare, ſo as that the ſurface of the marble and the frame form one continuous plane. Three of the ſides are furniſhed with a high ledge; and the front, which is open, has a leather flap faſtened to it, which the gold-beater takes before him as an apron, for preſerving the fragments of gold that fall off. Three hammers are employed, all of them with two round and ſomewhat convex faces, though commonly the workman uſes only one of the faces: the firſt, called the *cutch-hammer*, is about four inches in diameter, and weighs 15 or 16 pounds, and ſometimes 20, though few workmen can manage thoſe of this laſt ſize: the ſecond, called the *ſhodering-hammer*, weighs about 12 pounds, and is about the ſame diameter: the third, called the *goldhammer*, or *finiſhing hammer*, weighs 10 or 11 pounds, and is nearly of the ſame width. The French uſe four hammers, differing both in ſize and ſhape from thoſe of our workmen: they have only one face, being in figure truncated cones. The firſt has very little convexity, is near five inches in diameter, and weighs 14 or 15 pounds: the ſecond is more convex than the firſt, about an inch narrower, and ſcarcely half its weight: the third, ſtill more convex, is only about two inches wide, and four or five pounds in weight: the fourth or finiſhing hammer is near as heavy as the firſt, but narrower by an inch, and the moſt convex of all. As theſe hammers differ ſo remarkably from ours, I thought proper to inſert them, leaving the workmen to judge what advantage one ſet may have above the other.

“ A hundred and fifty of the pieces of gold are interlaid with leaves of vellum, three or four inches ſquare, one vellum leaf being placed between every two of the pieces, and about 20 more of the vellum leaves on the outſides; over theſe is drawn a parchment caſe, open at both ends, and over this another in a contrary direction, ſo that the aſſemblage of gold and vellum leaves is kept tight and cloſe on all ſides. The whole is beaten with the heavieſt hammer, and every now and then turned upſide down, till the gold is ſtretched to the extent of the vellum; the caſe being from time to time opened for diſcovering how the extenſion goes on, and the packet, at times, bent and rolled as it were between the hands, for procuring ſufficient freedom to the gold, or, as the workmen ſay, to make the gold work. The pieces, taken out from between the vellum leaves, are cut in four with a ſteel knife; and the 600 diviſions, hence reſulting, are interlaid, in the ſame manner, with pieces of the ox-gut ſkins five inches ſquare. The beating being repeated with a lighter hammer till the golden plates have again acquired the extent of the ſkins, they are a ſecond time divided in four: the inſtrument uſed for this diviſion is a piece of cane cut to an edge, the leaves being now ſo light, that the moiſture of the air or breath condenſing on a metalline knife would occaſion them to ſtick to it. Theſe laſt diviſions being ſo numerous, that the ſkins neceſſary for interpoſing between them would make the packet too thick to be beaten at once, they are parted into three parcels, which are beaten ſeparately, with the ſmalleſt hammer, till they are ſtretched for the third time to the ſize of the ſkins: they are now found to be reduced to the greateſt thinneſs they will admit of; and indeed many of them, before this period, break or fail. The French workmen, according to the minute detail of this proceſs given in the *Encyclopédie*, repeat the diviſion and the beating once more; but as the ſquares of gold, taken for the firſt operation, have four times the area of thoſe uſed among us, the number of leaves from an equal area is the ſame in both methods, viz. 16 from a ſquare inch. In the beating, however ſimple the proceſs appears to be, a good deal of addreſs is requiſite, for applying the hammers ſo as to extend the metal uniformly from the middle to the ſides: one improper blow is apt not only to break the gold leaves, but to cut the ſkins.

“ After the laſt beating, the leaves are taken up by the end of a cane inſtrument, and, being blown flat on a leather-cuſhion, are cut to a ſize, one by one, with a ſquare frame of cane made of a proper ſharpneſs, or or with a frame of wood edged with cane: they are then fitted into books of 25 leaves each, the paper of which is well ſmoothed, and rubbed with red-bole to prevent their ſticking to it. The French, for ſizing the leaves, uſe only the cane-knife; cutting them firſt ſtraight on one ſide, fitting them into the book by the ſtraight ſide, and then paring off the ſuperfluous parts of the gold about the edges of the book. The ſize of the French gold leaves is from ſomewhat leſs than three inches to three and three quarters ſquare; that of ours, from three inches to three and three-eighths.

“ The proceſs of gold-beating is conſiderably influenced by the weather. In wet weather, the ſkins grow ſomewhat damp, and in this ſtate make the extenſion of the gold more tedious: the French are ſaid to dry and preſs them at every time of uſing; with care not to over-dry them, which would render them unfit for further ſervice. Our workmen complain more of froſt, which appears to affect the metalline leaves themſelves: in froſt, a gold-leaf cannot eaſily be blown flat, but breaks, wrinkles, or runs together.

“ Gold-leaf ought to be prepared from the fineſt gold; as the admixture of other metals, though in too ſmall a proportion to ſenſibly affect the colour of the leaf, would diſpoſe it to loſe of its beauty in the air. And indeed there is little temptation to the workman to uſe any other; the greater hardneſs of alloyed gold occaſioning as much to be loſt in point of time and labour, and in the greater number of leaves that break, as can be gained by any quantity of alloy that would not be at once diſcoverable by the eye. All metals render gold harder and more difficult of extenſion: even ſilver, which in this reſpect ſeems to alter its quality leſs than any other metal, produces with gold a mixture ſenſibly harder than either of them ſeparately, and this hardneſs is in no art more felt than in the gold-beater's. The French are ſaid to prepare what is called the *green gold-leaf*, from a compoſition of one part of copper and two of ſilver with eighty of gold. But this is probably a miſtake: for ſuch an admixture gives no greenneſs to gold; and I have been informed by our workmen, that this kind of leaf is made from the ſame fine gold as the higheſt gold-coloured ſort, the greeniſh hue being only a ſuperficial teint induced upon the gold in ſome part of the proceſs: this greeniſh leaf is little otherwiſe uſed than for the gilding of certain books.

“ But though the gold-beater cannot advantageouſly diminiſh the quantity of gold in the leaf by the admixture of any other ſubſtance with the gold, yet means have been contrived, for ſome particular purpoſes, of ſaving the precious metal, by producing a kind of leaf called *party-gold*, whoſe baſis is ſilver, and which has only a ſuperficial coat of gold upon one ſide: a thick leaf of ſilver and a thinner one of gold, laid flat on one another, heated, and preſſed together, unite and cohere; and being then beaten into fine leaves, as in the foregoing proceſs, the gold, though its quantity is only about one fourth of that of the ſilver, continues every where to cover it, the extenſion of the former keeping pace with that of the latter.

LEAGUE, a meaſure of length, containing more or fewer geometrical paces, according to the different uſages and cuſtoms of countries. A league at ſea, where it is chiefly uſed by us, being a land-meaſure moſtly peculiar to the French and Germans, contains 3000 geometrical paces, or three Engliſh miles. The French league ſometimes contains the ſame meaſure, and in ſome parts of France it conſiſts of 3500 paces: the mean or common league conſiſts of 2400 paces, and the little league of 2000. The Spaniſh leagues are larger than the French, 17 Spaniſh leagues making a degree, or 20 French leagues, or 69½ Engliſh ſtatute-miles. The Dutch and German leagues contain each four geographical miles. The Perſian leagues are pretty near of the ſame extent with the Spaniſh; that is, they are equal to four Italian miles: which is pretty near to what Herodotus calls the length of the Perſian paraſang, which contained 30 ſtadia, eight whereof, according to Strabo, make a mile. The word comes from *leuca*, or *leuga*, an ancient Gauliſh word for an itinerary meaſure, and retained in that ſenſe by the Romans. Some derive the word *leuca* from λευκος, “ white;” as the Gauls, in imitation of the Romans, marked the ſpaces and diſtances of their roads with white ſtones.

League alſo denotes an alliance or confederacy between princes and ſtates for their mutual aid, either in attacking ſome common enemy, or in defending themſelves. The word comes from *liga*, which in the corrupt Latin was uſed for a *confederacy*: *Qua quis cum alio ligatur*.

Leagues *of the Griſons*, are a part of Switzerland, conſiſting of three ſubdiviſions, viz. the upper league, the league of the houſe of Gad, and the league of the ten juriſdictions. See the article Switzerland.

The **League**, by way of eminence, denotes that famous one on foot in France, from the year 1576 to 1593. Its intent was to prevent the ſucceſſion of Henry IV. who was of the reformed religion, to the crown; and it ended with his abjuration of that faith.

The *leaguers*, or confederates, were of three kinds. The *zealous leaguers* aimed at the utter deſtruction, not only of the Huguenots, but alſo of the miniſtry. The *Spaniſh leaguers* had principally in view the transferring the crown of France to the king of Spain, or the infanta his daughter. The *moderate leaguers* aimed only at the extirpation of Calviniſm, without any alteration of the government.

LEAK, at ſea, is a hole in the ſhip, thro' which the water comes in. A ſhip is ſaid to *ſpring a leak*, when ſhe begins to *leak* or to let in the water. The manner of ſtopping a leak is to put into it a plug wrapped in oakum and well tarred, or in a tarpawling clout, which keeps out the water, or nailing a piece of ſheet lead on the place.—Seamen ſometimes ſtop a leak by thruſting a piece of ſalt beef into it. The ſea-water, ſays Mr Boyle, being freſher than the brine imbibed by the beef, penetrates into its body, and cauſes it to ſwell ſo as to bear ſtrongly againſt the edges of the broken plank, and thereby ſtops the influx of the water.—A ready way to find a leak in a ſhip is to apply the narrower end of a ſpeaking trumpet to the ear, and the other to the ſide of the ſhip where the leak is ſuppoſed to be; then the noiſe of the water iſſuing in at the leak will be heard diſtinctly, whereby it may be diſcovered.

LEAKAGE, the ſtate of a veſſel that leaks, or lets water or other liquid ooze in or out.

Leakage, in commerce, is an allowance of 12 per cent. in the cuſtoms, allowed to importers of wines for the waſte or damage it is ſuppoſed to have received in the paſſage: an allowance of two barrels in 22 is alſo made to the brewers of ale and beer, by the exciſe-office.

LEAKE (Richard), maſter-gunner of England, was born at Harwich in 1629, and was bred to the ſea. At the reſtoration, he was made maſter-gunner of the Princeſs, a frigate of 50 guns; and in the firſt Dutch war diſtinguiſhed himſelf by his ſkill and bravery in two extraordinary actions; one againſt 15 ſail of Dutch men of war; and another in 1667 againſt two Danes in the Baltic, in which the commanding officers of the Princeſs being killed or deſperately wounded, the command, according to the rules of war at that time, fell to the gunner. In 1669, he was promoted to be gunner of the Royal Prince, a firſt-rate man of

Leake, Leander.

of war. He was engaged, with his two ſons Henry and John, in the battle againſt Van Tromp, in 1673; when the Royal Prince had all her maſts ſhot away, near 400 of her men killed and diſabled, and moſt of her upper tier of guns diſmounted. As ſhe lay thus like a wreck, a great Dutch man of war came down upon her with two fire-ſhips, either to burn or carry her off; and Captain Rooke, afterwards Sir George, thinking it impoſſible to defend her, ordered the men to ſave their lives, and the colours to be ſtruck. Mr Leake hearing this, ordered the lieutenant off the quarter-deck, and took the command upon himſelf, ſaying, "The Royal Prince ſhall never be given up to the enemy while I am alive to defend her." The undaunted ſpirit of the brave gunner inſpired the ſmall reſidue of the ſhip's company with reſolution: they returned with alacrity to the fight, and, under the direction of this valiant gunner and his two ſons, ſunk both the fire-ſhips, and obliged the man of war to ſheer off; and having thus ſaved the Royal Prince, he brought her into Chatham. But Mr Leake's joy in obtaining this victory was damped by the loſs of Henry, his eldeſt ſon, who was killed near him. Soon after, Mr Leake was preferred to the command of a yacht, and alſo made gunner of Whitehall. In 1677, he obtained a grant for life of the office of maſter-gunner of England, and ſtore-keeper of the ordnance at Woolwich. By theſe poſts he had full ſcope for his genius. He accordingly, among other things, invented the cuſhee-piece; and contrived to fire a mortar by the blaſt of a piece, which has been uſed ever ſince. He was alſo the principal contriver of what the French call *infernals*, uſed at the bombardment at St Malo's in 1693. Mr Leake had a ſurpriſing genius for all inventions of this kind; and had frequent trials of ſkill with French and Dutch gunners and engineers in Woolwich warren, at which king Charles II. and the duke of York were often preſent, and he never failed to excell all his competitors: nor was he leſs ſkilled in the art of making compoſitions for fireworks; of which he likewiſe made frequent trials, with equal ſucceſs.

Leake (Sir John), an Engliſh admiral, diſtinguiſhed by his bravery and ſucceſs, was born in 1656, and was taught mathematics and gunnery by Mr Richard Leake, his father, who was maſter-gunner of England. Entering early into the navy, he diſtinguiſhed himſelf under his father in 1673, in the memorable engagement between Sir Edward Spragg and Van Tromp, when but 16 years of age; and being afterwards made captain, he ſignalized himſelf, among other occaſions, by executing the deſperate attempt of convoying ſome victuallers into Londonderry, which obliged the enemy to raiſe the ſiege; and at the famous battle of La Hogue. In 1702, being made commodore of a ſquadron, he deſtroyed the French trade and ſettlements at Newfoundland, and reſtored the Engliſh to the poſſeſſion of the whole iſland. On his return he was created rear-admiral; ſoon after, he was made vice-admiral of the blue, and was afterwards knighted. He was engaged with admiral Rook in taking Gibraltar: ſoon after which, he particularly diſtinguiſhed himſelf in the general engagement off Malaga; when, commanding the leading ſquadron of the van, conſiſting only of ſix ſhips, he drove that of the enemy conſiſting of 13, out of the line of battle, ſo diſabled that they never returned to the fight. In 1705, he relieved Gibraltar, which the French had beſieged by ſea, and the Spaniards by land, ſo ſeaſonably, that the enemy was to have attacked the town that very night in ſeveral places, and would undoubtedly have made themſelves maſters of it. Five hundred Spaniards had, by the help of rope-ladders, climbed up the rocks by a way that was thought inacceſſible. At the ſame time they had got a great number of boats to land 3000 men at the New Mole, who, by making a vigorous aſſault on the ſide next the ſea, were to draw the garriſon to oppoſe that attack, while the 500 concealed men ruſhed into the town. Theſe being the next day drawn by hunger out of their ambuſcade, were diſcovered; on which Sir John aſſiſting the garriſon with ſailors and marines, they were attacked with ſuch vigour, that, though they had taken an oath not to ſurrender to the Engliſh, 190 common ſoldiers and 30 officers took quarter; 200 were killed on the ſpot; and the reſt, who endeavoured to make their eſcape, fell headlong down the rock. He was ſoon after made vice-admiral of the white, and then twice relieved that fortreſs. The laſt time, he attacked five ſhips of the French fleet coming out of the bay, of whom two were taken, and two run aſhore and were deſtroyed: baron Pointi died ſoon after, of the wounds he received in the battle; and in a few days the enemy raiſed the ſiege.

In the year 1705, Sir John was engaged in the reduction of Barcelona; and the next year relieved that city, when it was reduced to the laſt extremity, and obliged king Philip to raiſe the ſiege. Soon after he took the city of Carthagena; from whence proceeding to Alicant and Joyce, both theſe ſubmitted to him; and he concluded the exploits of that year with the reduction of the city and iſland of Majorca. Upon his return home, prince George of Denmark made him a preſent of a ring valued at 400 l. and he had the honour of receiving 1000 l. from the queen as a reward for his ſervices. Upon the unhappy death of Sir Cloudeſly Shovel, in 1707, he was made admiral of the white, and commander in chief of her majeſty's fleet; and the next year, ſurpriſing a convoy of the enemy's corn, he ſent it to Barcelona, and thus ſaved both that city and the confederate army from the danger of famine: ſoon after, convoying the new queen of Spain to king Charles her conſort, her majeſty made him a preſent of a diamond ring of 500 pounds value. He then proceeded to the iſland of Sardinia, which he reduced to the obedience of king Charles; and ſoon after aſſiſted the lord Stanhope in the conqueſt of Minorca.

Then returning home, he was appointed one of the council to the lord high admiral; and in 1709, was made rear-admiral of Great Britain. He was ſeveral times choſen member of Parliament for Rocheſter; and in 1712, conducted the Engliſh forces to take poſſeſſion of Dunkirk. But upon the acceſſion of king George I. he was ſuperſeded, and allowed a penſion of 600 l. a-year. After this, he lived privately till his death, which happened at his houſe in Greenwich in 1720.

LEANDER, in poetic hiſtory, a young man of Abydos in Aſia. He uſed to ſwim over the Helleſpont

ſpont by night to viſit Hero his miſtreſs, who ſet forth a light to guide him: but in a tempeſtuous winter-night, he was drowned; upon which Hero ſeeing him dead on the ſhore, caſt herſelf headlong from the tower, and died alſo.

LEAO, in natural hiſtory, a mineral ſubſtance approaching to the nature of the lapis lazuli, found in the Eaſt Indies, and of great uſe in the Chineſe porcelain manufactures, being the fineſt blue they are poſſeſſed of. This ſtone is found in the ſtrata of pit-coal, or in thoſe of a yellowiſh or reddiſh earth in the neighbourhood of the veins of coal. There are often found pieces of it lying on the ſurface of the ground, and theſe are a ſure indication that more will be found on dipping. It is generally found in oblong pieces of the ſize of a finger, not round, but flat. Some of this is very fine, and ſome coarſe and of a bad colour. The latter is very common; but the fine ſort is ſcarce, and greatly valued. It is not eaſy to diſtinguiſh them at ſight, but they are found by experiment; and the trying one piece is generally ſufficient for judging of the whole mine, for all that is found in the ſame place is uſually of the ſame ſort.

The manner of preparing it for uſe is this: They firſt waſh it very clean, to ſeparate it from the earth or any other foulneſs it may have: they then lay it at the bottom of their baking furnaces; and when it has been thus calcined for three or four hours, it is taken out, and powdered very fine in large mortars of porcelain with ſtone peſtles faced with iron. When the powder is perfectly fine, they pour in boiling water, and grind that with the reſt, and when it is thoroughly incorporated, they add more, and finally pour it off after ſome time ſettling. The remainder at the bottom of the mortar, which is the coarſer part, they grind again with more water; and ſo on, till they have made the whole fine, excepting a little dirt or grit. When this is done, all the liquors are mixed together, and well ſtirred. They are ſuffered to ſtand two or three minutes after this, and then poured off with the powder remaining in them: this is ſuffered to ſubſide gradually, and is the fine blue uſed in their beſt works, our common ſmalt ſerving for the blue of all the common china ware.

LEAP, in muſic, is when the ſong does not proceed by conjoint degrees, as when between each note there is an interval of a third, a fourth, fifth, &c.

Leap YEAR. See YEAR, and ASTRONOMY, n° 292.

LEAPING, or VAULTING. See VAULTING.

LEAR, the name of a Britiſh king ſaid in old chronicles to have ſucceeded his father Bladud, about A. M. 3160. The ſtory of this king and his three daughters, is well known from Shakeſpeare's excellent tragedy founded on it.

LEASE and RELEASE, a ſpecies of conveyance uſed in the Engliſh law, firſt invented by ſerjeant Moore, ſoon after the ſtatute of uſes, and now the moſt common of any, and therefore not to be ſhaken; though very great lawyers, (as particularly Mr Noy), have formerly doubted its validity. It is thus contrived. A leaſe, or rather bargain and ſale, upon ſome pecuniary conſideration, for one year, is made by the tenant of the freehold to the leſſee or bargainee. Now this, without any enrollment, makes the bargainor ſtand ſeized to the uſe of the bargainee, and veſts in the bargainee the *uſe* of the term for a year; and then the ſtatute immediately annexes the *poſſeſſion.* He therefore, being thus in poſſeſſion, is capable of receiving a releaſe of the freehold and reverſion, which muſt be made to a tenant in poſſeſſion: and accordingly, the next day, a releaſe is granted to him. This is held to ſupply the place of livery of ſeiſin; and ſo a conveyance by leaſe and releaſe is ſaid to amount to a feoffment.

LEASH, among ſportſmen, denotes three creatures of any kind; but chiefly gre-hounds, foxes, bucks, and hares.

The term *leaſh* alſo ſignifies a line to hold in a hunting dog; and a ſmall long thong of leather, by which a falconer holds his hawk.

LEASING-MAKING, in Scots law, the uttering of words tending to excite diſcord between the king and his people; alſo called *verbal ſedition.*

LEATHER, the ſkin of ſeveral ſorts of beaſts dreſſed and prepared for the uſe of various manufacturers, whoſe buſineſs it is to make them up.

DYEING *of Leather, Skins*, &c. *Blue* is given by ſteeping the ſubject a day in urine and indigo, then boiling it with alum: or it may be given by tempering the indigo with red-wine, and waſhing the ſkins therewith. *Red* is given by waſhing the ſkins, and laying them two hours in galls, then wringing them out, dipping them in a liquor made with liguſtrum, alum, and verdigreaſe in water; and laſtly, in a dye made of brazil wood, boiled with ley. *Purple* is given by wetting the ſkins with a ſolution of roche alum in warm water; and, when dry again, rubbing them with the hand with a decoction of log-wood in colder. *Green* is given by ſmearing the ſkin with ſap-green and alum-water boiled. *Dark-green* is alſo given with ſteel-filings and ſal armoniac ſteeped in urine till ſoft, then ſmeared over the ſkin; which is to be dried in the ſhade. *Sky-colour* is given with indigo ſteeped in boiling water, and the next morning warmed and ſmeared over the ſkin. *Yellow*, by ſmearing the ſkin over with aloes and linſeed-oil diſſolved and ſtrained; or by infuſing it in weld. *Orange-colour* is given by ſmearing with fuſtic berries boiled in alum-water; or, for a deep orange, with turmeric.

Proceſſes for Dyeing LEATHER Red *and* Yellow *as practiſed in* Turkey, *with directions for Preparing and Tanning the Skins; as communicated by Mr* Philippo, *a native of* Armenia, *who received from the Society for the Encouragement of Arts, &c. one hundred pounds, and alſo the gold medal of the Society, as a reward for diſcovering this ſecret.*

1. *Firſt Preparation of the Skins, both for Red and Yellow Leather, by dreſſing them in Lime.* Let the ſkins, dried with the hair on, be firſt laid to ſoak in clean water for three days; let them then be broken over the fleſh-ſide, put into freſh water for two days longer, and afterwards hung up to drain half an hour. Let them now be broken on the fleſh-ſide, limed in cold lime on the ſame ſide, and doubled together with the grain-ſide outward. In this ſtate they muſt be hung up within-doors over a frame for five or ſix days, till the hair be looſe; which muſt then be taken off, and the ſkins returned into the lime-pit, for about three weeks. Take them out, and let them be well worked fleſh and grain, every ſixth or ſeventh day during that

time: after which, let them be waſhed ten times in clear water, changing the water at each waſhing. They are next to be prepared in drench, as below mentioned.

Leather.

2. *Second Preparation of the Skins for both the Red and Yellow Dyes by drenching.* After ſqueezing the water out of the ſkins, put them into a mixture of bran and water, warm as new milk, in the following proportions; viz. about three pounds of bran for five ſkins, and water ſufficient to make the mixture moderately fluid, which will be about a gallon to each pound of bran. In this drench let the ſkins lie three days; at the end of which time they muſt be well worked, and afterwards returned into the drench two days longer. They muſt then be taken out and rubbed between the hands; the water ſqueezed from them, and the bran ſcraped off clear from both ſides of the ſkins. After this they muſt be again waſhed ten times in clear water, and the water ſqueezed out of them.

Thus far the preparatory proceſs of all the ſkins, whether intended to be dyed red or yellow, is the ſame; but afterwards thoſe which are to be dyed red, muſt be treated as follows.

3. *Preparation in Honey and Bran of the Skins that are to be dyed Red.* Mix one pound of honey with three pints of luke-warm water, and ſtirr them together till the honey is diſſolved. Then add two double handfuls of bran; and taking four ſkins (for which the above quantity of the mixture will be ſufficient) work them well in it one after another. Afterwards fold up each ſkin ſeparately into a round form, with the fleſh-ſide inwards; and lay them in an earthen pan, or other proper veſſel; if in the ſummer, by the ſide of each other; but in the winter, on the top of each other. Place the veſſel in a ſloping poſition, ſo that ſuch part of the fluid as may ſpontaneouſly drain from the ſkins, may paſs from them. An acid fermentation will then riſe in the liquor, and the ſkins will ſwell conſiderably. In this ſtate they muſt continue for ſeven or eight days; but the moiſture that drains from them muſt be poured off, once or twice a-day, as occaſion may require. After this a further preparation in ſalt is neceſſary; and which muſt be performed in the following manner.

4. *Preparation in Salt, of the Skins to be dyed Red.* After the ſkins have been fermented in the honey and bran, as abovementioned, let them be taken out of that mixture on the eighth or ninth day, and well rubbed with dry common ſea-ſalt, in the proportion of about half a pound to each ſkin; the ſalt muſt be well rubbed and worked with them. This will make them contract again, and part with a further conſiderable quantity of moiſture; which muſt be ſqueezed out by drawing each ſkin ſeparately through the hands. They muſt next be ſcraped clean on both ſides from the bran, ſuperfluous ſalt, and moiſture that may adhere to them. After which, dry ſalt muſt be ſtrewed over the grain-ſide, and well rubbed in with the hand. They are then to be doubled with the fleſh-ſide outwards, lengthwiſe from neck to tail, and a little more dry ſalt muſt be thinly ſtrewed over the fleſh-ſide, and rubbed in; for the two laſt operations, about a pound and a half of ſalt will be ſufficient for each ſkin. They muſt then be put, thus folded on each other, between two clean boards, placed ſloping, breadthwiſe; and a heavy weight laid on the upper board, in order gradually to preſs out what moiſture they will thus part with. In this ſtate of preſſure, they muſt be continued two days or longer, till it is convenient to dye them, for which they will then be duely prepared.

5. *Preparation of the Red Dye, in a proper proportion for four ſkins.* Put eight gallons of water into a copper, with ſeven ounces of ſhenan (A) tied up in a linen bag. Light a fire under a copper; and when the water has boiled about a quarter of an hour, take out the bag of ſhenan, and put into the boiling fluid or lixivium, 1ſt, two drams of alum; 2dly, two drams pomegranate bark; 3dly, three quarters of an ounce of turmeric; 4thly, three ounces of cochineal; 5thly, two ounces of loaf-ſugar. Let the whole mixture boil about ſix minutes, then cover the fire, and take out a quart of liquor, putting it into a ſtat earthen pan; and when it is as cold as new milk, take one ſkin, folded lengthwiſe, the grain-ſide outwards, and dip it in the liquor, rubbing it gently with the hands. Then taking out the ſkin, hang it up to drain, and throw away the ſuperfluous dye. Proceed in the ſame manner with the remaining three ſkins; repeating the operation of each ſkin ſeparately, eight times, ſqueezing the ſkins by drawing them through the hands before each freſh dipping. Lay them now on one ſide of a large pan, ſet ſloping, to drain off as much of the moiſture as will run from them without preſſure, for about two hours, or till they are cold; then tan them as below directed.

6. *Tanning the Red Skins.* Powder four ounces of the beſt white galls in a marble martar, ſifting it thro' a fine ſieve. Mix the powder with about three quarts of water, and work the ſkins well in this mixture for half an hour or more, folding up the ſkins four-fold. Let them lie in this tan for 24 hours; when they muſt be worked again as before; then taken out, ſcraped clean on both ſides from the firſt galls, and put into a like quantity of freſh galls and water. In this freſh mixture they muſt be again well worked for three quarters of an hour; then folded up as before, and left in the freſh tan for three days. On the fourth day they muſt be taken out, waſhed clean from the galls in ſeven or eight freſh quantities of water, and then hung up to dry.

7. *Manner of Dreſſing the Skins after they are tanned.* When the ſkins have been treated as above, and are very near dry, they ſhould be ſcraped with the proper inſtrument or ſcraper on the fleſh-ſide, to reduce them to a proper degree of thickneſs. They are then to be laid on a ſmooth board, and glazed by rubbing them

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(A) Shenan is a drug much uſed by dyers in the Eaſt; and may eaſily be procured at any of the ports of Syria and Africa, in the Levant. It is the Eaſtern jointed-kali, called by botaniſts *ſalicornia;* and grows in great plenty in thoſe and other parts of the Eaſt. There is a leſſer ſpecies of the ſalicornia on our coaſt, which, from its great affinity with the ſhenan, might be preſumed to have the ſame qualities. On ſome trials, however, it has not appeared to anſwer the intention of the ſhenan; but it will be prudent to purſue the examination of this further, as ſome unknown circumſtances in the collecting or uſing the Engliſh ſalicornia might occaſion the miſcarriage. But be this as it may, the Eaſtern ſhenan may, at all events, be eaſily procured in any quantity, at a very trifling expence, by any of the captains of Turkey ſhips, at Aleppo, Smyrna, *&c.*

with a ſmooth glaſs. After which they muſt be oiled, by rubbing them with olive-oil, by means of a linen rag, in the proportion of one ounce and a half of oil for four ſkins: they are then to be grained on a graining-board, lengthwiſe, breadthwiſe, and cornerwiſe, or from corner to corner.

8. *Preparation with Galls, for the Skins to be dyed Yellow.* After the four ſkins are taken out of the drench of bran, and clean waſhed as before directed in the ſecond article, they muſt be very well worked, half an hour or more, in a mixture of a pound and a half of the beſt white galls, finely powdered, with two quarts of clean water. The ſkins are then to be ſeparately doubled lengthwiſe; rolled up with the fleſh-ſide outwards, laid in the mixture, and cloſe preſſed down on each other, in which ſtate they muſt continue two whole days. On the third day let them be again worked in the tan; and afterwards ſcraped clean from the galls, with an ivory or braſs inſtrument (for no iron muſt touch them.) They muſt then be put into a freſh tan, made of two pounds of galls finely powdered, with about three quarts of water, and well worked therein 15 times. After this they muſt be doubled, rolled up as before, and laid in the ſecond tan for three days. On the third day a quarter of a pound of white ſea-ſalt muſt be worked into each ſkin; and the ſkins doubled up as before, and returned into the tan, till the day following, when they are to be taken out, and well waſhed ſix times in cold water, and four times in water lukewarm. The water muſt be then well ſqueezed out, by laying the ſkins under preſſure, for about half an hour, between two boards, with a weight of about 200 or 300 pounds laid upon the uppermoſt board, when they will be ready for the dye.

9. *Preparation of the Yellow Dye, in the proper proportion for four ſkins.* Mix ſix ounces of caſſiari gehira (B), or dgehira, or the berries of the eaſtern rhamnus, with the ſame quantity of alum; and pound them together till they be fine, in a marble or braſs mortar, with a braſs peſtle. Then dividing the materials, thus powdered, into three equal parts of four ounces each, put one of thoſe three parts into about a pint and a half of water, in a china or earthen veſſel; and ſtir the mixture together. Let the fluid ſtand to cool, till it will not ſcald the hand. Then ſpreading one of the ſkins flat on a table, in a warm room, with the grain-ſide uppermoſt, pour a fourth part of the tinging liquor, prepared as above directed, over the upper or grain-ſide, ſpreading it equally over the ſkin with the hand, and rubbing it well in. Afterwards do the like with the other three ſkins, for which the mixture firſt made will be ſufficient.

This operation muſt be repeated twice more on each ſkin ſeparately, with the remaining eight ounces of the powder of the berries, and alum, with the abovementioned due proportions of hot water, put to them as before directed.

The ſkins, when dyed, are to be hung up on a wooden frame, without being folded, with the grain-ſide outwards, about three quarters of an hour to drain; when they muſt be carried to a river or ſtream of running water, and well waſhed therein ſix times or more. After this they muſt be put under preſſure for about an hour, till the water be well ſqueezed out; afterwards the ſkins muſt be hung up to dry in a warm room.

This being done, the ſkins are to be dreſſed and grained as before directed for thoſe dyed red; except the oiling, which muſt be omitted.

Blacking LEATHER. In the tanning of leather it is ſo much impregnated with the aſtringent parts of oak-bark, or with that matter which ſtrikes a black with green vitriol, that rubbing it over three or four times with a ſolution of the vitriol, or with a ſolution of iron made in vegetable acids, is ſufficient for ſtaining it black. Of this we may be convinced by dropping a little of the ſolution on unblacked ſide of common ſhoe-leather. This operation is performed by the currier; who, after the colouring, gives a gloſs to the leather with a ſolution of gum-arabic and ſize made in vinegar. Where the previous aſtringent impregnation is inſufficient to give due colour, and for thoſe ſorts of leather which have not been tanned, ſome galls or other aſtringents are added to the ſolution of iron; and in many caſes, particularly for the finer ſorts of leather, and for renewing the blackneſs, ivory or lamp-black are uſed. A mixture of either of theſe with linſeed oil makes the common oil-blacking. For a ſhining blacking, ſmall beer or water are taken inſtead of oil, in the quantity of about a pint to an ounce of the ivory-black, with the addition of half an ounce of brown ſugar and as much gum-arabic. The white of an egg, ſubſtituted for the gum, makes the black more ſhining, but is ſuppoſed to hurt the leather, and make it apt to crack. It muſt be obvious, however, that all theſe compoſitions admit of a great many variations.

Gilding of LEATHER. Take glair of the whites of eggs, or gum water, and with a bruſh rub over the leather with either of them; then lay on the gold or ſilver, and, letting them dry, burniſh them. See the articles GILDING and BURNISHING.

To dreſs or cover LEATHER *with Silver or Gold.* Take brown-red; grind or move it on a ſtone with a muller, adding water and chalk; and when the latter is diſſolved, rub or lightly daub the leather over with it, till it looks a little whitiſh; and then lay on the leaf-ſilver or gold before the leather is quite dry, laying the leaves a little over each other, that there may not be the leaſt part uncovered; and when they have well cloſed with the leather, and are ſufficiently dried on and hardened, rub them over with an ivory poliſher, or the foretooth of a horſe.

LEAVEN, a piece of ſour dough, uſed to ferment and render light a much larger quantity of dough or paſte. See BREAD, BARM, and BAKING.

LEAVES *of* PLANTS. See LEAF.

Colours extracted from LEAVES. See COLOUR-*Making*, n° 36.

LEBEDA, an ancient ſea-port town of Africa, in the kingdom of Tripoli, with a pretty good harbour, and an old caſtle; ſeated on the Mediterranean Sea, in E. Long. 14. 50. N. Lat. 32. 10.

LEBRIXA, an ancient, ſtrong, and pleaſant town

(B) The caſſiari gehira is the berries of an Eaſtern rhamnus, or buckthorn-tree; and may be had at Aleppo, and other parts of the Levant, at a ſmall price. The common Avignon or yellow berries may be ſubſtituted, but not with ſo good an effect; the caſſiari gehira being a ſtronger and brighter yellow dye, both for this uſe, and alſo that of colouring paper-hangings, &c.

town of Spain, in Andaluſia; ſeated in a territory abounding in corn, wine, and a great number of olive-trees, of whoſe fruit they make the beſt oil in Spain. W. Long. 5. 32. N. Lat. 36. 52.

LEBUS, a town of Germany, in the circle of Upper Saxony, and in the marquiſate of Brandenburg, with a biſhop's ſee, ſecularized in favour of the houſe of Brandenburg. It is ſeated on the river Oder, in E. Long. 14. 55. N. Lat. 52. 28.

LECCE, a rich, populous, and moſt beautiful town of Italy, in the kingdom of Naples and in the Terra d'Otranto, of which it is the chief place, and the ſee of a biſhop. E. Long. 18. 20. N. Lat. 40. 38.

LECCO, a town of Italy, in the duchy of Milan, ſeated on the eaſtern ſide of the lake Como. E. Long. 9. 40. N. Lat. 45. 45.

LECHLADE, a town of Glouceſter-ſhire in England, ſeated at the confluence of the river Lech with the Thames. W. Long. 2. 15. N. Lat. 51. 42.

LECHNICH, a town of Germany in the circle of the Lower Rhine, and in the electorate of Cologne. E. Long. 6. 35. N. Lat. 50. 40.

LECTICA, among the Romans, a litter or vehicle in which people were carried. The *ſella* differed from the *lectica*, as being higher, and becauſe people always ſat in it; on which account the *ſella*, from the time it was firſt brought into uſe, was eſteemed the more honourable carriage of the two. The *lectica* was alſo uſed as a bier for carrying out the dead, who were dreſſed in habits ſuitable to their quality and ſex.

LECTISTERNIUM, a religious feaſt or banquet of the ancient Romans. In times of public danger or calamity, or of thanſgiving for ſome happy event, the republic ordered ſolemn feaſts to be made for the gods; and this ſolemnity was called *lectiſternium*, becauſe on this occaſion they ſpread tables, and placed beds around them, on which their heavenly gueſts were to lie and eat.

LECTORES, among the Romans, ſervants in great mens houſes, who were employed in reading while their maſters were at ſupper. They were called by the Greeks ANAGNOSTÆ.

LECTOURE, an ancient and ſtrong town of France, in Gaſcony, with a caſtle and a biſhop's ſee; ſeated on a mountain at the foot of which runs the river Gers. E. Long. 0. 42. N. Lat. 43. 56.

LECTURERS, in England, are an order of preachers in pariſh-churches, diſtinct from the rector or vicar. They are choſen by the veſtry, or chief inhabitants of the pariſh, and are uſually the afternoon preachers.

The law requires, that they have the approbation and admiſſion of the ordinary; and that, at the time of their admiſſion, they ſubſcribe to the 39 articles of religion, &c. required by the ſtatute 14 Car. II. and they are to be licenſed by the biſhop, like other miniſters.

Where there are lectures founded by the donations of pious perſons, the lecturers are appointed by the founders, without any interpoſition or conſent of rectors of churches, &c. though with the leave and approbation of the biſhop; ſuch as that of lady Moyer, at St Paul's.

LEDBURY, a town of Herefordſhire in England. It is a well-built town ſeated on a rich clay ſoil, and inhabited moſtly by clothiers, who carry on a pretty large trade. W. Long. 2. 27. N. Lat. 52. 6.

LEDESMA, an ancient and ſtrong town of Spain, in the kingdom of Leon, ſeated on the river Tome, in W. Long. 5. 25. N. Lat. 47. 2.

LEDGER, the principal book wherein merchants enter their accounts. See BOOK-KEEPING.

LEDUM, MARSH CISTUS, or *Wild Roſemary*; a genus of the monogynia order, belonging to the decandria claſs of plants. There is but one ſpecies, viz. the paluſtre with very narrow leaves. This grows naturally upon bogs and moſſes in many parts of Yorkſhire, Cheſhire, and Lancaſhire; riſing with a ſlender ſhrubby ſtalk about two feet high, dividing into many ſlender branches, garniſhed with narrow leaves, not much unlike thoſe of heath. The flowers are produced in ſmall cluſters at the end of the branches, and are ſhaped like thoſe of the ſtrawberry-tree, but ſpread open wider at top. Theſe are of a reddiſh colour, and in the natural places of their growth are ſucceeded by ſeed-veſſels filled with ſmall ſeeds which ripen in autumn.—This plant is with great difficulty kept in a garden; for as it naturally grows upon bogs, unleſs the plants have a ſimilar ſoil, they will not thrive. They muſt be procured from the places of their growth, and taken up with good roots, otherwiſe they will not live.

LEE, an epithet uſed by ſeamen to diſtinguiſh that part of the hemiſphere to which the wind is directed, from the other part whence it ariſes; which latter is accordingly called *to windward*. This expreſſion is chiefly uſed when the wind croſſes the line of a ſhip's courſe, ſo that all on a ſide of her is called *to windward*, and all on the oppoſite ſide *to leeward*. Hence,

Under the LEE, implies farther to the leeward, or farther from that part of the horizon whence the wind blows: as,

Under the LEE *of the Shore*; *i. e.* at a ſhort diſtance from the ſhore which lies to windward. This phraſe is commonly underſtood to expreſs the ſituation of a veſſel anchored, or ſailing under the weather-ſhore, where there is always ſmoother water, and leſs danger of heavy ſeas, than at a great diſtance from it.

LEE-*Larches*, the ſudden and violent rolls which a ſhip often takes to the leeward in a high ſea, particularly when a large wave ſtrikes her on the weather-ſide.

LEE-*Side*, all that part of a ſhip or boat which lies between the maſt and the ſide fartheſt from the direction of the wind; or otherwiſe, the half of a ſhip, which is preſſed down towards the water by the effort of the ſails, as ſeparated from the other half by a line drawn through the middle of her length. That part of the ſhip, which lies to windward of this line, is accordingly called the *weather-ſide*.

Thus admit a ſhip to be ſailing ſouthward, with the wind at eaſt, then is her ſtarboard, or right ſide, the *lee-ſide*; and the larboard, or left, the *weather-ſide*.

LEEWARD-*Ship*, a veſſel that falls much to leeward of her courſe, when ſailing cloſe-hauled, and conſequently loſes much ground.

To LEEWARD, towards that part of the horizon which lies under the lee, or whither the wind bloweth. Thus, "We ſaw a fleet *under the lee*," and, "We ſaw a fleet *to leeward*," are ſynonymous expreſſions.

Lee-*Way*. See Navigation, Sect. ix.

Lee (Nathaniel), a very eminent dramatic poet of the laſt century, was the ſon of a clergyman, who gave him a liberal education.—He received his firſt rudiments of learning at Weſtminſter ſchool; from whence he went to Trinity-college, Cambridge.—Coming to London, however, his inclination prompted him to appear on the theatre; but he was not more ſucceſsful in repreſenting the thoughts of other men, than many a genius beſides, who have been equally unfortunate in treading the ſtage, although they knew ſo well how to write for it. He produced 11 tragedies, all of which contain a very great portion of true poetic enthuſiaſm.—None, if any, ever felt the paſſion of love more truly; nor could any one deſcribe it with more tenderneſs. Addiſon commends his genius highly; obſerving, that none of our Engliſh poets had a happier turn for tragedy, although his natural fire and unbridled impetuoſity hurried him beyond all bounds of probability, and ſometimes were quite out of nature. The truth is, this poet's imagination ran away with his reaſon; ſo that at length he became quite crazy; and grew ſo bad, that his friends were obliged to confine him in bedlam, where he made that famous witty reply to a coxcomb ſcribbler, who had the cruelty to jeer him with his misfortune, by obſerving that it was an eaſy thing to write like a madman:—"No, (ſaid Lee), it is not an eaſy thing to write like a madman; but it is very eaſy to write like a fool."

Lee had the good fortune to recover the uſe of his reaſon ſo far as to be diſcharged from his melancholy confinement; but he did not long ſurvive his enlargement, dying at the early age of 34. Cibber, in his Lives of the Poets, ſays he periſhed unfortunately in a night-ramble, in London ſtreets.—His Theodoſius and Alexander the Great are ſtock-plays, and to this day are often acted with great applauſe. The late Mr Barry was particularly fortunate in the character of the Macedonian Hero.

LEECH, in zoology. See Hirudo.

Leeches in a ſhip, the borders or edges of a ſail which are either ſloping or perpendicular.

The leeches of all ſails whoſe tops and bottoms are parallel to the deck, or at right angles to the maſt, are denominated from the ſhip's ſide, and the ſail to which they belong; as the *ſtarboard* leech of the mainſail, the *lee*-leech of the fore-top-ſail, &c. But the ſails which are fixed obliquely on the maſts have their leeches named from their ſituation with reſpect to the ſhip's length; as the *fore*-leech of the mizen, the *after*-leech of the jib or fore-ſtay ſail, &c.

Leech-*Lines*, certain ropes faſtened to the middle of the leeches of the main-ſail and fore-ſail, and communicating with blocks under the oppoſite ſides of the top, whence they paſs downwards to the deck, ſerving to truſs up thoſe ſails to the yard as occaſion requires. See Brails.

Leech-*Rope*, a name given to that part of the bolt-rope to which the border or ſkirt of a ſail is ſewed. In all ſails whoſe oppoſite leeches are of the ſame length, it is terminated above the earing, and below the clue. See Bolt-*Rope*, Clue, and Earing.

LEEDS, a town of the Weſt Riding of Yorkſhire in England, in W. Long. 1. 17. N. Lat. 53. 48. It ſtands on the north ſide of the river Aire, over which it has a ſtately ſtone bridge, hath been long famous for the woollen manufacture, and is one of the largeſt and moſt flouriſhing towns in the county. On a market-day one may ſee a long ſtreet full of ſtandings, and theſe filled with cloth for ſale. Of this cloth large quantities are ſhipped off at Hull, for Holland, Hamburgh, and the North; whence they are diſperſed through the Netherlands, Germany, Poland, &c. John Harriſon, Eſq; a native of this town, was a great benefactor to it, by building and endowing a church, hoſpital, and free-ſchool. The corporation conſiſts of a mayor, 12 aldermen, and 24 aſſiſtants. On the market-days, when the market-bell rings, which is at ſeven in the morning in winter, and ſix in ſummer, the clothiers bring out their cloth from the inns; and when the bell ceaſes, the chapmen come into the market, match their patterns, and in an hour's time, perhaps, bargain for 20,000 l. worth. The bell rings again at half an hour paſt eight, upon which the clothiers give place to the linen-drapers, hardware-men, ſhoemakers, fruiterers, &c. There have been 500 loads of apples belonging to the laſt of theſe here upon a market-day. At the ſame time there is an equal plenty and variety of fiſh and butchers-meat expoſed to ſale. Great quantities alſo of white cloth are ſold in a magnificent hall, where notice is given by a bell when the ſale begins. Not only woollen goods, but coals and other commodities, are conveyed from hence by the Aire to Wakefield, York, and Hull. In a houſe here, called *Red-hall*, there is an apartment in which king Charles I. lodged, and which, on that account, ſtill bears the name of the *king's chamber*. There was a caſtle here anciently; and now there is a ſtately town-hall, and parochial church called *St Peter's*. On the roof of it, the delivering of the law by Moſes is finely painted in freſco. Here are alſo two charity-ſchools, a work-houſe, ſeveral alms-houſes, and meeting-houſes, one of which laſt, belonging to the Preſbyterians, is a very handſome building. This town gives the title of *duke* to the family of Oſborn, and has ſeveral medicinal ſprings about it.

LEEK, in botany. See Allium.

Leek, a town of Staffordſhire in England. It is ſeated in barren moor-lands, but its market is very good. W. Long. 2. N. Lat. 53. 6.

LEERWICK, the capital town of Shetland, ſituated in the iſland called the *Mainland*, in W. Long. 1. 30. N. Lat. 61. 20. It contains about 300 families.

LEES, the groſſeſt and moſt ponderous parts of liquors, which, being ſeparated by fermentation, fall to the bottom. The word comes from the French *lie*; and that either from *limus* "mud," or from *Lyeus* one of the ſurnames of Bacchus; or, according to du Cange, from *lia*, a corrupt Latin word, ſignifying the ſame.—The vinegar-makers make a great trade of the lees of wine dried and made into cakes, after having ſqueezed out the remains of the liquor in preſſes.

LEET, a little court held within a manor, and called the *king's court*, on account that its authority to puniſh offences originally belonged to the crown, from whence it is derived to inferior perſons.

LEEWARD, at ſea. See *To* Leeward, above.

LEEWARD-*Iſlands*, in the Weſt-Indies, a name given to the CARIBBEES.

LEG, in anatomy, the whole lower extremity from the acetabula of the oſſa innominata, commonly divided into three parts, viz. the thigh, the *leg* properly ſo called, and the foot. See ANATOMY, n° 59.

LEGACY, in ſcots law, a donation by one perſon to another, to be paid by the giver's executor after his death. See LAW, N° clxxxi. 3.

LEGATEE, in Scots law, the perſon to whom a legacy is provided.

LEGATE, a cardinal or biſhop, whom the pope ſends as his ambaſſador to ſovereign princes. See AMBASSADOR.

There are three kinds of legates, viz. legates *a latere*, legates *de latere*, and legates by office, or *legati nati*: of theſe the moſt conſiderable are the legates *a latere*, the next are the legates *de latere*. See the article LATERE.

Legates by office are thoſe who have not any particular legation given them; but who, by virtue of their dignity and rank in the church, become legates: ſuch are the archbiſhop of Rheims and Arles: but the authority of theſe legates is much inferior to that of the legates *a latere*.

The power of a legate is ſometimes given without the title. Some of the nuncios are inveſted with it. It was one of the eccleſiaſtical privileges of England from the Norman conqueſt, that no foreign legate ſhould be obtruded upon the Engliſh, unleſs the king ſhould deſire it upon ſome extraordinary emergency, as when a caſe was too difficult for the Engliſh prelates to determine.

The term *legate* comes from *legatus*, which Varro derives from *legere*, "to chooſe;" and others from *legare, delegare*, "to ſend, delegate."

LEGATUS, in Roman antiquity, a military officer who commanded as deputy of the chief general. The deſign of the *legati* at their firſt inſtitution, was not ſo much to command as to adviſe. They were choſen by the conſuls, the authority of the ſenate concurring with their nomination. There were two kinds of *legati*, viz. a legatus in the army, under the imperator or general, who commanded in chief under him, and managed all affairs by his permiſſion; and a legatus in the provinces under the proconſul or governor, in whoſe abſence the legatus had the honour to uſe the faſces, and was intruſted with the ſame charge as the office he repreſented. As to the number of the legati we have no certainty, but may ſuppoſe that this depended upon the pleaſure of the general, &c. Under the emperors, there were two ſorts of legati; *conſulares* and *prætorii*: the firſt of whom commanded whole armies, as the emperor's lieutenant-generals; and the others, only particular legions.

Legend.

LEGEND, any idle or ridiculous ſtory told by the Romaniſts concerning their ſaints, and other perſons, in order to ſupport the credit of their religion.

The *legend* was originally a book uſed in the old Romiſh churches, containing the leſſons to be read at divine ſervice; hence the lives of the ſaints and martyrs came to be called *legends*, becauſe chapters were read out of them at mattins, and at the refectories of religious houſes. Among theſe the *golden legend*, which is a collection of the lives of the ſaints, was received in the church with great applauſe, which it maintained for 200 years; though it is ſo full of ridiculous and romantic ſtories, that the Romaniſts themſelves are now aſhamed of it.

LEGEND is alſo uſed to ſignify the words or letters engraven about the margins, &c. of coins. Thus the *legend* of a French crown is, *Sit nomen Domini benedictum*; that of a moidore, *In hoc ſigno vinces*; on thoſe of the laſt emperors of Conſtantinople, we find *Jeſus Chriſtus Baſileus Baſileon*, IHS XPS NIKA, *Jeſus Chriſtus vincit*.

LEGERDEMAIN,

OR SLEIGHT OF HAND;

A DENOMINATION given to certain deceptive performances, which either depend altogether on dexterity and addreſs, or derive but a ſmall degree of aid from philoſophical principles. Of theſe we ſhall preſent our readers with a ſelection of the beſt that have been either explained in books, or publicly exhibited.

SECT. I. *Performances with the Cards*.

PREVIOUS to the performances with cards, it will be neceſſary to explain the method of *making the paſs*; that is, bringing a certain number of cards from the bottom of the pack to the top; as many of theſe performances depend on that manœuvre.

1. Hold the pack of cards in your right hand, ſo that the palm of your hand may be under the cards: place the thumb of that hand on one ſide of the pack, the firſt, ſecond, and third fingers on the other ſide, and your little finger between thoſe cards that are to be brought to the top and the reſt of the pack. Then place your left hand over the cards, in ſuch a manner that the thumb may be at C, (fig. 20, 21.) the fore-finger at A, and the other fingers at B.

Plate CLX.

The hands and the two parts of the cards being thus diſpoſed, you draw off the lower cards confined by the little finger and the other parts of the right hand, and place them, with an imperceptible motion, on the top of the pack.

It is quite neceſſary, before you attempt any of the experiments that depend on making the paſs, that you can perform it ſo dexterouſly that the eye cannot diſtinguiſh the motion of your hand; otherwiſe, inſtead of deceiving others, you will expoſe yourſelf. It is alſo proper that the cards make no noiſe, as that will occaſion ſuſpicion. This dexterity is not to be attained without ſome practice.

There is a method of preparing a pack of cards, by inſerting one or more that are a ſmall matter longer or wider than the reſt; which preparation will be neceſſary in ſeveral of the following experiments.

2 The card of divination.

2. Have a pack in which there is a long card; open the pack at that part where the long card is, and preſent the pack to a perſon in ſuch a manner that he will naturally draw that card. He is then to put it into any part of the pack, and ſhuffle the cards. You take the pack, and offer the ſame card in like manner to a ſecond or third perſon; obſerving, however, that they do not ſtand near enough to ſee the card each other draws. You then draw ſeveral cards yourſelf, among which is the long card, and aſk each of the parties if his card be among thoſe cards, and he will naturally ſay Yes, as they have all drawn the ſame card. You then ſhuffle all the cards together, and cutting them at the long card, you hold it before the firſt perſon, ſo that the others may not ſee it, and tell him that is his card. You then put it again in the pack, and ſhuffling them a ſecond time, you cut again at the ſame card, and hold it in like manner to the ſecond perſon, and ſo of the reſt (a).

If the firſt perſon ſhould not draw the long card, each of the parties muſt draw different cards; when, cutting the pack at the long card, you put thoſe they have drawn over it, and ſeeming to ſhuffle the cards indiſcriminately, you cut them again at the long card, and ſhow one of them his card. You then ſhuffle and cut again, in the ſame manner, and ſhow another perſon his card, and ſo on: remembering, that the card drawn by the laſt perſon is the firſt next the long card; and ſo of the others.

This experiment may be performed without the long card, in the following manner. Let a perſon draw any card whatever, and replace it in the pack: you then make the paſs, and bring that card to the top of the pack, and ſhuffle them without loſing ſight of that card. You then offer that card to a ſecond perſon, that he may draw it, and put it in the middle of the pack. You make the paſs and ſhuffle the cards a ſecond time in the ſame manner, and offer the card to a third perſon, and ſo again to a fourth or fifth, as is more fully explained further on.

3 The four confederated cards.

3. You let a perſon draw any four cards from the pack, and tell him to think on one of them. When he returns you the four cards, you dexterouſly place two of them under the pack and two on the top. Under thoſe at the bottom you place four cards of any ſort; and then, taking eight or ten from the bottom-cards, you ſpread them on the table, and aſk the perſon if the card he fixed on be among them. If he ſay No, you are ſure it is one of the two cards on the top. You then paſs thoſe two cards to the bottom, and drawing off the loweſt of them, you aſk him if that is not his card. If he again ſay No, you take that card up, and bid him draw his card from the bottom of the pack.

If the perſon ſay his card is among thoſe you firſt drew from the bottom, you muſt dexterouſly take up the four cards that you put under them, and, placing thoſe on the top, let the other two be the bottom-cards of the pack, which you are to draw in the manner before deſcribed.

4 Divin by the ſword.

4. After a card has been drawn, you place it under the long card, and by ſhuffling them dexterouſly you bring it to top of the pack. Then lay, or throw, the pack on the ground, obſerving where the top-card lies. A handkerchief is then bound over your eyes, in ſuch a manner however that you can ſee the ground, which may be eaſily done. A ſword is then put into your hand, with which you touch ſeveral of the cards, ſeemingly in great doubt, but never loſing ſight of the top-card, in which at laſt you fix the point of the ſword, and preſent it to him who drew it. Two or three cards may be diſcovered in the ſame manner, that is, by placing them under the long card, and then bringing them to the top of the pack.

5 The mutab cards.

5. You muſt have in the pack two cards of the ſame ſort, ſuppoſe the king of ſpades. One of theſe is to be placed next the bottom-card, which may be the ſeven of hearts, or any other card. The other is to be placed at top. You then ſhuffle the cards, without diſplacing thoſe three cards, and ſhow a perſon that the bottom-card is the ſeven of hearts. Then drawing that card privately aſide with your finger, which you have wetted for that purpoſe, you take the king of ſpades from the bottom, which the perſon ſuppoſes to be the ſeven of hearts, and lay it on the table, telling him to cover it with his hand. You then ſhuffle the cards again, without diſplacing the firſt and laſt card, and paſſing the other king of ſpades at the top to the bottom, you ſhow it to another perſon. You then draw that privately away; and taking the bottom-card, which will then be the ſeven of hearts, you lay that on the table, and tell the ſecond perſon, who believes it to be the king of ſpades, to cover it with his hand.

You then command the ſeven of hearts, which is ſuppoſed to be under the hand of the firſt perſon, to change into the king of ſpades; and the king of ſpades, which is ſuppoſed to be under the hand of the ſecond perſon, to change into the ſeven of hearts; and when the two parties take their hands off, and turn up the cards, they will ſee, to their no ſmall aſtoniſhment, after having ſo carefully obſerved the bottom-cards, that your commands are punctually obeyed.

The com hen tran tion

6. Take a card, the ſame as your long card, and rolling it up very cloſe, put it in an egg, by making a hole as ſmall as poſſible, and which you are to fill up carefully with white wax. You then offer the long card to be drawn; and when it is replaced in the pack you ſhuffle the cards ſeveral times, giving the egg to the perſon who drew the card, and, while he is breaking it, you privately withdraw the long card, that it may appear, upon examining the cards, to have gone from the pack into the egg. This experiment may be rendered more ſurpriſing by having ſeveral eggs, in each of which is placed a card of the ſame ſort, and then giving the perſon the liberty to chooſe which egg he thinks fit.

This deception may be ſtill further diverſified, by having, as moſt public performers have, a confederate, who is previouſly to know the egg in which the card is placed; for you may then break the other eggs, and ſhow that the only one that contains a card is that in which you directed it to be.

(a) There is frequently exhibited another experiment, ſimilar to this, which is by making a perſon draw the long card; then giving him the pack, you tell him to place his card where he pleaſes and ſhuffle them, and you will then name his card or cut the pack where it is. You may alſo tell him to put the pack in his pocket, and you will draw the card; which you may eaſily do by the touch.

7. Divide a piquet pack of cards into two parts by a long card. Let the firſt part contain a quint to a king in clubs and ſpades, the four eights, the ten of diamonds and ten of hearts; and let the other part contain the two quart majors in hearts and diamonds, the four ſevens, and the four nines (b).

Then ſhuffle the cards, but obſerve not to diſplace any of thoſe cards of the laſt part which are under the long card. You then cut at that card, and leave the pack in two parts. Next, preſent the firſt of thoſe parts to a perſon, and tell him to draw two or three cards, and place the remainder on the table. You preſent the ſecond parcel in like manner to another. Then having dextrouſly placed the cards drawn by the firſt perſon in the ſecond parcel, and thoſe drawn by the ſecond perſon in the firſt parcel, you ſhuffle the cards, obſerving to diſplace none but the upper cards. Then ſpreading the cards on the table, you name thoſe that each perſon drew; which you will very eaſily do, by obſerving the cards that are changed in each parcel.

8. On the ace of ſpades fix, with ſoap, a heart, and on the ace of hearts, a ſpade, in ſuch a manner that they will eaſily ſlip off.

Show theſe two aces to the company; then taking the ace of ſpades, you deſire a perſon to put his foot upon it, and as you place it on the ground, draw away the ſpade. In like manner you place the ſeeming ace of hearts under the foot of another perſon. You then command the two cards to change their places; and that they obey your command, the two perſons, on taking up their cards, will have ocular demonſtration. A deception ſimilar to this is ſometimes practiſed with one card, ſuppoſe the ace of ſpades, over which a heart is placed ſlightly. After ſhowing a perſon the card, you let him hold one end of it, and you hold the other, and while you amuſe him with diſcourſe, you ſlide off the heart. Then laying the card on the table, you bid him cover it with his hand. You then knock under the table, and command the heart to turn into the ace of ſpades. By deceptions like theſe, people of little experience and much conceit are frequently deprived of their money, and rendered ridiculous.

9. You muſt be prepared with two cards, like thoſe repreſented by fig. 22. and with a common ace and a five of diamonds.

The five of diamonds and the two prepared cards are to be diſpoſed as in fig. 23. and holding them in your hand, you ſay, "A certain Frenchman left 15,000 livres, which are repreſented by theſe three cards, to his three ſons. The two youngeſt agreed to leave their 5000, each of them, in the hands of the elder, that he might improve it." While you are telling this ſtory, you lay the 5 on the table, and put the ace in its place, and at the ſame time artfully change the poſition of the other two cards, that the three cards may appear as in fig. 24. You then reſume your diſcourſe, "The eldeſt brother, inſtead of improving the money, loſt it all by gaming, except 3000 livres, as you here ſee." You then lay the ace on the table, and, taking up the 5, continue your ſtory: "The eldeſt, ſorry for having loſt the money, went to the Eaſt-Indies with theſe 3000, and brought back 15,000." You then ſhow the cards in the ſame poſition as at firſt, in fig. 22.

To render this deception agreeable, it muſt be performed with dexterity, and ſhould not be repeated, but the cards immediately put in the pocket; and you ſhould have five common cards in your pocket, ready to ſhow, if any one ſhould deſire to ſee them.

10
To tell the number of cards by their weight

10. Take a parcel of cards, ſuppoſe 40, among which inſert two long cards; let the firſt be, for example, the 15th, and the other the 26th from the top. Seem to ſhuffle the cards, and then cutting them at the firſt long card, poiſe thoſe you have cut off in your hand, and ſay, "there ſhould be here 15 cards." Cut them again at the ſecond long card, and ſay, "there are here only 11 cards." Then poiſing the remainder, you ſay, "here are 14 cards."

11
To name ſeveral cards on which different perſons have fixed.

11. *Several different cards being ſhewn to different perſons, that each of them may fix on one of thoſe cards; to name that on which each perſon has fixed.*—There muſt be as many different cards ſhown to each perſon as there are perſons to chooſe: therefore, ſuppoſe there are three perſons, then to each of them you muſt ſhow three cards; and telling the firſt perſon to retain one in his memory, you lay thoſe three cards down, and ſhow three others to the ſecond perſon, and ſo to the third. You then take up the firſt perſon's cards, and lay them down one by one, ſeparately, with their faces upward. You next place the ſecond perſon's card over the firſt, and in like manner the third perſon's card over the ſecond's; ſo that in each parcel there will be one card belonging to each perſon. You then aſk each of them in which parcel his card is; and when you know that, you immediately know which card it is; for the firſt perſon's card will always be the firſt, the ſecond perſon's the ſecond, and the third perſon's the third, in that parcel where they each ſay his card is.

This experiment may be performed with a ſingle perſon, by letting him fix on three, four, or more cards. In this caſe you muſt ſhow him as many parcels as he is to chooſe cards, and every parcel muſt conſiſt of that number, out of which he muſt fix on one; and you then proceed as before, he telling you the parcel that contains each of his cards.

12
The magic ring.

12. Make a ring large enough to go on the ſecond or third finger (fig. 15.), in which let there be ſet a large tranſparent ſtone, to the bottom of which muſt be fixed a ſmall piece of black ſilk, that may be either drawn aſide or expanded by turning the ſtone round. Under the ſilk is to be the figure of a ſmall card.

Then make a perſon draw the ſame ſort of card as that at the bottom of the ring, and tell him to burn it in the candle. Having firſt ſhown him the ring, you take part of the burnt card, and reducing it to powder, you rub the ſtone with it, and at the ſame time turn it artfully about, ſo that the ſmall card at bottom may come in view.

13
The card in the mirror.

13. Provide a mirror, either round, as A (fig. 18.), or oval, the frame of which muſt be at leaſt as wide as a card. The glaſs in the middle muſt be made to move

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(b) The cards may be divided in any other manner that is eaſy to be remembered.

move in the two grooves CD and EF, and ſo much of the quickſilver muſt be ſcraped off, as is equal to the ſize of a common card. You will obſerve that the glaſs muſt likewiſe be wider than the diſtance between the frame, by at leaſt the width of a card.

Then paſte over the part where the quickſilver is rubbed off, a piece of paſteboard, on which is a card that muſt exactly fit the ſpace, which muſt at firſt be placed behind the frame.

This mirror muſt be placed againſt a partition, through which is to go two ſtrings, by which an aſſiſtant in the adjoining room can eaſily move the glaſs in the grooves, and conſequently make the card appear or diſappear at pleaſure (c).

Matters being thus prepared, you contrive to make a perſon draw the ſame ſort of card with that fixed to the mirror, and place it in the middle of the pack: you then make the paſs, and bring it to the bottom; you then direct the perſon to look for his card in the mirror, when the confederate behind the partition is to draw it ſlowly forward, and it will appear as if placed between the glaſs and the quickſilver. While the glaſs is drawing forward, you ſlide off the card from the bottom of the pack, and convey it away.

The card fixed to the mirror may eaſily be changed each time the experiment is performed. This experiment may alſo be made with a print that has a glaſs before it and a frame of ſufficient width, by making a ſlit in the frame through which the card is to paſs; but the effect will not be ſo ſtriking as in the mirror.

14 The marvellous vaſe.

14. **Place** a vaſe of wood or paſteboard AB (fig. 19.) on a bracket L, fixed to the partition M. Let the inſide of this vaſe be divided into five parts, *c*, *d*, *e*, *f*, *g*; and let the diviſions *c* and *d* be wide enough to admit a pack of cards, and thoſe of *e*, *f*, *g*, one card only.

Fix a thread of ſilk at the point H, the other end of which paſſing down the diviſion *d*, and over the pulley I, runs along the bracket L, and goes out behind the partition M.

Take three cards from a piquet pack, and place one of them in each of the diviſions *e*, *f*, *g*, making the ſilk thread or line go under each of them. In the diviſion *c*, put the pack of cards from which you have taken the three cards that are in the other diviſions.

Then take another pack of cards, at the top of which are to be three cards of the ſame ſort with thoſe in the three ſmall diviſions; and, making the paſs, bring them to the middle of the pack, and let them be drawn by three different perſons. Then give them all the cards to ſhuffle; after which place the pack in the diviſion *d*, and tell the parties they ſhall ſee the three cards they drew come, at their command, ſeparately out of the vaſe.

An aſſiſtant behind the partition then drawing the line with a gentle and equal motion, the three cards will gradually riſe out of the vaſe. Then take the cards out of the diviſion *c*, and ſhow that thoſe three cards are gone from the pack.

The vaſe muſt be placed ſo high that the inſide cannot be ſeen by the company. You may perform this experiment alſo without an aſſiſtant, by fixing a weight to the end of the ſilk line, which is to be placed on a ſupport, and let down at pleaſure by means of a ſpring in the partition.

15. **Let** a ſmall perſpective glaſs be made, that is wide enough, at the end where the object-glaſs is placed, to hold a table ſimilar to the following.

1.131	10..132	19.133
2.231	11..232	20.233
3.331	12..332	21.333
4.121	13..122	22.123
5.221	14..222	23.223
6.321	15..322	24.323
7.111	16..112	25.113
8.211	17..212	26.213
9.311	18..312	27.313

Take a pack of cards that conſiſts of 27 only, and giving them to a perſon, deſire him to fix on any one, then ſhuffle them and give the pack to you. Place the 27 cards in three heaps, by laying down one alternately on each heap; but before you lay each card down, ſhow it to the perſon, without ſeeing it yourſelf; and when the three heaps are finiſhed, aſk him at what number, from 1 to 27, he will have his card appear, and in which heap it then is? Then look at the heap through the glaſs, and if the firſt of the three numbers which ſtands againſt that number it is to appear at be 1, put that heap at top; if the number be 2, put it in the middle; and if it be 3, put it at bottom. Then divide the cards into three heaps, in the ſame manner, a ſecond and third time, and his card will then be at the number he choſe.

For example: Suppoſe he deſire that his card ſhall be the 20th from the top, and the firſt time of making the heaps he ſay it is in the third heap: you then look at the table in the perſpective, holding it at the ſame time over that heap, and you ſee that the firſt figure is 2; you therefore put that figure in the middle of the pack. The ſecond and third times you in like manner put the heap in which he ſays it is, at the bottom, the number each time being 3. Then looking at the pack with your glaſs, as if to diſcover which the card was, you lay the cards down one by one, and the 20th card will be that he fixed on.

You may ſhow the perſon his card in the ſame manner, without aſking him at what number it ſhall appear, by fixing on any number yourſelf.

The foregoing experiments with the cards will be found ſufficient to explain moſt others of a ſimilar nature that have or may be made; the number of which is very great. To perform thoſe we have deſcribed requires no great practice; the two principal points are, the making the paſs in a dexterous manner, and a certain addreſs by which you influence a perſon to draw the card you preſent. Thoſe that are performed by the long card are in general the moſt eaſy, but they are confined to a pack of cards that is ready prepared; whereas thoſe which depend on making the paſs, may be performed with any pack that is offered.

(c) This experiment may be performed without an aſſiſtant, if a table be placed againſt the partition, and the ſtring from the glaſs be made to paſs through a leg of it, and communicate with a ſmall trigger, which you may eaſily puſh down with your foot; and at the ſame time wiping the glaſs with your handkerchief, as if to make the card appear the more conſpicuous. It may alſo be diverſified, by having the figure of a head, ſuppoſe that of ſome abſent friend, in the place of the card.

Sect. II. *Experiments with Sympathetic Inks.* [See *Sympathetic* Ink ‡.]

Experiments with Class I.

16. Make a book of 70 or 80 leaves; and in the cover at the end of it let there be a caſe, which opens next the binding, that it may not be perceived.

At the top of each right-hand page write any queſtion you pleaſe; and at the beginning of the book let there be a table of all thoſe queſtions, with the number of the page where each is contained. Then write with common ink, on ſeparate papers, each about half the ſize of the pages in the book, the ſame queſtions that are in the book, and under each of them write, with the ink made of the impregnation of ſaturn, or the diſſolution of biſmuth, the anſwer.

Soak a double paper in the vivifying liquor made of quick-lime and orpiment, or the phlogiſton of the liver of ſulphur, and place it, juſt before you make the experiment, in the caſe that is in the cover of the book.

Then deliver ſome of the papers on which the queſtions are wrote to the company; and, after they have choſen ſuch as they would have anſwered, they put them in thoſe leaves where the ſame queſtions are contained, and, ſhutting the book for a few minutes, the ſulphureous ſpirit with which the paper in the cover of the book is imbibed, will penetrate the leaves, and make the anſwers viſible, which will be of a brown colour, and more or leſs deep in proportion to the time the book has been cloſed (d).

17. Make a box about four inches long, and three wide, as ABCD, and quite ſhallow. Let it ſhut with hinges and faſten with a hook; and let it have two bottoms, the loweſt of wood, that draws out by a groove, and the uppermoſt of paſteboard. Between theſe two bottoms is to be placed a paper dipped in the vivifying liquor mentioned in the laſt experiment. Let there be alſo a board of the ſame ſize with the inſide of the box, which being placed in it may preſs a paper againſt the paſteboard bottom.

Then take ſeveral pieces of paper, of the ſame ſize with the inſide of the box, and draw on them the figures of men and women, in different attitudes and employments, as walking, riding, reading, writing, &c. Theſe figures muſt be drawn with a new pen, or pencil, dipped in the impregnation of ſaturn.

Being thus provided, and having privately placed the paper dipped in the vivifying liquor between the two bottoms, you tell a perſon you will ſhow him what an abſent friend of his is doing at the preſent hour. You then give him the paper adapted to the employment you intend, and tell him to write his friend's name at the bottom, that you may not change the paper. Then placing that paper next the paſteboard bottom, and putting the piece of wood over it, you ſhut the box. After amuſing him with diſcourſe for three or four minutes, you take out the paper, when he will ſee his friend in the employment you have aſſigned him.

18. The artificial hand.

18. Let a workman make a hand of wood, as in fig. 16. fixed at the end next the elbow to the piece E, the ends of which go through the ſcrews CD and EF. The fore and middle fingers, and the thumb, are to be moveable at their joints. There muſt go a wire through the arm, that is fixed at one end to the fore-finger, and at the other to the piece E, round which it is to move: under the two joints of the two fingers are alſo placed two ſmall ſprings, which are to raiſe it up.

To the fore-finger and thumb fix two ſmall rings, through which a pen may be put, ſo as not to impede their motion. Under the arm, at the point I, place a ſmall braſs roller, which ſerves to ſuſtain the arm.

The pedeſtal on which this hand is placed muſt be at leaſt a foot long, if the hand be of the natural ſize, and about eight inches wide. This pedeſtal muſt be hollow, and at the part ST there muſt be an opening about three inches long and two inches wide; the whole pedeſtal may be covered with a thin ſtuff, by which the hole will be concealed. There is to be a valve, or ſort of trap-door, on the inſide of the pedeſtal, which is to faſten againſt the opening.

Over the hand and pedeſtal place a glaſs frame, as in the figure: cover the hand with fine leather of fleſh colour, and decorate the arm with a ruffle and cuff, which will entirely conceal the machinery.

Then take a number of cards, and write on them different queſtions; and on the ſame number of papers write, with the impregnation of lead, the anſwers. Give the cards to any one, and let him chooſe a queſtion; and you place the paper with the anſwer under the pen in the hand, letting him firſt ſee there is no writing on it (e). Now the pedeſtal being placed againſt a partition, the end F is to go through it. Therefore an aſſiſtant, upon a ſignal given, turns a handle fixed to F; and, as piece E turns round, the wires that move the fingers and thumb are alternately lengthened and ſhortened, by which their joints are kept in continual motion; and the ſcrew at the ſame time turning gently from F towards G, gives the whole arm a motion which very much reſembles that of nature (f).

The hand and pen ſerve here merely to aſſiſt the illuſion: but if a bit of ſponge, dipped in the vivifying liquor, be placed at the end of the pen, as it goes

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‡ In that article, line 8. for *invisible* read *viſible*.

(d). If a weight be placed upon the book, the effect will be the ſooner produced. Or you may put the book in a box that will preſs it cloſe down.

(e) The paper dipped in the vivifying liquor is to be previouſly placed againſt the opening in the table, and ſupported by the trap-door.

(f) This might be performed without an aſſiſtant, by means of a trigger placed in the leg of the table, and communicating with the handles, which the operator might thruſt down with his foot. Where expence is not regarded, there may be a complete figure of a man in wood, or plaſter of Paris, ſeated by the table.

over the writing on the paper, it will make it become gradually viſible, and in this caſe the trap-door and and dipped paper may be omitted (G).

Deception with Class II.

19 The writing againſt the wall.

19. Take ſeveral pieces of paper, of a ſize that you can put in any book that will go into your pocket, and write at the top of each of them a queſtion, with common ink, and under it write the anſwer with the ſolution of gold or ſilver. Give any of theſe papers, cloſely wrapt up, to a perſon, and tell him to place it againſt the wall of his chamber, and keeping the door locked he will next day find the anſwer wrote on it.

As the gold ink will ſometimes give a yellow caſt to the paper, you may previouſly give a ſlight tincture of that kind to the papers you uſe for this purpoſe.

Deception with Class III.

20 Magical vegetations.

20. On different papers draw the figures of ſeveral leaves or flowers with one of the colourleſs juices mentioned: then take one of the correſponding leaves or flowers, and laying it on an iron plate, over a chafingdiſh of hot-coals, let it burn to aſhes. Put theſe aſhes into a ſieve, in which there is ſome very fine ſteel-filings, and ſift them over the paper on which the flower is drawn, when they will adhere to the glutinous liquor, and form an exact repreſentation of the figure of the leaf or flower.

Deceptions with Class IV.

21 The taliſman, fig. 7.

21. Make a little triangular box, each ſide of which is to be about five inches, and let its inſide be divided into three parts. The firſt part A, which makes the bottom of the box, is to be covered by the ſecond part B, in form of a caſe, and let the top C exactly cover the part B, as is expreſſed in the figure and the profiles.

Upon the bottom of the box let there be a plate of copper, about one twentieth of an inch thick, on which let there be a number of hieroglyphic characters, contiguous to each other, and cut in different ſorts of metal.

On the top of the cover place a knob O, that goes through it, and to which the copper triangle Q is to be fixed occaſionally, in ſuch manner as it may go into the caſe B. There muſt be a ſpace of one quarter of an inch between the triangle Q, and the bottom of the caſe B; into which another plate of copper, of that thickneſs, may be placed.

The outſide of this taliſman may be decorated with uncommon figures or characters, to give it the appearance of greater myſtery.

On ſeveral pieces of paper, of the ſame ſize with the inſide of the taliſman, write different queſtions, in common ink, and write the anſwers in thoſe different ſorts of ſympathetic ink, that appear when heated, obſerving that each word of the anſwer is to be wrote in a different ink.

Having properly heated the triangle, and placed it under the cover, you introduce the taliſman, and tell any one of the company to chooſe one of the papers on which the queſtions are wrote, and place it in the taliſman, and he will immediately have an anſwer wrote on that paper, the words of which will be of different colours, according to the different metals of which the taliſman is compoſed. The paper being placed in the taliſman, and the cover placed over it, the heat of the triangle will make the anſwer viſible in a few moments. This experiment may be repeated if the triangle be made ſufficiently hot; and two papers may be placed in the taliſman at the ſame time.

This deception, when well executed, occaſions a ſurpriſe that cannot be conceived by a mere deſcription.

22. Make a wooden pedeſtal AB, about ten inches long, eight wide, and one deep: and at one end erect a box C, about ten inches high, eight broad, and two and a half deep.

The top of the pedeſtal muſt ſlide in a groove, on which inſcribe a dial M, of ſix inches diameter, and which is to be divided into nineteen equal parts, in twelve of which write the names of the months, and mark the reſpective ſigns of the zodiack; and in the ſeven other diviſions, which muſt be next the end B, write the days of the week, and mark the figures of the planets. Next the inner circle NO, make an opening into the box, of about one tenth of an inch. On the centre of the dial place an index that turns freely on its centre.

Within the pedeſtal place a pulley P, about four inches diameter, which is to turn on an axis that is directly under the centre of the dial; and on the upper part of that axis fix a bent index R, which comes out at the opening made by the inner circle (H), and paſſes over thoſe ſeven diviſions only on which are wrote the days of the week.

Within the box C, let there be two rollers S and T, as in the figure: let that of S contain a ſpring; and at the end of T let there be a pulley V, of three quarters of an inch diameter, round which goes a ſtring or thread that paſſes under the ſmall pully X, and is faſtened to that of P: ſo that when the laſt pully makes about one-third of a turn, that of V may make three or four turns.

There muſt alſo be a ſcroll of paper, about two feet long, and each end of which muſt be paſted to one of the rollers. In the front of the box, between the two rollers, make an aperture D, about four inches long, and one inch and a half wide: to this opening let there be a little flap or ſlider, by which it may be cloſed at pleaſure.

The apparatus being thus diſpoſed, place the index R ſucceſſively againſt each of the diviſions marked with one of the planets; and as the paper is gradually wound up the roller, mark, againſt that part which is at the aperture D, the name of one of the following ſibyls:

The Helleſpontian }
Cumean }
Artemiſian } ſibyl.
Phrygian }
Albunean }
Perſian }
Libyan. }

On

(G) You may alſo have a glaſs ink-ſtand, with ſome of the vivifying liquor, into which the pen may be dipped, and it will then appear to write with common ink. The ſpectators ſhould not be permitted to come very near this machine, which may be applied to ſeveral other purpoſes.

(H) If the axis be made to paſs through the top of the pedeſtal, this opening will not be neceſſary.

On each of the ſeven cards write a different queſtion, and draw one of the ſeven planets. Next, take a memorandum-book that contains ſeven leaves, and on each of them write the name of one of the foregoing ſibyls; in each of the leaves place ſeveral pieces of paper, and on each of them write, with the ſympathetic ink that does not appear till the paper is heated, different anſwers to the ſame queſtion.

Then give a perſon the ſeven cards on which the queſtions are wrote, and tell him to chooſe one of them privately, and conceal the reſt, ſo that it cannot poſſibly be known which of them he has choſen.

Next, tell him to place the index that points to the month againſt that in which he was born (I), and to place the index of the planets againſt that which is on the card he has choſen, and which is to preſide over the anſwer: you tell him to do this privately, that no one may ſee him, and after that to cover the dial with his handkerchief. Then let him open the door that is before the aperture in the box, and tell you the name of the ſibyl there viſible.

You then open the memorandum-book, and taking out the papers that are in the leaf where the name of the ſibyl juſt mentioned is wrote, you deſire him to chooſe any one of them he thinks proper. The taliſman uſed in the laſt experiment being properly heated, is then to be introduced, when you direct the perſon to put the blank paper into it; and taking it out a few moments after, he will find the anſwer to his queſtion.

To make this operation appear the more extraordinary, it will be proper to have a ſmall preſs or cupboard, at the back of which there is a door that opens into an adjoining room, by which means an aſſiſtant having prepared the taliſman may place it in the cupboard the moment before it is wanted. This contrivance will be uſeful on many other occaſions.

23 magic

22. PROVIDE an urn of wood or metal about ſix inches high, and two and a half diameter in the wideſt part, and of ſuch figure in other reſpects as you think proper (ſee fig. 9.) Let there be a cylinder of copper C, (fig. 10.) of about one-eighth of an inch diameter, which is to fill a hole AB, made in the urn. The top of this cylinder is to be in the top of the urn, ſo that it may be eaſily taken out. To this urn there muſt be a cover D, which fits it exactly.

On a ſmall ſquare piece of paper draw the figure of a flower or leaf, with that ſort of ſympathetic ink whoſe colour moſt reſembles it. You then preſent ſeveral ſorts of flowers or leaves to a perſon, and deſire him to chooſe any one of them. Then put that flower on a chafingdiſh of hot coals; and, taking the paper on which it is ſecretly drawn, you give it to the perſon to examine, and then put it in the urn, having previouſly heated the cylinder (K). Then taking ſome of the aſhes of the burnt flower, you ſtrew them over the paper, after which you take it out and ſhew the company the figure of that flower. While the flower is burning you may ſprinkle ſome powder over it, ſuppoſe that of ſaltpetre; and by that, mixed with the aſhes of the flower, the company may imagine the effect is produced.

The preſs or cupboard mentioned in the preceding experiment will be here very convenient for heating the cylinder and placing it in the urn. A ſimilar deception may be performed by putting the paper in a copper veſſel, that may be placed on an iron plate over the chafingdiſh in which the flower is burnt. But this method has not ſo myſterious an appearance as the other, and in ſome perſons may cauſe a ſuſpicion that the effect is produced by heat.

24 The convertible cards.

24. To perform this experiment you muſt obſerve, that there are ſeveral letters which may be changed into others, without any appearance of the alteration; as, the *a* into *d*, the *c* into *a*, *e*, *d*, *g*, *o*, or *q*, the *i* into *b*, *d*, or *l*, the *l* into *t*, the *o* into *a*, *d*, *g*, or *q*, the *v* into *y*, &c.

Take a parcel of cards, ſuppoſe 20, and on one of them write, with the ink of the fourth claſs, the word *law* (L), and on the other, with the ſame ink, the words *old woman*; then holding them to the fire, they will both become viſible. Now you will obſerve, that by altering the *a* in the word *law* into *d*, and adding *o* before the *l*, and *oman* after the *w*, it becomes *old woman*. Therefore, you make thoſe alterations with the inviſible ink, and let it remain ſo. On the reſt of the cards you write any words you think fit.

Preſent the cards in ſuch a manner to two perſons, that one of them ſhall draw the word *law*, and the other the words *old woman*. You then tell the perſon who drew the word *law*, that it ſhall diſappear, and the words on the other card ſhall be wrote in its place; and that you may not change the cards, deſire each of the parties to write his name on his card. Then putting the cards together, and holding them before the fire, as if to dry the names juſt wrote, the word *law* will preſently change into *old woman*.

This experiment may be varied by fixing on a word that may be changed into three other words, and making four perſons draw the cards on which thoſe words are wrote; and it may be further diverſified by chooſing three ſuch words, as that the firſt can be changed into the ſecond, and the ſecond into the third. You then tell him who drew the firſt word, that it ſhall be changed into that drawn by the ſecond perſon; and him you tell, that his word ſhall be changed into that of the third perſon.

25 The oracular letters.

25. Write on ſeveral ſlips of paper different queſtions, and ſuch as may be anſwered by the name of ſome perſon; for example, Who is the merrieſt man in the company? Anſwer, Mr * * *. To whom will Miſs * * * be married? Anſwer, To Mr * * *. Theſe queſtions are to be wrote in the ſympathetic ink of this claſs, and expoſed to the fire, and the anſwers wrote in the ſame ink, and left inviſible. The papers are to be folded in form of letters, and in ſuch manner that the part where the name is wrote ſhall be directly under the ſeal, and the heat of the wax will make it viſible. Then give the letter to the perſon who requires the anſwer, and he will find it plainly wrote.

A deception ſimilar to this may be made with a num-

(I) Theſe months and the index are of no other uſe than to give the experiment an air of greater myſtery.

(K) There are ſome ſorts of ſympathetic inks that require much more heat than others.

(L) Theſe letters ſhould not be joined.

number of blank cards, on each of which an ace of ſpades is drawn with the inviſible ink; then let a perſon chooſe any one of them, and incloſe it in a letter-caſe, prepared in ſuch manner that the figure of the ace ſhall be directly under the ſeal, and on opening the letter it will be immediately viſible.

Deceptions with Class V.

26 The incomprehenſible writing.

26. Have a box that is divided into three parts, after the ſame manner as the taliſman in the 21ſt experiment, except that inſtead of being triangular, it muſt be of a long ſquare (ſee fig. 14.) Divide its top B into two equal parts D and E, as in fig. 13. and to the part D adjuſt a plate of copper L, about one quarter of an inch thick, and under both the plate L and the opening E place a cloth. The upper part C muſt have a button by which it may be fixed on the cover B, ſo as to appear of one piece with it.

At the bottom of the box place a piece of cloth, or other ſtuff, on which you may ſtamp certain myſterious characters, and obſerve that the bottom of the cover muſt reſt upon this cloth.

Then provide a ſlip of paper G H (fig. 12.) of the ſame ſize with the bottom of the box; and at each end of it write, with the green ſympathetic ink, the name of a different card, and make ſome private mark by which you can tell at which end each name is wrote (n).

Take a parcel of cards, and offer thoſe two of them whoſe names are wrote on the paper to the two perſons, that they may draw them. You tell the parties to keep their cards to themſelves, and you propoſe to make the names of thoſe cards appear upon a ſlip of paper, which you put into the box. You then aſk which name of the two cards ſhall appear firſt. The copper plate being previouſly heated and placed in the cover, you put it over that end of the paper on which is the name required, and it will preſently appear. Then taking the paper out and ſhowing the name wrote, you put it in again, turning the other end to the ſide of the box where the plate is, and it will in like manner become viſible.

The firſt name may be made to diſappear at the ſame time that the ſecond appears, if the cloth at the end oppoſite to that where the plate is be made damp.

27 Winter changed into ſpring.

27. Take a print that repreſents winter, and trace over the proper parts of the trees, plants, and ground, with the green ſympathetic ink; obſerving to make ſome parts deeper than others, according to their diſtance. When thoſe parts are dry, paint the other objects with their natural colours. Then put the print in a frame with a glaſs, and cover the back of it with a paper that is paſted over its border only.

When this print is expoſed to the heat of a moderate fire, or to the warm rays of the ſun, all the graſs and foliage will turn to a pleaſing green; and if a yellow tint be given to ſome parts of the print, before the ſympathetic ink be drawn over, this green will be of different ſhades; and the ſcene that a minute before repreſented winter, will now be changed to ſpring. When this print is placed in the cold, winter will again appear, and will again be driven away by the warm rays of the ſun. This alternate change of ſeaſons may be repeated as often as you pleaſe; remembering, however, as was before obſerved, not to make the print at any time too hot, for then a faded autumn will for ever remain.

Deceptions with Class VII.

28 The re fied bo quets.

28. Provide a number of artificial flowers, ſuch as roſes, jonquils, pinks, or any other you find convenient. Theſe flowers muſt be made of white thread or ſilk, and their leaves of parchment. Dip the roſes in the red ſympathetic ink, the jonquils in the yellow, the pinks in the violet, and their leaves in a ſolution of ſalt of tartar. When they are all dry, form them into ſmall bouquets, which will all appear white, and may be uſed in this experiment, either the day they are dipped, or ſeveral days after.

You take one of theſe bouquets, and after ſhowing the company that every part of it is white, you dip it in an infuſion of any of the blue flowers mentioned under the article Colour-*Making*, n° 13. and, drawing it preſently out, all the flowers and leaves will appear in their natural colours (n).

29 The t ſcolor writin

29. Write on a paper, with the violet liquor, as many letters or words as you pleaſe; and aſk any perſon whether he will have that writing turn to yellow, green, or red.

Have a ſponge with three ſides that you can readily diſtinguiſh, and dip each of its ſides in one of the three ſympathetic inks. Draw the ſide of the ſponge that correſponds to the colour the perſon has choſe, over the writing once only; and it will directly change to the colour required (o).

Sect. III. *Miſcellaneous Performances.*

3 To tel or eve

30. *A perſon having an even unmber of counters in one hand, and an odd number in the other, to tell in which hand the odd or even number is.* Let the perſon multiply the number in his right-hand by an odd number, and the number in his left-hand by an even number, and tell you if the ſum of the products added together be odd or even. If it be even, the even number is in the right hand; but if it be odd, the even number is in the left hand.

Example.

1 Number in the right hand }	18	In the left	7
Multipliers	3		2
	54		14
	14		
Their ſum	68		

2 Num-

(m) That there may be no ſuſpicion of the papers being prepared, you may cut it from a whole ſheet, before the company, having previouſly wrote the names.

(n) The liquor ſhould be put in a ſort of jar with a narrow neck, that it may not be ſeen by the company; and you ſhould draw the flowers gently out, that the liquor may drop if thin, and they may have time to acquire their colours.

(o) The ſponge ſhould be well cleaned immediately after the experiment.

2 Number in the right hand } 7 In the left 18
Multipliers 3 2

21 36
36

Their ſum 57

31 ll at hour erſon ds to

31. *To tell, by the dial of a watch, at what hour any perſon intends to riſe.* LET the perſon ſet the hand of the dial to any hour he pleaſes, and tell you what hour that is; and to the number of that hour you add, in your mind, 12. Then tell him to count privately the number of that amount upon the dial, beginning with the next hour to that on which he propoſes to riſe, and counting backwards, firſt reckoning the number of the hour at which he has placed the hand. An example will make this plain.

Suppoſe the hour at which he intends to riſe be 8, and that he has placed the hand at 5. You add 12 to 5, and tell him to count 17 on the dial, firſt reckoning 5, the hour at which the index ſtands, and counting backwards from the hour at which he intends to riſe; and the number 17 will neceſſarily end at 8, which ſhews that to be the hour he choſe.

That the hour at which the counting ends muſt be that on which he propoſed to riſe, will be evident on a little reflection; for if he had began at that hour and counted 12, he would neceſſarily have come to it again; and calling the number 17, by adding 5 to it, only ſerves to diſguiſe the matter, but can make no ſort of difference in the counting.

agi- ury.

32. IF the number 11 be multiplied by any one of the nine digits, the two figures of the product will always be ſimilar. As follows:

11	11	11	11	11	11	11	11	11
1	2	3	4	5	6	7	8	9
11	22	33	44	55	66	77	88	99

Place a parcel of counters on a table, and propoſe to any one to add, alternately, a certain number of thoſe counters, till they amount to 100, but never to add more than 10 at a time. You tell him, moreover, that, if you ſtake firſt, he ſhall never make the even century, but you will. In order to which, you muſt firſt ſtake 1, and remembering the order of the above ſeries, 11, 22, 33, &c. you conſtantly add, to what he ſtakes, as many as will make one more than the numbers of that ſeries, that is, as will make 12, 23, 34, &c. till you come to 89, after which the other party cannot make the century himſelf, nor prevent you from making it.

If the other party has no knowledge of numbers, you may ſtake any other number firſt, under ten, provided you take care to ſecure ſome one of the laſt terms, as 56, 67, 78, &c.

This deception may be performed with other numbers; and in order to ſucceed, you muſt divide the number to be attained, by a number that has one digit more than what you can ſtake each time, and the remainder will be the number you muſt firſt ſtake. Obſerve, that, to be ſure of ſucceſs, there muſt be always a remainder. Suppoſe, for example, the number to be attained is 52, making uſe of a pack of cards inſtead of counters, and that you are never to add more than 6; then divide 52 by the next number above 6, that is, by 7, and the remainder, which is 3, will be the number you muſt ſtake firſt; and whatever the other ſtakes, you muſt add as much to it as will make it equal to the number by which you divided, that is, 7. Therefore, if his firſt ſtake be 1, you muſt ſtake 6, &c. ſo that your ſecond ſtake will make the heap 10, your third ſtake will make it 17, and ſo on, till you come to 45, when, as he cannot ſtake more than 6, you muſt make the number 52.

In this, as in the former caſe, if the other perſon has no knowledge of numbers, you may ſtake any number firſt under 7; or you may let him ſtake firſt, only taking care to ſecure either of the numbers 10, 17, 24, 31, &c. after which he cannot make 52, if you conſtantly add as many to his ſtake as will make it 7.

33 To tell what number a perſon privately fixes on.

33. *A perſon privately fixing on any number, to tell him that number.* AFTER the perſon has fixed on a number, bid him double it and add 4 to that ſum, then multiply the whole by 5; to the product let him add 12, and multiply the amount by 10. From the ſum of the whole let him deduct 320, and tell you the remainder; from which if you cut off the two laſt figures, the number that remains will be that fixed on.

Example.

Let the number choſe be - -	7
Which doubled is - - -	14
And 4 added to it, makes - -	18
Which multiplied by 5, gives - -	90
To which 12 being added, it is -	102
That multiplied by 10, makes - -	1020
From which deducting 320, the remainder is	700
And by ſtriking off the two ciphers, it becomes the original number - -	7

34 To tell the number of points thrown up by 3 dice, without ſeeing them.

34. *Three dice being thrown on a table, to tell the number of each of them, and the order in which they ſtand.* LET the perſon who has thrown the dice double the number of that next his left hand, and add 5 to that ſum; then multiply the amount by 5, and to the product add the number of the middle die; then let the whole be multiplied by 10, and to that product add the number of the third die. From the total let there be ſubtracted 250, and the figures of the number that remains will anſwer to the points of the three dice as they ſtand on the table.

Example.

Suppoſe the points of the three dice thrown on the table to be 4, 6, and 2,

Then the double of the firſt die will be -	8
To which add - - -	5
	13
	5
That ſum multiplied by 5 will be -	65
To which add the number of the middle die	6
	71
And multiply the ſum by	10
	710
To that product add the number of the third die	2

From

From the total	712
Subtract	250
And the three remaining figures	264

will anſwer to the numbers on the dice, and ſhew the order in which they ſtand.

35 To tell on what finger, joint, &c. a ring has been privately put.

35. *Some perſon in company having put a ring privately on one of his fingers; to name the perſon, the hand, the finger, and the joint, on which it is placed.* Let a third perſon double the number of the order in which he ſtands who has the ring, and add 5 to that number; then multiply that ſum by 5, and to the product add 10. Let him next add 1 to the laſt number if the ring be on the right hand, and 2 if on the left, and multiply the whole by 10: to this product he muſt add the number of the finger (counting the thumb as the firſt finger), and multiply the whole again by 10. Let him then add the number of the joint; and, laſtly, to the whole join 35.

He is then to tell you the amount of the whole, from which you are to ſubtract 3535, and the remainder will conſiſt of four figures, the firſt of which will expreſs the rank in which the perſon ſtands, the ſecond the hand, (the number 1 ſignifying the right hand, and 2 the left) the third number the finger, and the fourth the joint.

Example.

Suppoſe the perſon who ſtands the third in order has put the ring upon the ſecond joint of the thumb of his left hand; then

The double of the rank of the third perſon is	6
To which add	5
	11
Multiply the ſum by	5
	55
To which add	10
And the number of the left hand	2
	67
Which being multiplied by	10
	670
To which add the number of the thumb	1
	671
And multiply again by	10
	6710
Then add the number of the joint	2
And laſtly the number	35
	6747
From which deducting	3535
The remainder is	3212

Of which, as we have ſaid, the 3 denotes the third perſon, the 2 the left hand, the 1 the thumb, and the laſt 2 the ſecond joint.

36 The burnt writing reſtored.

36. Cover the outſide of a ſmall memorandum-book with black paper, and in one of its inſide covers make a flap, to open ſecretly, and obſerve there muſt be nothing over the flap but the black paper that covers the book.

Mix ſoot with black or brown ſoap, with which rub the ſide of the black paper next the flap; then wipe it quite clean, ſo that a white paper preſſed againſt it will not receive any mark.

Provide a black-lead pencil that will not mark without preſſing hard on the paper. Have likewiſe a ſmall box, about the ſize of the memorandum-book, and that opens on both ſides, but on one of them by a private method. Give a perſon the pencil, and a ſlip of thin paper, on which he is to write what he thinks proper: you preſent him the memorandum-book at the ſame time, that he may not write on the bare board. You tell him to keep what he writes to himſelf, and direct him to burn it on an iron plate laid on a chafingdiſh of coals, and give you the aſhes. You then go into another room to fetch your magic box above deſcribed, and take with you the memorandum-book.

Having previouſly placed a paper under the flap in the cover of the book, when he preſſes hard with the pencil, to write on the paper, every ſtroke, by means of the ſtuff rubbed on the black paper, will appear on that under the flap. You therefore take it out, and put put it into one ſide of the box.

You then return to the other room, and taking a ſlip of blank paper, you put it into the other ſide of the box, ſtrewing the aſhes of the burnt paper over it. Then ſhaking the box for a few moments, and at the ſame time turning it dexterouſly over, you open the other ſide, and ſhew the perſon the paper you firſt put in, the writing on which he will readily acknowledge to be his.

37. Take two guineas and two ſhillings, and grind part of them away, on one ſide only, ſo that they may be but of half the common thickneſs; and obſerve that they muſt be quite thin at the edge: then rivet a guinea and a ſhilling together. Lay one of theſe double pieces, with the ſhilling upwards, on the palm of your hand, at the bottom of your three firſt fingers; and lay the other piece, with the guinea upward, in like manner, in the other hand. Let the company take notice in which hand is the guinea, and in which the ſhilling. Then as you ſhut your hands, you naturally turn the pieces over; and when you open them again, the ſhilling and the guinea will appear to have changed their places.

38. Provide a round tin box, of the ſize of a large ſnuff-box; and in this place eight other boxes, which will go eaſily into each other, and let the leaſt of them be of a ſize to hold a guinea. Each of theſe boxes ſhould ſhut with a hinge; and to the leaſt of them there muſt be a ſmall lock, that is faſtened with a ſpring, but cannot be opened without a key: and obſerve that all theſe boxes muſt ſhut ſo freely, that they may be all cloſed at once. Place theſe boxes in each other, with their tops open, in the drawer of the table on which you make your experiments; or, if you pleaſe, in your pocket, in ſuch a manner that they cannot be diſplaced.

Then aſk a perſon to lend you a new guinea, and deſire him to mark it, that it may not be changed. You take this piece in one hand, and in the other you have another of the ſame appearance; and putting your hand in the drawer you ſlip the piece that is marked into the leaſt box, and, ſhutting them all at once, you take them out. Then ſhowing the piece you have in your hand, and which the company ſuppoſe to be the ſame that was marked, you pretend to make it paſs through the box, and dexterouſly convey it away.

You then preſent the box, for the ſpectators do not yet know there are more than one, to any perſon in company; who, when he opens it, finds another, and another, till he comes to the laſt, but that he cannot open without the key, which you then give him, and retiring to a diſtant part of the room, you tell him to take out the guinea himſelf, and ſee if it be that he marked.

This deception may be made more ſurpriſing, by putting the key into the ſnuff-box of one of the company; which you may do by aſking him for a pinch of his ſnuff, and at the ſame time conceal the key, which muſt be very ſmall, among the ſnuff: and when the perſon who is to open the box aſks for the key, you tell him that one of the company has it in his ſnuff-box. This part of the deception may likewiſe be performed by means of a confederate.

9 ſuſci- flower

39. Provide a ſmall tin mortar, that is double, as A, (fig. 8.) whoſe bottom B turns round on an axis, by means of a ſpring which communicates with the piece C. There muſt be a hollow ſpace under the falſe bottom. To the under-ſide of the bottom faſten, by a thread of fine ſilk, a flower, with its ſtalk and leaves.

Then take a flower that exactly reſembles the other, and plucking it from the ſtalk, and all the leaves from each other, put them into the mortar, and pound them with a ſmall peſtle; after which you ſhow the mortar to the company, that they may ſee the parts are all bruiſed.

Then taking the mortar up in your hands, you hold it over the flame of a lamp or candle, by whoſe warmth the flower is ſuppoſed to be reſtored; and at the ſame time preſſing the piece at C, the bottom will turn round, the bruiſed parts deſcend into the ſpace under the bottom, and the whole flower will be at top: you then put your hand into the mortar, and eaſily breaking the ſilk thread, which may be very ſhort as well as fine, you take the flower out and preſent it to the company.

There is an experiment ſimilar to this, in which a live bird is concealed at the bottom of the mortar, and one that is dead is pounded in it; after which, by the motion of the bottom, the live bird is ſet at liberty. But ſurely the pounding a bird in a mortar, though it be dead, muſt produce, in perſons of any delicacy, more diſguſt than entertainment.

mi- racle.

40. Procure a tin box ABCD, (fig. 1.) about eight inches high, four wide, and two deep, and let it be fixed on the wooden ſtand E. On two of the inſides let there be a groove FG; and in the front an opening I, three inches wide and one high.

At the back of the box let there be a little tin door, that opens outward, by which two wax-candles M may be put in. Let the top of the box have a cover of the ſame metal, in which there are ſeveral holes, and which may be taken off at pleaſure.

Provide a double glaſs OP, (fig. 2.) conſtructed in the ſame manner as that in the laſt experiment. On one of its ſides you are to paſte a black paper, the length of which is to be divided into three parts, and the breadth into fifteen: in every two of theſe fifteen diviſions you cut out letters, which will make in the whole three anſwers, to three queſtions that may be propoſed. On the other ſide of the glaſs paſte a very thin paper, and to the top faſten a ſmall cord, by which they may be made to riſe or deſcend in the groove FG.

Then take a ſlip of paſteboard RS, (fig. 3.) one inch and a half wide and three inches long, which is to be divided into fifteen equal parts ſimilar to thoſe of the paper OP, and cut out ſpaces, as in the figure, ſo that this paper, ſliding horizontally before OP, will either cover or conceal the letters cut in that.

This paſteboard is to ſlide between two braſs wires, and is to be faſtened to one ſide of the box, by a ſtring that communicates with a ſmall braſs ſpring; and to the other ſide, by a ſtring faſtened to the box by a ſmall piece of wax, ſo ſituate that the ſtring may be eaſily ſet at liberty by the heat of the candles placed in the box.

Take a parcel of cards, and write on them different queſtions, three of which are to correſpond with the anſwers on the glaſs. Shuffle theſe cards, and let a perſon draw any one of the three queſtions. Then by raiſing the glaſs you bring the anſwer againſt the hole in the front in the box. You next place the candles in the box, the heat of which will melt the wax that holds the paper RS, which being then drawn by the ſpring the anſwer will be viſible, and in proportion as the compoſition between the glaſſes becomes diluted by the increaſe of the heat, the letters will become more ſtrongly illuminated.

The letters cut in the paper may be made to anſwer ſeveral different queſtions, as has been explained in other experiments; and the whole parcel of cards may conſiſt of queſtions that may be anſwered by one or other of the three diviſions in the paper.

41 A flower produced from its aſhes.

30. Make a tin box ABCD, (fig. 4.) with a cover M, that takes off. Let this box be ſupported by the pedeſtal FGHI, of the ſame metal, and on which there is a little door L. In the front of this box is to be a glaſs, O.

In a groove, at a ſmall diſtance from O, place a double glaſs of the ſame ſort with that in the laſt experiment. Between the front and back glaſſes place a ſmall upright tin tube ſupported by the croſs-piece R. Let there be alſo a ſmall chafingdiſh placed in the pedeſtal FGHI. The box is to be open behind. You privately place a flower (Q) in the tin tube R; and preſenting one that reſembles it to any perſon (R), deſire him to burn it on the coals in the chafingdiſh.

You then ſtrew ſome powder over the coals, which may be ſuppoſed to aid the aſhes in producing the flower; and then put the chafingdiſh in the pedeſtal, under the box. As the heat by degrees melts the compoſition between the glaſſes, the flower will gradually ap-

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(Q) This flower muſt not be placed ſo near the front glaſs, as to make it in the leaſt degree viſible.

(R) You may preſent ſeveral flowers, and let the perſon chooſe any one of them. In this caſe, while he is burning the flower, you fetch the box from another apartment, and at the ſame time put in a correſponding flower, which will make the experiment ſtill more ſurpriſing.

appear; but when the chaſingdiſh is taken away, and the power of the aſhes is ſuppoſed to be removed, the flower ſoon diſappears.

For entertaining experiments, illuſions, &c. of a philoſophical nature, ſee ACOUSTICS, CATOPTRICS, CHROMATICS, DIOPTRICS, ELECTRICITY, HYDROSTATICS, MAGNETISM, MECHANICS, PYROTECHNICS, &c.

LEGER-LINE, in muſic, one added to the ſtaff of five lines, when the aſcending or deſcending notes run very high or low: there are ſometimes many of theſe lines both above and below the ſtaff, to the number of four or five.

LEGHORN, anciently called *Liburnus Portus*, but by the modern Italians *Livorno*, a handſome town of Italy, in the duchy of Tuſcany, and a free port, about 30 miles ſouth-weſt from Florence, in the territory of Piſa. The only defect of the harbour is its being too ſhallow for large ſhips. Coſmo I. had this town in exchange for Sarzana, from the Genoeſe; and it is the only ſea-port in the duchy. It was then but a mean, unhealthy place; but is now very handſome, and well-built, with broad, ſtraight, parallel ſtreets. It is alſo well fortified; but wants good water, which muſt be brought from Piſa. The port, conſiſting of two havens, one for the duke's galleys, and the other for merchant ſhips, is ſurrounded with a double mole, above a mile and a half in length, and defended, together with the town, by a good citadel and 12 forts. Roman Catholics, Jews, Greeks, Armenians, Mahometans, and even the Engliſh factory, are indulged in the public exerciſe of their religion; but other Proteſtants muſt be ſatisfied with the private. The trade carried on here is very great, and moſt of it paſſes thro' the hands of the Jews. Though only two piaſtres, or ſcudi, are paid for every bale, great or ſmall, imported or exported, yet the duties on all proviſions and commodities brought from the continent to the town are very heavy. The number of the inhabitants is ſaid to be about 40,000; and one half of theſe are Jews, who live in a particular quarter, but without any mark of diſtinction, and have a fine ſynagogue. The walks on the ramparts are very agreeable. There is good anchorage in the road; but ſhips riding there are much expoſed to the weather and the Barbary corſairs. The number of Engliſh families in Leghorn are about 36; they are much favoured by the government, and carry on a good trade. The power of the inquiſition is limited to eccleſiaſtical matters, and Roman Catholics. There are a great many Turkiſh ſlaves here, brought in by the duke's galleys, who are often ſent out on a cruize againſt the corſairs of Barbary. The light-houſe ſtands on a rock in the ſea; near which is the Lazaretto, where quarentine is performed. Another ſource, from which the duke draws a great revenue, is the monopoly of brandy, tobacco, and ſalt; but that, with the heavy duties, makes proviſions dear. The Turks who are not ſlaves, live in a particular quarter, near that of the Jews. The common proſtitutes alſo have a particular place aſſigned them, out of which they muſt not be ſeen, without leave from the commiſſary. The number of the rowers in the galleys, whether Turkiſh ſlaves, criminals, or volunteers, are about 2000. In the area before the darſena, or inner harbour, is a fine ſtatute of duke Ferdinand, with four Turkiſh ſlaves, in bronze, chained to the pedeſtal. The ducal palace is one of the fineſt ſtructures in the town, and the ordinary reſidence of the governor. Leghorn is the ſee of a biſhop, and has a noble cathedral; but the other churches are not remarkable. E. Long. 11. 0. N. Lat. 43. 30.

LEGION, in Roman antiquity, a body of foot which conſiſted of ten cohorts. The word comes from the Latin *legere*, to chooſe; becauſe, when the legions were raiſed, they made choice of ſuch of their youth as were moſt proper to bear arms.

The exact number contained in a legion was fixed by Romulus at 3000; though Plutarch aſſures us, that, after the reception of the Sabines into Rome, he increaſed it to 600. The common number afterwards in the firſt times of the free ſtate was 4000; but in the war with Hannibal it roſe to 5000; and after that it is probable that it ſunk again to 4000, or 4200, which was the number in the time of Polybius.

They borrowed their names from the order in which they were raiſed, as *prima*, *ſecunda*, *tertia*; but bebecauſe it uſually happened that there were ſeveral primæ, ſecundæ, &c. in ſeveral places, they, on that account, took a ſort of ſurname beſides, either from the emperors who firſt conſtituted them, as Auguſta, Claudiana, Galbiana; or from the provinces which had been conquered chiefly by their valour, as Parthica, Scythica, Gallica, &c. or from the names of the particular deities for whom their commanders had an eſpecial honour, as Minervia and Apollinaris; or from the region where they had their quarters, as Cretenſis, Cyrenaica, Britannica, &c. or ſometimes upon account of leſſer accidents, as Ajutrix, Martia, Fulminatrix, Rapax, &c.

LEGISLATOR, a lawgiver, or perſon who eſtabliſhes the polity and laws of a ſtate. Such was Moſes, among the Jews; Lycurgus, among the Lacedæmonians, &c.

LEGITIMATION, an act whereby illegitimate children are rendered legitimate. See BASTARD.

LEGITIME, in Scots law, that ſhare of the moveable effects belonging to a huſband and wife, which upon the huſband's death falls to the children.

LEGUMEN, a POD; a ſpecies of ſeed-veſſel which has two valves or external openings incloſing a number of ſeeds that are faſtened along one ſuture only. In this laſt circumſtance the ſeed-veſſel in queſtion differs from that termed by botaniſts *ſiliqua*, in which the incloſed ſeeds are faſtened alternately to both the ſutures or joinings of the pod.

The ſeed-veſſel of all the pea-bloom or butterfly-ſhaped flowers, the *diadelphia* of Linneus, is of this pod-kind. Such, for inſtance, is the ſeed-veſſel of the pea, vetch, lupine, and broom.

LEGUMINOUS, an appellation given to all plants whoſe fruit is a legumen.

LEIBNITZ (Godefroy-William de), an eminent mathematician and philoſopher, was born at Leipſic in Saxony in 1646. At the age of 15 years, he applied himſelf to mathematics at Leipſic and Jena; and in 1663, maintained a theſis *de Principiis Individuationis*.

The year following he was admitted maſter of arts. He read with great attention the Greek philoſophers; and endeavoured to reconcile Plato with Ariſtotle, as he afterwards did Ariſtotle with Des Cartes. But the ſtudy of the law was his principal view; in which faculty he was admitted bachelor in 1665. The year following he would have taken the degree of doctor; but was refuſed it on pretence that he was too young, though in reality becauſe he had raiſed himſelf ſeveral enemies by rejecting the principles of Ariſtotle and the ſchoolmen. Upon this he went to Altorf, where he maintained a theſis *de Caſibus Perplexis*, with ſuch applauſe, that he had the degree of doctor conferred on him. He might have ſettled to great advantage at Paris; but as it would have been neceſſary to have embraced the Roman Catholic religion, he refuſed all offers. In 1673, he went to England; where he became acquainted with Mr Oldenburg, ſecretary of the royal ſociety, and Mr John Collins, fellow of that ſociety. In 1676, he returned to England, and thence went into Holland, in order to proceed to Hanover, where he propoſed to ſettle. Upon his arrival there, he applied himſelf to enrich the duke's library with the beſt books of all kinds. The duke dying in 1679, his ſucceſſor Erneſt Auguſtus, then biſhop of Oſnaburgh, ſhewed our author the ſame favour as his predeceſſor had done, and ordered him to write the hiſtory of the houſe of Brunſwic. He undertook it, and travelled over Germany and Italy in order to collect materials. The elector of Brandenburgh, afterward king of Pruſſia, founded an academy at Berlin by his advice; and he was appointed perpetual preſident, though his affairs would not permit him to reſide conſtantly at Berlin. He projected an academy of the ſame kind at Dreſden; and this deſign would have been executed, if it had not been prevented by the confuſions in Poland. He was engaged likewiſe in a ſcheme for an univerſal language. His writings had long before made him famous over all Europe. Beſide the office of privy-counſellor of juſtice, which the elector of Hanover had given him, the emperor appointed him in 1711 aulic counſellor; and the czar made him privy-counſellor of juſtice, with a penſion of 1000 ducats. He undertook at the ſame time the eſtabliſhment of an academy of ſcience at Vienna; but the plague prevented the execution of it. However, the emperor, as a mark of his favour, ſettled a penſion on him of 2000 florins, and promiſed him another of 4000 if he would come and reſide at Vienna. He would have complied with this offer, but he was prevented by death in 1716. His memory was ſo ſtrong, that in order to fix any thing in it, he had no more to do but to write it once; and he could even in his old age repeat Virgil exactly. He profeſſed the Lutheran religion, but never went to ſermon; and upon his death-bed, his coachman, who was his favourite ſervant, deſiring him to ſend for a miniſter, he refuſed, ſaying, *he had no need of one.* Mr Locke and Mr Molyneux plainly ſeem to think that he was not ſo great a man as he had the reputation of being: and, in truth, many of his metaphyſical notions are quite unintelligible. Foreigners did for ſome time aſcribe to him the honour of an invention, of which he received the firſt hints from Sir Iſaac Newton's letters, who had diſcovered the method of fluxions in 1664 and 1665. But it would be tedious to give the reader a detail of the diſpute concerning the right to that invention.

Leiceſter.

LEICESTER, the capital of a county of the ſame name in England, upon the river Leire, now called *Soare.* From its ſituation on the Foſſe-way, and the many coins and antiquities diſcovered here, it ſeems probable that it was a place of ſome note in the time of the Romans. In the time of the Saxons it was a biſhop's ſee, and afterwards ſo repaired and fortified by Edelflida, that it became, according to Matthew Paris, a moſt wealthy place, having 32 pariſh-churches: but in Henry the Second's reign it was in a manner quite ruined, for joining in rebellion againſt him with Robert earl of Leiceſter. In the reign of Edward III. however, it began to recover, by the favour of his ſon Henry Plantagenet, duke and earl of Lancaſter, who founded and endowed a collegiate church and hoſpital here. It is a borough and corporation, governed by a mayor, recorder, ſteward, bailiff, 24 aldermen, 48 common-council men, a ſolicitor, a town-clerk, and two chamberlains. It had its firſt charter from king John. The freemen are exempt from paying toll in all the fairs and markets of England. It has three hoſpitals; that mentioned above, built by Henry Plantagenet duke of Lancaſter, and capable of ſupporting 100 aged people decently; another erected and endowed in the reign of Henry VIII. for 12 poor lazars; and another for ſix poor widows. The caſtle was a prodigious large building, where the duke of Lancaſter kept his court. The hall and kitchen ſtill remain entire, of which the former is very ſpacious and lofty; and in the tower over one of the gate-ways is kept the magazine for the county militia. There was a famous monaſtery here, anciently called, from its ſituation in the meadows, *St Mary de Pratis* or *Prez.* In theſe meadows is now the courſe for the horſe-race. It is ſaid that Richard III. who was killed at the battle of Boſworth, lies interred in St Margaret's church. The chief buſineſs of Leiceſter is the ſtocking-trade, which hath produced in general to the amount of 60,000 l. a-year. In a parliament held here in the reign of Henry V. the firſt law for the burning of heretics was made, levelled againſt the followers of Wickliffe, who was rector of Lutterworth in this county, and where his pulpit is ſaid ſtill to remain. The town ſuffered greatly in the civil wars, by two ſieges upon the back of one another. It has given the title of *earl* to ſeveral noble families, and laſt to Thomas Coke, lord Lovel, created earl of Leiceſter in 1744. It has a market every Saturday. W. Lon. 1. 5. N. Lat. 52. 40.

Leicestershire, an inland county of England, in form almoſt circular. It has Nottinghamſhire and Derbyſhire to the north; Rutlandſhire and Lincolnſhire on the eaſt; Warwickſhire on the weſt, from which it is parted by the Roman military way called *Watling-ſtreet;* and by Northamptonſhire on the ſouth. It is 33 miles long, 28 broad, and 100 in circumference; containing 560,000 acres, 112,200 inhabitants, 200 pariſhes, and 13 market-towns. As it lies at a great diſtance from the ſea, and is free from bogs and marſhes, the air is ſweet and wholeſome. It is a champaign country in general, and abundantly fertile in corn and graſs, being watered by ſeveral rivers, as the Soure, or Sare, which paſſes through the middle of it, and abounds in excellent ſalmon and other fiſh; the Wreke, Trent, Eye, Senſe, Auker, and Aven. Theſe rivers being moſtly navigable, greatly facilitate the trade of the county. In ſome parts there is a great ſcarcity of fuel, both wood and coal; but in the more hilly parts there is plenty of both, together with great flocks of ſheep. Beſides wheat, barley, oats, and peaſe, it produces the beſt beans in England. They grow ſo tall and luxuriant in ſome places, particularly about Barton in the Beans, that they look, towards the harveſt-time, like a foreſt: and the inhabitants eat them not only when they are green, as in other places, but all the year round; for which reaſon their neighbours nickname them *bean-bellies*. They have plenty of very good wool, of which they not only make great quantities of ſtockings, but ſend a great quantity unmanufactured into other parts of England. They make great profit of their corn and pulſe; and likewiſe breed great numbers of coach and dray horſes, moſt of the gentlemen being graziers; and it is not uncommon to rent graſs-farms from 500l. to 2000l. a-year. It is in the midland circuit, and dioceſe of Lincoln; and ſends four members to parliament, two for Leiceſter, and two for the county.

LEIGHTON (Robert), archbiſhop of Glaſgow. During Cromwell's uſurpation, he was miniſter of a church near Edinburgh, and diſtinguiſhed himſelf by his charity, and his averſion to religious and political diſputes. The miniſters were then called over yearly in the ſynod, and were commonly aſked, Whether they had preached to the times? "For God's ſake, (anſwered Leighton), when all my brethren preach to the times, ſuffer me to preach about eternity." His moderation, however, giving offence, he retired to a life of privacy. But ſoon after, he was called, by the unanimous voice of the magiſtrates, to preſide over the college of Edinburgh; where, during 10 years, he diſplayed all the talents of a prudent, wiſe, and learned governor. Soon after the Reſtoration, when the ill-judged affair of introducing epiſcopacy into Scotland was reſolved on, Leighton was conſecrated biſhop of Dunblane, and immediately gave an inſtance of his moderation: for when Sharpe and the other biſhops intended to enter Edinburgh in a pompous manner, Leighton remonſtrated againſt it; but finding that what he ſaid had no weight, he left them, and went to Edinburgh alone. Leighton, in his own dioceſe, ſet ſuch a remarkable example of moderation, that he was revered even by the moſt rigid of the oppoſite party. He went about, preaching without any appearance of pomp; gave all he had to the poor; and removed none of the miniſters, however exceptionable he might think their political principles. But finding that none of the other biſhops would be induced to join, as he thought, properly in the work, he went to the king, and reſigned his biſhopric, telling him he would not have a hand in ſuch oppreſſive meaſures. Soon after, the king and council, partly induced by this good biſhop's remonſtrances, and partly by their own obſervations, reſolved to carry on the cauſe of epiſcopacy in Scotland on a different plan; and with this view, Leighton was perſuaded to accept of the archbiſhopric Glaſgow, on which he made one effort more; but finding it not in his power to ſtem the violence of the times, he reſigned his archbiſhopric, and retired into Suſſex, where he devoted himſelf to acts of piety. He died in the year 1684. He was of a moſt amiable diſpoſition, ſtrict in his life, polite, cheerful, engaging in his manners, and profoundly learned. He left many ſermons and uſeful tracts, which are greatly eſteemed.

LEINSTER, or Lempster, a province of Ireland, called in Latin *Lagenia*, bounded by Ulſter on the north, by Connaught and Munſter on the weſt and ſouth-weſt, and by the ſea on the ſouth and eaſt. The Shannon ſeparates it from Connaught, and the Sure from a part of Munſter. Its length from north to ſouth amounts to about 112 miles; its breadth from eaſt to weſt 70; and its circumference, including the windings and turnings, to 360 miles. It contains 12 counties, viz. Louth, Eaſt-Meath, Weſt-Meath, Longford, Dublin, Kildare, King's-county, Queen's-county, Wicklow, Catherlogh, Kilkenny, and Wexford; 90 baronies, one archbiſhopric, three biſhoprics, 926 pariſhes, 47 parliamentary boroughs, and 63 market-towns and places of trade. Leinſter in general is very well cultivated, enjoys a good air and ſoil, and abounds in corn, cattle, fiſh, and fowl. Its principal rivers are the Boyne, Barrow, Liffey, Nuer, Slane, or Urrin, and the May; of which the firſt is famous for the victory obtained on its banks by king William over king James, and gives title of *viſcount* to a family of the name of *Hamilton*. The bog of Allen, the largeſt in the kingdom, extends almoſt acroſs the whole province from eaſt to weſt, the turf of which is univerſally eſteemed the beſt in Ireland. This province, formerly governed by petty kings of its own, is now the moſt populous in the kingdom, containing the capital and ſeat of government. The inhabitants are alſo the moſt polite, and, in general, as zealous Proteſtants as any in the Britiſh dominions. Leinſter gives the title of *duke* to the family of Fitzgerald, formerly earls of Kildare.

LEIPSIC, a large, ſtrong, and populous town of Miſnia in Germany, with a caſtle, and a famous univerſity. It is neat, and regularly built, and the ſtreets are lighted in the night; it carries on a great trade, and has a right to ſtop and ſell the merchandizes deſigned to paſs through it, and the country for 75 miles round has the ſame privilege. There are three great fairs every year; at the beginning of the year, Eaſter, and Michaelmas, which laſt 15 days each. There are ſix handſome colleges belonging to the univerſity, beſides the private colleges. The town-houſe makes an indifferent appearance, but the exchange is a fine ſtructure. The town was taken by the king of Pruſſia in the late war, but given up by the peace in 1763. It is ſeated in a plain between the rivers Saale and Muld, near the confluence of the Playſſe, the Elſter, and the Barde. E. Long. 12. 55. N. Lat. 51. 19.

LEITH, (anciently called *Inverleith*), the port of Edinburgh, is ſeated on the banks of the Forth, about a mile from the capital. It is divided into two parts, called *North* and *South Leith*. The former is a part of the barony of the Canongate; and is ſubject to the baron-bailie of that diſtrict, and to the magiſtrates of Edinburgh. The communication between North and South Leith is by a ſtone-bridge of three arches, which appears to have been founded by Robert Ballentyne,

lentyne, abbot of Holyrood-houſe, in 1493. The harbour, however, is what gives the importance to Leith, and indeed to Edinburgh alſo. It is formed by the conflux of the rivulet called the *Water of Leith* with the Frith of Forth. The depth of water, at neap-tides, is about nine feet; but in high ſpring-tides, it is about 16 feet. In the beginning of the preſent century, the town-council of Edinburgh improved the harbour at an enormous expence, by extending a ſtone-pier a conſiderable way into the ſea. In 1753, an act was paſſed for enlarging and deepening the harbour of Leith; but as no adequate means were propoſed by the ſtatute for defraying the expence, nothing was done in conſequence. A plan was ſoon afterwards formed for enlarging the harbour upon a ſtill larger plan; and, to carry this expenſive project into execution, a bill was framed by which an additional duty from 1 d. to 6 d. a ton was to be laid upon all ſhipping in the harbour. But the ſcheme was dropped, in conſequence of a vigorous oppoſition. In 1777, the town of Edinburgh conſiderably improved the harbour, by erecting an additional ſtone-quay towards its weſt ſide. Upwards of 100 ſhips can lie conveniently in this port. It is accommodated with wet and dry docks, and other conveniencies for ſhip-building, which is there carried on to ſome extent, as veſſels come to Leith to be repaired from all parts of Scotland.

The harbour of Leith was granted to the community of Edinburgh by king Robert, in 1329; but the banks of the harbour belonged to Logan of Reſtalrig, a turbulent and ambitious baron, from whom the citizens were under the neceſſity of purchaſing the bank or waſte piece of ground between the houſes and the rivulet abovementioned, for the purpoſes of wharfs, as well as for erecting ſhops and granaries, neither of which they could do before. As the ſituation of Leith, however, is much more convenient for trade than that of Edinburgh, two miles diſtant from the harbour, the inhabitants of the metropolis have fallen upon various methods of reſtraining the trade of Leith. They firſt purchaſed, from Logan of Reſtalrig, an excluſive privilege of carrying on every ſpecies of traffic in the town of Leith; of keeping warehouſes and inns for the entertainment of ſtrangers in that place; and in 1483, the town-council of Edinburgh prohibited, under ſevere penalties, the citizens of Edinburgh from taking into partnerſhip any inhabitant of Leith. To free themſelves from this oppreſſion, the people of Leith purchaſed the ſuperiority of their town from Logan of Reſtalrig for 3000 l. Scots, and it was erected into a burgh of barony by the queen-regent, Mary of Lorraine, who promiſed to erect it into a royal burgh. She died, however, before this was accompliſhed; and upon her death, Francis and Mary, in violation of the private rights of the people of Leith, re-ſold the ſuperiority to the town of Edinburgh, to whom it has ſince been confirmed by grants from ſucceſſive ſovereigns.

On the breaking out of the diſturbances at the Reformation, the queen-regent cauſed the whole town to be fortified, that the French troops might have a more ready inlet into the kingdom. It was accordingly ſurrounded with a wall, having eight baſtions: but this wall went no farther than the ſtreet now called *Bernard's-nook*, becauſe at that time the ſea came up the length of that ſtreet; and even as late as 1623, a houſe ſituated exactly where the weigh-houſe is at preſent, is deſcribed as bounded on the eaſt by the "ſand of the ſea-ſhore." All that ſpace, therefore, on which the row of houſes neareſt the harbour of Leith now ſtands, has been gained ſince that time from the ſea.

In the time of Charles I. a fortification was erected at Leith by the Covenanters. Cromwell built a ſtrong fort at the place ſtill called the *citadel* in North-Leith; but it was pulled down on the reſtoration of Charles II. by order of government. A gate with portcullices are the preſent remains of that fortification.—A palace alſo appears to have formerly ſtood here, ſituated at the north-eaſt boundaries of the former town, on the ſpot where the preſent weigh-houſe ſtands. It was deſtroyed by the Engliſh in the time of Henry VIII. The remains of this building, called the *king's work*, with a garden, and piece of waſte land that ſurrounded it, was erected into a barony by James VI. and beſtowed upon Bernard Lindſay of Lochill, groom of the chamber to that prince. He is ſaid to have fully repaired, and appropriated it to the recreations of the court; but it ſoon fell from its dignity, and became ſubſervient to much more ignoble purpoſes. The tennis-court was converted into a weigh-houſe; and the ſtreet which bounds it ſtill bears the name of the founder, from whom it is called *Bernard's nook*.

As Leith lay within the pariſh of Reſtalrig, the church of Reſtalrig was of conſequence the place of worſhip for the inhabitants of Leith; but in 1650 the aſſembly ordered that church to be pulled down as a monument of idolatry, ſo that Leith wanted a pariſh-church for upwards of 50 years. During that period they reſorted for worſhip, to a large and beautiful chapel already built, and dedicated to St Mary, which is now called *South-Leith church*; and in 1609 this chapel was by authority of parliament declared to be the pariſh-church of the diſtrict, ſo that Reſtalrig is now in the pariſh of South-Leith, as the latter was formerly in that of Reſtalrig. In 1772, a chapel of Eaſe was erected by the inhabitants, as the pariſh-church was inſufficient to contain the number of hearers. Its dimenſions are 72 feet by 52 within the walls, and it can accommodate 1500 perſons. There is alſo an epiſcopal and ſeveral diſſenting congregations in Leith. North-Leith is a pariſh by itſelf, and the church is ſituated at the ſouth-end of the bridge.

Though a very great trade is carried on between Leith and many foreign ports, yet the articles of export and import fluctuate ſo much, that no quantity can be ſettled upon as an average, at leaſt without having a table of exports and imports for ſuch a number of years as is perhaps impoſſible to be obtained. The following is an account of the number of ſhips, &c. employed in the foreign and coaſting trades, for one year ending January 5th 1778, taken from Mr Arnot's Hiſtory of Edinburgh.

Foreign Trade,

Ships	Tons	Men
52	6800	428

Coaſting and Fiſhing Trades,

Ships	Tons	Men
44	3346	281

N. B.

Leith.

N. B. It is to be obſerved, that beſides the veſſels belonging to Leith, there are employed in the trade, ſhips belonging to other ports on the Frith, and to the north of England, to the amount of about one fourth of the tonnage of the Leith veſſels. Ships in the London trade make, at an average, ſeven voyages up, and as many down, every two years.

The following is an account of the articles of import and export to and from the port of Leith, taken from the ſame work.

Imports.

From Denmark. Conſiderable quantities of oats, peaſe, and barley, when the port is open: ſmall quantities of butter, cheeſe, old iron, and ſcull iron.

From Norway. Deals, about 15,000 annually; battens, ſpars, handſpikes, oak-ſpokes for cart-wheels; harrow-bills, haſel-cuts, fir-timber, middle balks, ſmall balks, pailing boards, wood-hoops for coopers; oak-knees for ſhips; tar, in 1777 3000 barrels; oak-timber, bar-iron, oars, tree-nails, ſtock-fiſh, barley, ſieve-rims.

From Sweden. Bar-iron, about 400 tons annually; deals, about 10,000 annually; battens; tar, in 1777 about 600 barrels; barrel-ſtaves, handſpikes, ſpars, pailing boards, fir-timber, oats, barley.

From Ruſſia. Bar-iron, about 600 tons annually; deals, in 1777, 35,000; battens, in 1777, 12,000; fir-timber; flax, about 250 tons annually; hemp, cordelia; tallow, in 1777, 200 tons; hogs-briſtles, matts, wheat, oats, barley, ſhips maſts, ſpars, ſieve-rims, feather-beds, oak-timber, a conſiderable quantity of linens of different kinds; flax-ſeed, about 1000 barrels annually; cordage, elk's hair, old iron, furs, knees of oak for ſhips; handſpikes, neats-tongues, iſinglaſs, indigo, roſin; tar, in 1777, 1100 barrels; tallow-candles, hard-ſoap, pearl-aſhes, ſail-cloth, pailing boards.

From Pruſſia. Fir-timber, in 1777, 1200 loads; deals, battens, pipe and barrel ſtaves; wheat, oats, barley, peaſe, pearl-aſhes, flax, hemp, bar-iron, ſcull-iron, old iron, ſhips maſts, linen-yarn, weed-aſhes, pot-aſhes, ox and cow-hides, calves-ſkins.

From Poland. Weed-aſhes, pearl-aſhes, and pot-aſhes; oak-plank, in 1777, 115 loads; oak-timber, clap-boards, barrel and kilderkin ſtaves; pipe and hogſhead ſtaves; ſalt-petre, honey, ſpruce-beer, hogs-briſtles, wheat, deals, feathers for beds, tree-nails, linens, linen-yarn, linen-rags, ox and cow hides, calve's-ſkins, beech and elm timber, oats, barley, peaſe.

From Germany. Oak-timber, in 1777, 116 loads; oak-plank, in 1777, 37 loads; oak-bark, linen-rags, wheat, oats, barley, beans and peaſe, apples; linen-yarn, in 1777, 116 tons; oak-knees, for ſhips; earthen ware, pearl-aſhes, ſmalt, Rheniſh wine, vinegar; pipe, hogſhead, and barrel ſtaves; firkin-ſtaves, cheſnuts, madder; tanned leather, in 1777, 11000 pounds; ſeal-ſkins, mineral waters, beech-timber, calf-pelts, horſe-hides, matts, flax-ſeed, bar-iron, linens, wood-hoops, wooden clocks, tree-nails, caraway-ſeeds, juniper-berries, drugs.

From Holland. Flax, about 350 tons annually; flax-ſeed, about 500 hogſheads annually; madder, clover-ſeed, matts, wood-hoops for coopers; linen-yarn, in 1777, 11,330 pound weight; old-iron, butter and cheeſe, cinnamon, unbound books, garden-ſeeds, tanned leather, wheat, oats, barley, peaſe and beans, pearl-aſhes, ſmalt, wainſcots, Rheniſh wine, oak-bark, iron nails, cork, bridges thread, incle, wood-aſhes, galley-tiles, writing paper, wooden clocks, tarras, oakhum, ſaccharum ſaturni, white-lead, mineral waters, flower-roots, burrs for mill-ſtones, gooſe-quills, liquorice-juice, onions, hard ſoap, linen-rags, oak-timber, goat-ſkins, red-lead, apples, vinegar.

From France. Wine, walnuts, cheſnuts, prunes, cork, brandy, pickles, apples, olives, ſuccads, capers, anchovies, dried plums, almonds, ſalt, roſin, vinegar, verdigreaſe.

From Spain. Wine and oil, grapes, figs, almonds, raiſins, lemons and oranges, ſalt, cork, brandy, Jeſuits-bark, cow-hides, reeds, lemon-juice, drugs, roſin, and turpentine.

From Portugal. Wine and oil, raiſins, cork, ſalt, lemons and oranges, figs, reeds, onions, ſumach, drugs, ſuccads, roſin.

From Guernſey. French, Spaniſh, and Portugueſe wines; roſin, cork, apples and pears; brandy, cheſnuts and walnuts; pickles, capers, olives, anchovies, cows, cyder, prunes.

From Ireland; butter.

From Gibraltar. Spaniſh and Portugueſe wines.

From Italy. Drugs, Levant wine, currants, ſalad-oil, rough and poliſhed marble, gum-arabic, cheeſe, anchovies, brimſtone.

From Sicily; ſalt.

From North America, (before the differences with our colonies.) Rice, indigo, tar, pitch, turpentine, pine-plank, lignum-vitæ, barrel and hogſhead ſtaves, ox and cow hides, deer-ſkins, otter and racoon ſkins, logwood, mahogany, fir-plank, ſago-powder, muſcovado ſugar, rum.

From the Weſt Indies. Rum, muſcovado ſugar, indigo, cotton-wool, cow-hides, mahogany, logwood, and fuſtic; coffee-berries, ſuccads, pimento.

Exports.

To Denmark. Coals, rod-iron, fire-grates, thread-ſtockings.

To Norway. Lead, earthen-ware, ſtrong beer, glaſs-bottles, tow, printed linen, printed paper, tanned leather, hard-ware, woollen drapery, bricks, wheat, flour, ſmall coals, malt, haberdaſhery.

To Sweden. Hard-ware, woollen drapery, cotton-ſtuffs, velverets, worſted hoſe, ſilk-ſtuffs, porter, ſtone-ware, lead, tanned leather.

To Ruſſia. Coaches and chariots, with braces and harneſs, ſilk-ſtuffs, houſehold-furniture, ſaddlery-ware, coals, Spaniſh ſalt, ſtrong-beer, glaſs-bottles, checquered linen furniture, diaper, velvets, worſted ſtockings, printed linen handkerchiefs, fine linen, clocks, haberdaſhery, hard-ware, oil of vitriol, ſal-ammoniac, wine.

To Poland. Coaches and chariots, with braces and harneſs; ſilk-ſtuffs, alum, worſted ſtockings, rum, herrings, mahogany furniture, ſtone-ware, ſmall coals, hats.

To Germany. Houſehold furniture, glaſs-bottles, porter and ſtrong-beer, oil of vitriol, earthen ware, millenery ware, rum, coals, ſail-cloth, lead, carpetting, worſted ſtockings.

To Holland. Lead, in 1776, 1650 tons; in 1777, 1500 tons; ſalmon, porter and ſtrong-beer; carpetting, coals, oil of vitriol, Spaniſh and French wines a ſmall quantity, ſteel, rod-iron, velveret, rum, ſilkſtuffs, woollen cloth, earthen ware, fire-grates, ſadlery.

To France. Coaches and chariots, with braces and harneſs; a few.

To Spain. Linens and damaſks; ſtrong-beer and porter; iron-hoops, ſmall coals, ſail-cloth, tarred cordage, wheat, flour, ſtone-ware, ſmall-beer, deals and cuts of deals, barley, glaſs-bottles, ſilk-gauze.

To Portugal. Glaſs-bottles, ſtrong-beer, packing-mats, ſail-cloth, barley and big; wheat, wheat-flour, iron-hoops, pipe-ſtaves, dried cod-fiſh, ſmall coals.

To Gibraltar. Coals and bricks, linens, glaſs-bottles, houſehold furniture, beer and porter, iron-hoops.

To Guernſey; coals, glaſs-bottles.

To Ireland; porter and ſtrong-beer, barrel-ſtaves, glaſs-bottles, biſcuit.

To North America, (before the differences with that country.) Great quantities of linen; houſehold furniture, wearing apparel, writing-paper, printing and brown paper, books, haberdaſhery, ſtone-ware, porter and ſtrong-beer, ſadlery-ware, worſted hoſe, thread ditto, ſewing-thread, wrought iron, hats, coals, ſpades, ſcythes, and corn-hooks; waggon-wheels, window-glaſs, cordage and ſail-cloth, bricks, ſhoes, carpetting, lawns and gauzes, printed linen handkerchiefs, mens ſhirts, clocks; French, Spaniſh, and Portugueſe wines; glaſs-bottles.

To the Weſt Indies. Linens, herrings, houſehold furniture, wood-hoops for coopers, coals and bricks; French, Spaniſh, and Portugal wines; negroes, cloathing, hats, ſhoes, ſadlery ware, thread-hoſe, ſewing-thread, ſugar-boilers, nails, ſtrong-beer and porter, haberdaſhery, ſmiths and joiners tools, ploughs and furniture, yetlin pots, bliſtered ſteel, iron crows, mule-harneſs, fiſh oil, medicines, chaiſes with harneſs, ſail-cloth and cordage, lime and lime-ſtones, linen handkerchiefs, wearing apparel, wheat-flour and bread, woollen drapery, ling-fiſh; hulled barley, oats, peaſe, and beans; horſes, writing-paper, books, blanketing, iron-hoops, ſtationary ware, ſhips anchors, caſt-iron work, window-ſaſhes, cutlery-ware.

Oyſters began to be exported from Leith for London in the year 1773. They are taken from their beds in the Forth to the Medway and other rivers in the neighbourhood of London, where they fatten for the conſumption of that metropolis. This oyſter-trade is carried on with ſo much ſo much avidity, that, according to Mr Arnot, if the banks on the Forth are not more ſparingly dragged, they muſt of neceſſity be ſoon exhauſted. As the quantity exported hath diminiſhed, however, the price hath increaſed. The firſt year the oyſters were ſold at 4s. per barrel.

The ſhipping at Leith render the demand for ropes, ſail-cloth, and cordage, very conſiderable. There are three different companies who carry on theſe manufactures, beſides ſome private perſons who deal leſs conſiderably. The firſt of theſe companies was eſtabliſhed in the beginning of the preſent century; and about 12 years ago made, perhaps, larger dividends among the partners than any trading or manufacturing company in the nation. The three companies at preſent employ about 150 weavers, flax-dreſſers, and ſpinners of rope-yarn, 60 rope-makers, and 450 ſpinners of flax.

In the middle of the laſt century, a manufactory of green glaſs was eſtabliſhed at the citadel of Leith. Chopin-bottles were ſold at 4s. 6d. per dozen, and other bottles in proportion. Soon afterwards this article was manufactured alſo in North Leith; and, in 1707, chopin-bottles were ſold at 2s. 6d. per dozen, and ſo proportionably. The preſent Bottle-houſe Company was eſtabliſhed in 1746. They began work in the bottle-houſe of North-Leith; but that houſe being burned down during the firſt year of the partnerſhip, a new houſe was built on South-Leith ſands in 1747, and an additional one in 1764. The annual expence of both houſes is between 8000 or 9000l.

The manufactures of ſoft-ſoap and candles were erected by William St Clair of Roſlin and ſome merchants; the former in 1750, and the latter in 1770; a manufacture of hard-ſoap was alſo eſtabliſhed in 1770 by David Neilſon. Beſides theſe, there is alſo a ſugar-houſe, and a conſiderable manufacture for making cards with which wool is combed.

The inhabitants of Leith were divided into four claſſes; and theſe erected into corporations by the queen dowager, Mary of Lorraine. Theſe were mariners, maltmen, trades, and traffickers. The firſt of theſe conſiſted of ſhip-maſters and ſailors; the ſecond of malt-makers and brewers; the third of coopers, bakers, ſmiths, wrights, &c.; and the fourth, of merchants and ſhop-keepers. Of theſe corporations the mariners are the moſt conſiderable. They obtained from Mary of Lorraine a gift, afterwards ratified by William and Mary, of one penny duty on the ton of goods in the habour of Leith, for the ſupport of their poor. This duty, which not many years ago did not amount to 40l. a-year, now riſes from 70l. to 120l. as trade flouriſhes. For the ſame purpoſe the ſhip-maſters alſo pay 6d. a-pound out of their own wages annually; and the like ſum they give upon the wages of their ſailors. From theſe and other donations, this corporation is enabled to pay from 600l. to 700l. a-year to their poor. Oppoſite to South-Leith church there is a large houſe belonging to them, called the *Trinity hoſpital,* becauſe originally conſecrated to the Holy Trinity. In this houſe ſome of their poor uſed formerly to be maintained, but now they are all out-penſioners. Beſides other apartments, this hoſpital contains a large handſome hall for the meetings of the corporation. Adjoining to the ſchool-houſe there is another hoſpital, called *king James's hoſpital;* and bears upon its front the cipher and arms of that prince. Here ſome poor women belonging to the other corporations are maintained.

As the town of Leith was very ill ſupplied with water, and the ſtreets were neither properly cleaned nor lighted, an act was paſſed for remedying theſe defects in the year 1771, appointing certain perſons from among the magiſtrates of Edinburgh, lords of ſeſſion, inhabitants of Edinburgh and Leith, and members of the corporations of Leith, *commiſſioners of police;* empowering them to put this act in execution; and, for that purpoſe, to levy a ſum not exceeding 6d. in the pound upon the valued rent of Leith. The great change which has ſince taken place on the ſtreets of Leith ſhows the good effect of this act, and that it hath

Leith.

N. B. It is to be obſerved, that beſides the veſſels belonging to Leith, there are employed in the trade, ſhips belonging to other ports on the Frith, and to the north of England, to the amount of about one fourth of the tonnage of the Leith veſſels. Ships in the London trade make, at an average, ſeven voyages up, and as many down, every two years.

The following is an account of the articles of import and export to and from the port of Leith, taken from the ſame work.

IMPORTS.

From Denmark. Conſiderable quantities of oats, peaſe, and barley, when the port is open: ſmall quantities of butter, cheeſe, old iron, and ſcull iron.

From Norway. Deals, about 15,000 annually; battens, ſpars, handſpikes, oak-ſpokes for cart-wheels; harrow-bills, haſel-cuts, fir-timber, middle balks, ſmall balks, pailing boards, wood-hoops for coopers; oak-knees for ſhips; tar, in 1777 3000 barrels; oak-timber, bar-iron, oars, tree-nails, ſtock-fiſh, barley, ſieve-rims.

From Sweden. Bar-iron, about 400 tons annually; deals, about 10,000 annually; battens; tar, in 1777 about 600 barrels; barrel-ſtaves, handſpikes, ſpars, pailing boards, fir-timber, oats, barley.

From Ruſſia. Bar-iron, about 600 tons annually; deals, in 1777, 35,000; battens, in 1777, 12,000; fir-timber; flax, about 250 tons annually; hemp, cordelia; tallow, in 1777, 200 tons; hogs-briſtles, matts, wheat, oats, barley, ſhips maſts, ſpars, ſieve-rims, feather-beds, oak-timber, a conſiderable quantity of linens of different kinds; flax-ſeed, about 1000 barrels annually; cordage, elk's hair, old iron, furs, knees of oak for ſhips; handſpikes, neats-tongues, iſinglaſs, indigo, roſin; tar, in 1777, 1100 barrels; tallow-candles, hard-ſoap, pearl-aſhes, ſail-cloth, pailing boards.

From Pruſſia. Fir-timber, in 1777, 1200 loads; deals, battens, pipe and barrel ſtaves; wheat, oats, barley, peaſe, pearl-aſhes, flax, hemp, bar-iron, ſcull-iron, old iron, ſhips maſts, linen-yarn, weed-aſhes, pot-aſhes, ox and cow-hides, calves-ſkins.

From Poland. Weed-aſhes, pearl-aſhes, and pot-aſhes; oak-plank, in 1777, 115 loads; oak-timber, clap-boards, barrel and kilderkin ſtaves; pipe and hogſhead ſtaves; ſalt-petre, honey, ſpruce-beer, hogs-briſtles, wheat, deals, feathers for beds, tree-nails, linens, linen-yarn, linen-rags, ox and cow-hides, calve's-ſkins, beech and elm timber, oats, barley, peaſe.

From Germany. Oak-timber, in 1777, 116 loads; oak-plank, in 1777, 37 loads; oak-bark, linen-rags, wheat, oats, barley, beans and peaſe, apples; linen-yarn, in 1777, 116 tons; oak-knees, for ſhips; earthen ware, pearl-aſhes, ſmalt, Rheniſh wine, vinegar; pipe, hogſhead, and barrel ſtaves; firkin-ſtaves, cheſnuts, madder; tanned leather, in 1777, 11000 pounds; ſeal-ſkins, mineral waters, beech-timber, calf-pelts, horſe-hides, matts, flax-ſeed, bar-iron, linens, wood-hoops, wooden clocks, tree-nails, caraway-ſeeds, juniper-berries, drugs.

From Holland. Flax, about 350 tons annually; flax-ſeed, about 500 hogſheads annually; madder, clover-ſeed, matts, wood-hoops for coopers; linen-yarn, in 1777, 11,330 pound weight; old-iron, butter and cheeſe, cinnamon, unbound books, garden-ſeeds, tanned leather, wheat, oats, barley, peaſe and beans, pearl-aſhes, ſmalt, wainſcots, Rheniſh wine, oak-bark, iron nails, cork, bridges thread, incle, wood-aſhes, galley-tiles, writing paper, wooden clocks, tarras, oakhum, ſaccharum ſaturni, white-lead, mineral waters, flower-roots, burrs for mill-ſtones, gooſe-quills, liquorice-juice, onions, hard ſoap, linen-rags, oak-timber, goat-ſkins, red-lead, apples, vinegar.

From France. Wine, walnuts, cheſnuts, prunes, cork, brandy, pickles, apples, olives, ſuccads, capers, anchovies, dried plums, almonds, ſalt, roſin, vinegar, verdigreaſe.

From Spain. Wine and oil, grapes, figs, almonds, raiſins, lemons and oranges, ſalt, cork, brandy, Jeſuits-bark, cow-hides, reeds, lemon-juice, drugs, roſin, and turpentine.

From Portugal. Wine and oil, raiſins, cork, ſalt, lemons and oranges, figs, reeds, onions, ſumach, drugs, ſuccads, roſin.

From Guernſey. French, Spaniſh, and Portugueſe wines; roſin, cork, apples and pears; brandy, cheſnuts and walnuts; pickles, capers, olives, anchovies, cows, cyder, prunes.

From Ireland; butter.

From Gibraltar. Spaniſh and Portugueſe wines.

From Italy. Drugs, Levant wine, currants, ſalad-oil, rough and poliſhed marble, gum-arabic, cheeſe, anchovies, brimſtone.

From Sicily; ſalt.

From North America, (before the differences with our colonies.) Rice, indigo, tar, pitch, turpentine, pine-plank, lignum-vitæ, barrel and hogſhead ſtaves, ox and cow hides, deer-ſkins, otter and racoon ſkins, logwood, mahogany, fir-plank, ſago-powder, muſcovado ſugar, rum.

From the Weſt Indies. Rum, muſcovado ſugar, indigo, cotton-wool, cow-hides, mahogany, logwood, and fuſtic; coffee-berries, ſuccads, pimento.

EXPORTS.

To Denmark. Coals, rod-iron, fire-grates, thread-ſtockings.

To Norway. Lead, earthen-ware, ſtrong beer, glaſs-bottles, tow, printed linen, printed paper, tanned leather, hard-ware, woollen drapery, bricks, wheat, flour, ſmall coals, malt, haberdaſhery.

To Sweden. Hard-ware, woollen drapery, cotton-ſtuffs, velverets, worſted hoſe, ſilk-ſtuffs, porter, ſtone-ware, lead, tanned leather.

To Ruſſia. Coaches and chariots, with braces and harneſs, ſilk-ſtuffs, houſehold-furniture, ſaddlery-ware, coals, Spaniſh ſalt, ſtrong-beer, glaſs-bottles, checquered linen furniture, diaper, velvets, worſted ſtockings, printed linen handkerchiefs, fine linen, clocks, haberdaſhery, hard-ware, oil of vitriol, ſal-ammoniac, wine.

To Poland. Coaches and chariots, with braces and harneſs; ſilk-ſtuffs, alum, worſted ſtockings, rum, herrings, mahogany furniture, ſtone-ware, ſmall coals, hats.

To Germany. Houſehold furniture, glaſs-bottles, porter and ſtrong-beer, oil of vitriol, earthen ware, millenery ware, rum, coals, ſail-cloth, lead, carpetting, worſted ſtockings.

To Holland. Lead, in 1776, 1650 tons; in 1777,

1,500

Leith.

1500 tons; ſalmon, porter and ſtrong-beer; carpetting, coals, oil of vitriol, Spaniſh and French wines a ſmall quantity, ſteel, rod-iron, velveret, rum, ſilkſtuffs, woollen cloth, earthen ware, fire-grates, ſadlery.

To France. Coaches and chariots, with braces and harneſs; a few.

To Spain. Linens and damaſks; ſtrong-beer and porter; iron-hoops, ſmall coals, ſail-cloth, tarred cordage, wheat, flour, ſtone-ware, ſmall-beer, deals and cuts of deals, barley, glaſs-bottles, ſilk-gauze.

To Portugal. Glaſs-bottles, ſtrong-beer, packing-mats, ſail-cloth, barley and big; wheat, wheat-flour, iron-hoops, pipe-ſtaves, dried cod-fiſh, ſmall coals.

To Gibraltar. Coals and bricks, linens, glaſs-bottles, houſehold furniture, beer and porter, iron-hoops.

To Guernſey; coals, glaſs-bottles.

To Ireland; porter and ſtrong-beer, barrel-ſtaves, glaſs-bottles, biſcuit.

To North America, (before the differences with that country.) Great quantities of linen; houſehold furniture, wearing apparel, writing-paper, printing and brown paper, books, haberdaſhery, ſtone-ware, porter and ſtrong-beer, ſadlery-ware, worſted hoſe, thread ditto, ſewing-thread, wrought iron, hats, coals, ſpades, ſcythes, and corn-hooks; waggon-wheels, window-glaſs, cordage and ſail-cloth, bricks, ſhoes, carpetting, lawns and gauzes, printed linen handkerchiefs, mens ſhirts, clocks; French, Spaniſh, and Portugueſe wines; glaſs-bottles.

To the Weſt Indies. Linens, herrings, houſehold furniture, wood-hoops for coopers, coals and bricks; French, Spaniſh, and Portugal wines; negroes, cloathing, hats, ſhoes, ſadlery ware, thread-hoſe, ſewing-thread, ſugar-boilers, nails, ſtrong-beer and porter, haberdaſhery, ſmiths and joiners tools, ploughs and furniture, yetlin pots, bliſtered ſteel, iron crows, mule-harneſs, fiſh oil, medicines, chaiſes with harneſs, ſail-cloth and cordage, lime and lime-ſtones, linen handkerchiefs, wearing apparel, wheat-flour and bread, woollen drapery, ling-fiſh; hulled barley, oats, peaſe, and beans; horſes, writing-paper, books, blanketing, iron-hoops, ſtationary ware, ſhips anchors, caſt-iron work, window-ſaſhes, cutlery-ware.

Oyſters began to be exported from Leith for London in the year 1773. They are taken from their beds in the Forth to the Medway and other rivers in the neighbourhood of London, where they fatten for the conſumption of that metropolis. This oyſter-trade is carried on with ſo much ſo much avidity, that, according to Mr Arnot, if the banks on the Forth are not more ſparingly dragged, they muſt of neceſſity be ſoon exhauſted. As the quantity exported hath diminiſhed, however, the price hath increaſed. The firſt year the oyſters were ſold at 4s. per barrel.

The ſhipping at Leith render the demand for ropes, ſail-cloth, and cordage, very conſiderable. There are three different companies who carry on theſe manufactures, beſides ſome private perſons who deal leſs conſiderably. The firſt of theſe companies was eſtabliſhed in the beginning of the preſent century; and about 12 years ago made, perhaps, larger dividends among the partners than any trading or manufacturing company in the nation. The three companies at preſent employ about 150 weavers, flax-dreſſers, and ſpinners of rope-yarn, 60 rope-makers, and 450 ſpinners of flax.

In the middle of the laſt century, a manufactory of green glaſs was eſtabliſhed at the citadel of Leith. Chopin-bottles were ſold at 4s. 6d. per dozen, and other bottles in proportion. Soon afterwards this article was manufactured alſo in North Leith; and, in 1707, chopin-bottles were ſold at 2s. 6d. per dozen, and ſo proportionably. The preſent Bottle-houſe Company was eſtabliſhed in 1746. They began work in the bottle-houſe of North-Leith; but that houſe being burned down during the firſt year of the partnerſhip, a new houſe was built on South-Leith ſands in 1747, and an additional one in 1764. The annual expence of both houſes is between 8000 or 9000l.

The manufactures of ſoft-ſoap and candles were erected by William St Clair of Roſlin and ſome merchants; the former in 1750, and the latter in 1770; a manufacture of hard-ſoap was alſo eſtabliſhed in 1770 by David Neilſon. Beſides theſe, there is alſo a ſugar-houſe, and a conſiderable manufacture for making cards with which wool is combed.

The inhabitants of Leith were divided into four claſſes; and theſe erected into corporations by the queen dowager, Mary of Lorraine. Theſe were mariners, maltmen, trades, and traffickers. The firſt of theſe conſiſted of ſhip-maſters and ſailors; the ſecond of malt-makers and brewers; the third of coopers, bakers, ſmiths, wrights, &c.; and the fourth, of merchants and ſhop-keepers. Of theſe corporations the mariners are the moſt conſiderable. They obtained from Mary of Lorraine a gift, afterwards ratified by William and Mary, of one penny duty on the ton of goods in the habour of Leith, for the ſupport of their poor. This duty, which not many years ago did not amount to 40l. a-year, now riſes from 70l. to 120l. as trade flouriſhes. For the ſame purpoſe the ſhip-maſters alſo pay 6d. a-pound out of their own wages annually; and the like ſum they give upon the wages of their ſailors. From theſe and other donations, this corporation is enabled to pay from 600l. to 700l. a-year to their poor. Oppoſite to South-Leith church there is a large houſe belonging to them, called the *Trinity hoſpital*, becauſe originally conſecrated to the Holy Trinity. In this houſe ſome of their poor uſed formerly to be maintained, but now they are all out-penſioners. Beſides other apartments, this hoſpital contains a large handſome hall for the meetings of the corporation. Adjoining to the ſchool-houſe there is another hoſpital, called *king James's hoſpital;* and bears upon its front the cipher and arms of that prince. Here ſome poor women belonging to the other corporations are maintained.

As the town of Leith was very ill ſupplied with water, and the ſtreets were neither properly cleaned nor lighted, an act was paſſed for remedying theſe defects in the year 1771, appointing certain perſons from among the magiſtrates of Edinburgh, lords of ſeſſion, inhabitants of Edinburgh and Leith, and members of the corporations of Leith, *commiſſioners of police;* empowering them to put this act in execution; and, for that purpoſe, to levy a ſum not exceeding 6d. in the pound upon the valued rent of Leith. The great change which has ſince taken place on the ſtreets of Leith ſhows the good effect of this act, and that it hath

Leland.

both been judiciouſly prepared, and attentively executed.

LELAND (John), the great Engliſh antiquary, was born in London, about the year 1507. Having loſt his parents when a child, he had the good fortune to find a friend and patron in one Mr Thomas Miles, who placed him in St Paul's ſchool, of which the grammarian Lillye was maſter. From that ſchool he was ſent to Chriſt's college, Cambridge; whence, after ſome years reſidence, he removed to All-Souls, Oxford. From Oxford he went to Paris, chiefly with a deſign to ſtudy the Greek language, which at that time was but little underſtood in this kingdom. On his return to England he took orders, and was ſoon appointed chaplain to king Henry VIII. who alſo gave him the rectory of Poppeling, in the marſhes of Calais, appointed him his librarian, and in 1533 granted to him, by commiſſion under the great ſeal, the office of king's antiquary; an office never borne by any other perſon before or ſince. By this commiſſion he was empowered to ſearch for ancient writings in all the libraries of colleges, abbeys, priories, &c. in his majeſty's dominions. We are told by his laſt biographer, that he renounced popery ſoon after his return to England; but he quotes no authority. Be this as it may, in 1536, he obtained a diſpenſation to keep a curate at Poppeling, and ſet out on his journey in ſearch of antiquities. In this employment he ſpent ſix years, during which time he viſited every part of England where monuments of antiquity were to be expected. After his return, in the year 1542, he was preſented by the king to the rich rectory of Haſeley in Oxfordſhire; and in the following year he gave him a prebend of King's-college, now Chriſt's church, in Oxford, beſides that of eaſt and weſt Knowle, in the cathedral of Saliſbury. Being thus amply provided for, he retired to a houſe of his own in the pariſh of St Michael le Querne in London, where he ſpent ſix years more in digeſting the materials which he had collected. King Henry VIII. died in 1547; and in a ſhort time after, poor Leland loſt his ſenſes. He was at firſt ſeized with a deep melancholy, which was ſucceeded by a total deprivation of his reaſon. In this dreadful ſtate he continued till the beginning of the year 1552, when he was happily releaſed by death. He was buried in the church of St Michael le Querne, which was deſtroyed by the fire in 1666. Mr Leland is remembered as a man of great learning, an univerſal linguiſt, an excellent Latin poet, and a moſt indefatigable and ſkilful antiquary. On his death, king Edward VI. gave all his papers to Sir John Checke, his tutor and Latin ſecretary of ſtate. The king dying, and Sir John being obliged to leave the kingdom, he gave four folio volumes of Leland's collections to Humphrey Purefoy, Eſq; which, in 1612, were by his ſon given to William Burton, author of the hiſtory of Leiceſterſhire. This gentleman alſo became poſſeſſed of the Itinerary in 8 vols fol. which, in 1632, he depoſited in the Bodleian library. Many other of Leland's manuſcripts, after the death of Sir John Checke, fell into the hands of lord Paget, Sir William Cecil, and others, which at laſt fortunately came into the poſſeſſion of Sir John Cotton. Theſe manuſcripts were of great uſe to all our ſubſequent antiquarians, particularly Cambden, Sir William Dugdale, Stowe, Lambard, Dr Batteley, Ant. Wood, &c. His Itinerary throughout moſt part of England and Wales, was publiſhed by Mr Hearne, 9 vols 8vo, in 1710-11; as was alſo his *Collectanea de rebus Britannicis*, 6 vols 8vo, in 1715.

LELY (Sir Peter), an excellent painter, born in Weſtphalia, in the year 1617. He was placed as a diſciple with Peter Grebber at Haerlem; and in 1641 was induced, by the encouragement Charles I. gave to the fine arts, to come to England: he became ſtate-painter to Charles II., who knighted him; and being as complete a gentleman as a painter, that king took pleaſure in converſing with him. He practiſed portrait-painting, and ſucceeded ſo well that he excelled all his cotemporaries; on which account he was always involved in buſineſs. Yet the critics remark, that he preſerved in almoſt all his female faces a drowſy ſweetneſs of the eyes peculiar to himſelf; for which he is reckoned a manneriſt. The hands of his portraits are remarkably fine and elegantly turned; and he frequently added landſcapes in the back-grounds of his pictures, in a ſtyle peculiar to himſelf, and better ſuited to his ſubject than moſt men could do. He excelled likewiſe in crayon-painting. He died in 1680.

LEMBERG, a town of Poland, capital of Red Ruſſia, ſeated in the palatinate of Lemburg, on the river Pelteu. It is pretty well fortified, and defended by two citadels, one of which is ſeated on an eminence without the town. The ſquare, the churches, and the public buildings, are magnificent; and it is a large and rich trading place. It has a Roman-Catholic archbiſhop, and an Armenian as well as a Ruſſian biſhop; but the Proteſtants are not tolerated. This city was reduced to the laſt extremity by the rebel Coſſacks and Tartars, and was forced to redeem itſelf with a large ſum of money. In 1672, it was beſieged in vain by the Turks; but in 1704, was taken by ſtorm by Char. XII. of Sweden. E. Long. 24. 46. N. Lat. 49. 51.

LEMERY (Nicholas), a celebrated chemiſt, born at Rouen in Normandy in 1645. After having made the tour of France, he, in 1672, commenced an acquaintance with M. Martyn apothecary to Monſieur the Prince; and performed ſeveral courſes of chemiſtry in the laboratory of this chemiſt at the Hotel de Conde; which brought him to the knowledge and eſteem of the prince. He provided himſelf at length with a laboratory of his own, and might have been made a doctor of phyſic: but he choſe to continue an apothecary, from his attachment to chemiſtry, in which he opened public lectures; and his confluence of ſcholars was ſo great as ſcarcely to allow him room to perform his operations. The true principles of chemiſtry in his time were but ill underſtood; Lemery was the firſt who aboliſhed the ſenſeleſs jargon of barbarous terms, reduced the ſcience to clear and ſimple ideas, and promiſed nothing that he did not perform. In 1681, he was diſturbed on account of his religion; and came to England, where he was well received by Charles II.: but affairs not promiſing him the ſame tranquillity, he returned to France, and ſought for ſhelter under a Doctor's degree; but the revocation of the edict of Nantz drove him into the Romiſh communion to avoid perſecution. He then became aſſociate chemiſt and penſionary in the royal academy of ſciences, and died in 1715. He wrote, A courſe of chemiſtry; An univerſal pharmacopœia; An univerſal treatiſe of drugs; and, A treatiſe on Antimony."

LEMING, in zoology. See Mus.

LEMMA, in mathematics, a propoſition which ſerves previouſly to prepare the way for the more eaſy apprehenſion of the demonſtration of ſome theorem, or conſtruction of ſome problem.

LEMNA, Duck-meat; a genus of the diandria order, belonging to the monœcia claſs of plants. There are three ſpecies, all natives of Britain, growing frequently in ditches and the ſhallow parts of ſtagnant waters. All of them are acceptable food for ducks and geeſe.

LEMNIAN earth, *Terra Lemnia*, a medicinal, aſtringent ſort of earth, of a fatty conſiſtence and reddiſh colour; uſed in the ſame caſes as bole. It has its name from the iſland of Lemnos, whence it is chiefly brought. Many form it into round cakes, and impreſs a ſeal upon it; whence it is alſo called *terra ſigillata*.

LEMNIUS (Lævinus), a famous phyſician, born at Ziric-Zee in Zealand, in 1505. He practiſed phyſic with applauſe; and after his wife's death being made prieſt, became canon of Ziric-Zee, where he died in 1560. He left ſeveral eſteemed works, the principal of which is entitled *De occultis naturæ miraculis*.

LEMNOS, (anc. geog.) a noble iſland in the Ægean ſea, near Thrace, called *Dipolis*, from its conſiſting of two towns, into the forum of which mount Athos caſts its ſhadow at the ſolſtice, (Pliny); in compaſs 112 miles. An iſland ſacred to Vulcan, (Val. Flaccus.) Famous for its aſtringent earth, uſed for conſolidating wounds.

LEMON, in botany. See Citrus.

LEMONADE, a liquor prepared of water, ſugar, and lemon or citron juice; it is very cooling and grateful.

LEMUR, or Maki, in zoology, a genus of quadrupeds belonging to the order of primates, the characters of which are theſe: There are four fore teeth in the upper jaw, the intermediate ones being remote; and ſix long, compreſſed, parallel teeth in the under jaw; the dog-teeth are ſolitary, and the grinders are ſomewhat labated. There are five ſpecies, viz.

1. The tardigradus, a ſmall animal found in the iſland of Ceylon. It is of a very ſingular conſtruction, and perhaps longer in proportion to its thickneſs than any other quadruped. The head is roundiſh, with a prominent noſe; the legs are long and thick, and the feet reſemble thoſe of a monkey; it has no tail. It lives in the woods, and feeds on fruits; is a tender animal; has the ſenſe of ſmell very acute, and the action of an ape; and is very agile, though its name implies the contrary.

2. The mongooz inhabits Madagaſcar and the iſlands to the eaſtward as far as Celebes, is about the ſize of a cat; hath the whole upper part of the body covered with long, ſoft, and thick fur, a little curled or waved, of a deep browniſh aſh-colour; the tail very long, covered with the ſame ſort of hair, and of the ſame colour. It lives on fruits, turns its tail over its head to protect it from rain, and ſleeps on trees; it is very ſportive and good-natured, and very tender.

3. The catta, or arch-tailed maki, inhabits Madagaſcar and the neighbouring iſles. It is of the ſize of a cat; has the hair on the top and hind-part of the head of a deep aſh-colour, the back and ſides reddiſh, the belly and inſides of the limbs white; all its hair very ſoft, cloſe and fine, and erect like the pile of velvet; the tail is twice the length of the body. It is very good-natured, and has all the life of a monkey, without its miſchievous diſpoſition; it is very cleanly, and has a weak cry. In a wild ſtate they go in troops of 30 or 40, and are eaſily tamed when taken young.

4. The caudatus niger, or ruffed maki, is alſo an inhabitant of Madagaſcar. It is ſomewhat larger than the laſt, and hath long hair ſtanding out round the ſides of the head like a ruff; a long tail; the colour of the whole animal generally black, but ſometimes white ſpotted with black. In a wild ſtate it is very fierce; and makes ſuch a violent noiſe in the woods, that the cries of two might be eaſily miſtaken for the noiſe made by a hundred.

5. The volans, or flying maki, reſembles a bat; being furniſhed with a ſtrong membrane like that animal, by which it is enabled to fly. It inhabits the country about Guzarat, the Molucca iſles, and the Philippines; feeds on the fruits of the trees, and is very diſtinct both from the bat and flying ſquirrel. Its hiſtory, however, is very little known.

LEMURES, in antiquity, ſprites or hobgoblins; reſtleſs ghoſts of departed perſons, who return to terrify and torment the living.—Theſe are the ſame with larvæ, which the ancients imagined to wander round the world, to frighten good people, and plague the bad. For which reaſon, at Rome they had lemuria, or feaſts inſtituted to appeaſe the manes of the defunct.

LEMURIA, or Lemuralia, a feaſt ſolemnized at Rome on the ninth of May, to pacify the manes of the dead, or in honour of the lemures.—The inſtitution of this feaſt is aſcribed to Romulus, who, to rid himſelf of the phantom of his brother Remus (whom he had ordered to be murdered) appearing always before him, ordained a feaſt called after his name *remuria*, or *lemuria*.—In the lemuria, they offered ſacrifices for three nights together; during which time all the temples of the gods were ſhut up, nor were any marriages permitted. There were a world of ceremonies in this feaſt, chiefly intended to exorciſe the lemures, and prevent their appearing or giving any diſturbance to the living.

LENA, a great river of Siberia in Aſia, which takes its riſe in N. Lat. 52. 30. and E. Long. 124. 30. from Ferro. After traverſing a large tract of land, it divides itſelf into five branches about Lat. 73°. Three of theſe run weſtward, and two eaſtward, by which it diſcharges itſelf into the Icy Sea. Its three weſtern mouths lie in 143° E. Long. from Ferro, but the eaſtern ones extend to 153. The current is every where ſlow, and its bed entirely free from rocks. The bottom is ſandy, and the banks are in ſome places rocky and mountainous. Sixteen large rivers fall into the Lena during its courſe to the northern ocean.

LENÆA, in antiquity, a feſtival of Bacchus, ſurnamed *Lenæus*, from a wine-preſs. Beſides the uſual ceremonies at feaſts ſacred to this god, it was remarkable for poetic contentions, and the acting of tragedies.

LENFANT (James), a learned French writer born in 1661. After ſtudying at Saumur, he went to Heidelberg, where he received impoſition of hands for the miniſtry in 1684. He diſcharged the functions of this character with great reputation there, as chaplain of the electreſs dowager of Palatine, and paſtor in ordinary to the French church. The deſcent of the French into the Palatinate obliged our author to depart from Heidelberg in 1688. He went to Berlin, where the elector Frederic, afterward king of Pruſſia, appointed him one of the miniſters. There he continued 39 years, diſtinguiſhing himſelf by his writings. He was preacher to the queen of Pruſſia, Charlotta Sophia; and after her death, to the late king of Pruſſia. In 1707, he took a journey to England and Holland, where he had the honour to preach before queen Anne; and might have ſettled in London, with the title of *chaplain to her majeſty*. In 1712 he went to Helmſtad, in 1715 to Leipſic, and in 1725 to Breſlaw, to ſearch for rare books and MSS. It is not certain whether it was he that firſt formed the deſign of the *Bibliotheque Germanique*, which began in 1720; or whether it was ſuggeſted to him by one of the ſociety of learned men, which took the name of *Anonymous*, and who ordinarily met at his houſe. He died in 1728. His principal works are, 1. The hiſtory of the Council of Conſtance, 2 vols 4to. 2. A hiſtory of the Council of Piſa, 2 vols 4to. 3. The New Teſtament tranſlated from the Greek into the French, with Notes by Beauſobre and Lenfant, 2 vols 4to. 4. The hiſtory of pope Joan, from Spanheim's Latin diſſertation. 5. Several pieces in the *Bibliotheque Choiſie*, *La Republic des Lettres*, *La Bibliotheque Germanique*, &c.

LENGLET (Nicholas du Freſnoy, l'abbe), born at Beauvais in France, 1674, was a moſt fertile and uſeful French author on a variety of ſubjects, hiſtorical, geographical, political, and philoſophical. The following deſerve particular notice, 1. A method of ſtudying hiſtory, with a catalogue of the principal hiſtorians of every age and country, publiſhed in 1713; a work which eſtabliſhed his reputation as an hiſtorical writer: it was tranſlated into moſt of the modern languages, particularly our own, with conſiderable improvements, by Richard Rawlinſon, LL.D. and F.R.S. and publiſhed at London in 1730, in 2 vols 8vo. 2. A copious abridgment of univerſal hiſtory and biography, in chronological order, under the title of *Tablettes chronologiques;* which made its firſt appearance at Paris in 1744, in 2 vols ſmall 8vo, and was univerſally admired by the literati in all parts of Europe. The author attended with great candour, as every writer ought, to well-founded, judicious criticiſms. In future editions, he made ſeveral alterations and improvements, and from one of theſe, we believe that of 1759, an Engliſh tranſlation was made, and publiſhed at London in 1762, in 2 vols large 8vo. Du Freſnoy died in 1755: the Paris edition of 1759 was printed from the author's corrected copy; and the impreſſion being ſold off, another edition appeared in 1763, with conſiderable improvements by an unknown editor: to the biographical part, a great number of names of reſpectable perſons are added, not to be found in the former edition; and it has this ſuperior advantage in the hiſtorical parts, that the general hiſtory is brought down to the year 1762. Du Freſnoy, however, has loaded his work with catalogues of ſaints, martyrs, councils, ſynods, hereſies, ſchiſms, and other eccleſiaſtical matters, fit only for the libraries of popiſh convents and ſeminaries.

LENGTH, the extent of any thing material from end to end. In duration, it is applied to any ſpace of time whether long or ſhort.

LENGTHENING, in ſhip-carpentry, the operation of cutting a ſhip down acroſs the middle, and adding a certain portion to her length. It is performed by ſawing her planks aſunder in different places of her length, on each ſide of the midſhip-frame, to prevent her from being too much weakened in one place. The two ends are then drawn apart to a limited diſtance; which muſt be equal to the propoſed addition of length. An intermediate piece of timber is next added to the keel, upon which a ſufficient number of timbers are erected, to fill up the vacancy produced by the ſeparation. The two parts of the kelſon are afterwards united by an additional piece which is ſcored down upon the floor-timbers, and as many beams as may be neceſſary are fixed acroſs the ſhip in the new interval. Finally, the planks of the ſide are prolonged ſo as to unite with each other; and thoſe of the ceiling refitted in the ſame manner; by which the whole proceſs is completed.

LENEICIA, a ſtrong town of Poland, and capital of a palatinate of the ſame name, with a fort ſeated on a rock. The nobility of the province hold their diet here. It ſtands in a moraſs on the banks of the river Bſura, in E. Long. 19. 25. N. Lat. 52. 12.

LENOX, or DUNBARTON-*Shire*, a county of Scotland, ſtretching 24 miles in length and 20 in breadth, is bounded on the ſouth by the river and frith of Clyde, on the weſt by Lochlong and Argyleſhire, on the north by the Grampian hills, and on the eaſt by Monteith and Stirlingſhire. Great part of this county conſiſts of hills and heaths, fit for nothing but paſturage and ſport; even in the lower lands, the ſoil is not extremely fertile: yet the face of the country is agreeably diverſified with hill, dale, mountain, heath, ſtreams, lakes, woods, and fields of corn: the ſhire is likewiſe beautified with a great number of agreeable ſeats and plantations, belonging to gentlemen of fortune. Part of this county is waſhed by the river Clyde in its courſe to the ſea: even at the caſtle of Dumbarton, the breadth of it amounts to two miles at high-water, and it continues extending in width and depth until it joins the ocean. From the mouth of the Clyde, the two bays of Lochlong and Lochfyn make large indentations in the ſhire of Dumbarton. The only river of any conſideration that runs through this county, is the Leven, the Lelanonius of Ptolemy, otherwiſe called *Levinia*, the Latin name for Lenox. The river Leven is a pure tranſparent paſtoral ſtream, that warbles over a bed of pebbles, thro' a delightful vale adorned with farms, ſeats, woods, and plantations. It derives its origin from the great lake called *Lochlomond*, of which indeed it is the overflowing, and, after a delightful meandring courſe of five or ſix miles, diſembogues itſelf into the Clyde at the caſtle of Dumbarton. But the greateſt curioſity of this county is Lochlomond itſelf, a vaſt body of freſh water, ſupplied by ſubterraneous ſprings and rivulets, ſurrounded with huge mountains, extending 25 miles in length, and in ſome places five miles in breadth, incredibly deep in every part, interſperſed with 24 verdant iſles, ſome of which are ſtocked with red deer, and inhabited. Nothing can be more wildly romantic than this part of the country, during the ſummer-ſeaſon, on the ſouth ſide of the lake: the high road runs in ſome places through natural woods; overhung, on one hand, by ſteep mountains, covered with flowery heath; and on the other opening in long viſtas upon the lake, terminated by green iſlands that ſeem to float upon the water. Among the rivers of this ſhire we ſhall likewiſe mention the water of Blane, which, though itſelf an inconſiderable ſtream, hath been rendered famous by the birth of George Buchannan, the celebrated Latin poet and hiſtorian. He was born on the north ſide of the lake, not far from the place called *Buchannan*, where we may behold an elegant ſeat belonging to the duke of Montroſe, head of the noble family of Graham, ſo often diſtinguiſhed by its loyalty, integrity, and valour. The ſame part of the country gave birth to the great mathematician and naturaliſt, Napier lord Merchiſton, inventor of the logarithms. The title of *Lenox*, with the property of great part of the ſhire, was heretofore veſted in a branch of the royal family of Stuart, with which it was reunited in the perſon of king James VI. whoſe father, Henry lord Darnly, was ſon to the duke of Lenox. This prince conferred the title upon his kinſman Eſme Stuart, ſon of John lord D'Aubigney in France: but, his race failing at the death of Charles duke of Lenox and Richmond, and the eſtate devolving to the crown, king Charles II. conferred both titles on his own natural ſon by the ducheſs of Portſmouth; and they are ſtill enjoyed by his poſterity. The people of Lenoxſhire are chiefly Lowlanders, though in ſome parts of it divine ſervice is performed in the Erſe language. The moſt numerous clans in this diſtrict, are the Macfarlanes, the Colquhouns, and the Buchannans. They generally profeſs the Proteſtant faith, according to the Preſbyterian diſcipline; yet ſome of the gentlemen follow the Engliſh ritual. The commonalty are for the moſt part ſober, honeſt, and induſtrious; and though they live poorly, are tall, vigorous, and healthy.

LENS, a piece of glaſs, or any other tranſparent ſubſtance, the ſurfaces of which are ſo formed, that the rays of light, by paſſing through it, are made to change their direction, either tending to meet in a point beyond the lens, or made to become parallel after converging or diverging; or laſtly proceeding as if they had iſſued from a point before they fell upon the lens. Some lenſes are convex, or thicker in the middle; ſome concave, or thinner in the middle; ſome plano-convex, or plano-concave; that is with one ſide flat, and the other convex or concave; and ſome are called meniſcuſes, or convex on one ſide and concave on the other. See DIOPTRICS, p. 2475.

LENT, a ſolemn time of faſting in the Chriſtian church, obſerved as a time of humiliation before Eaſter, the great feſtival of our Saviour's reſurrection.

Thoſe of the Romiſh church, and ſome of the Proteſtant communion, maintain, that it was always a faſt of forty days, and, as ſuch, of apoſtolical inſtitution. Others think it was only of eccleſiaſtical inſtitution, and that it was variouſly obſerved in different churches, and grew by degrees from a faſt of forty hours, to a faſt of forty days. This is the ſentiment of Morton, biſhop Taylor, du Moulin, Daillé, and others.

Anciently the manner of obſerving lent among thoſe who were piouſly diſpoſed, was to abſtain from food till evening: their only refreſhment was a ſupper; and then it was indifferent whether it was fleſh or any other food, provided it was uſed with ſobriety and moderation.

Lent was thought the proper time for exerciſing, more abundantly, every ſpecies of charity. Thus what they ſpared from their own bodies by abridging them of a meal, was uſually given to the poor; they employed their vacant hours in viſiting the ſick and thoſe that were in priſon, in entertaining ſtrangers, and reconciling differences. The imperial laws forbad all proſecution of men in criminal actions, that might bring them to corporal puniſhment and torture, during the whole ſeaſon. This was a time of more than ordinary ſtrictneſs and devotion, and therefore in many of the great churches they had religious aſſemblies for prayer and preaching every day. All public games and ſtage-plays were prohibited at this ſeaſon; as alſo the celebration of all feſtivals, birth-days, and marriages, as unſuitable to the preſent occaſion.

The Chriſtians of the Greek church obſerve four lents: the firſt commences on the 15th of November; the ſecond is the ſame with our lent; the third begins the week after Whitſuntide, and continues till the feſtival of St Peter and St Paul; and the fourth commences on the firſt of Auguſt, and laſts no longer than till the 15th. Theſe lents are obſerved with great ſtrictneſs and auſterity; but on Saturdays and Sundays they indulge themſelves in drinking wine and uſing oil, which are prohibited on other days.

LENTISCUS, in botany. See PISTACIA.

LEO, in zoology. See FELIS.

LEO, in aſtronomy. See there, n° 206.

LEO X. whoſe proper name was John de Medicis, is a pope ever to be remembered by Proteſtants, as having proved the cauſe of the reformation begun by Martin Luther. He had been honoured with a cardinal's hat at 14 years of age, and ſome years after with the dignity of legate by Julius II. He was in that quality in the army which was defeated by the French near Ravenna in 1512, where he was taken priſoner. The ſoldiers, who had overcome him, ſhewed him ſuch great veneration, that they humbly aſked his pardon for gaining the victory, beſought him to give them abſolution for it, and promiſed never to bear arms againſt the pope. When pope Julius died, Leo was very ill of the venereal diſeaſe at Florence, and was carried to Rome in a litter. His hurrying about every night to the cardinals of his faction, occaſioned the breaking of his ulcer; and the matter which ran from it exhaled ſuch a ſtench, that all the cells in the conclave, which were ſeparated only by thin partitions, were poiſoned by it. Upon this the cardinals conſulted the phyſicians of the conclave, to know what the matter was. They, being bribed, ſaid the cardinal de Medicis could not live a month; which ſentence occaſioned his being choſen pope. Thus cardinal de Medicis, then not 30 years of age, was elected pope upon a falſe information; and as joy is the moſt ſovereign of all remedies, he ſoon after recovered his health, ſo that the old cardinals had reaſon to repent their credulity.—He was better calculated for a temporal prince, being ambitious, politic, luxurious, a connoiſſeur in the fine arts, and an accompliſhed fine gentleman: thus qualified, it is no wonder that ſo young a pontiff, neglecting the true intereſt of his church, ſhould avail himſelf of the folly of religious dupes, and publicly ſell indulgences to ſupport his prodigality, eſpecially as he was known to diſbelieve Chriſtianity itſelf, which he called *A very profitable fable for him and his predeceſſors*. In 1517, he publiſhed general indulgences throughout Europe (and ordered the prieſts to recommend them) in favour of thoſe who would contribute any ſum towards completing the church of St Peter; and this was the baſis of the reformation. (See Luther and Indulgence.) Leo died in 1521.

It is but juſtice to add, that to this pope was principally owing the revival of polite literature in Italy. He ſpared neither pains nor expence in recovering ancient manuſcripts, and procuring good editions of them; he favoured the arts and ſciences; and gloried in being the patron of learned and ingenious men, who in return have been very laviſh in his praiſe. Mr Pope, in his eſſay on Criticiſm, beſtows on him theſe harmonious lines.

> But ſee! each Muſe, in Leo's golden days,
> Starts from her trance, and trims her wither'd bays;
> Rome's ancient Genius, o'er its ruins ſpread,
> Shakes off the duſt, and rears his rev'rend head.
> Then Sculpture and her ſiſter Arts revive:
> Stones leap to form, and rocks begin to live;
> With ſweeter notes each riſing temple rung;
> A Raphael painted, and a Vida ſung.

Leo (St.), a ſmall but ſtrong town of Italy, in the territory of the church, and duchy of Urbino, with a biſhop's ſee. It is ſeated on a mountain, near the river Marrechia, in E. Long. 12. 25. N. Lat. 43. 57.

LEOMINSTER, a town of Herefordſhire, in England, ſeated on the river Lug; which waters the north and eaſt ſides of the town. It contains one pariſh, about 400 houſes, ſix wards, and the principal officer is a bailiff. It is of great note for its fine wool, has ſeveral good inns, and ſends two members to parliament. W. Long. 2. 45. N. Lat. 52. 20.

LEON, an ancient town of France, in Lower Bretagne, and capital of the Lyonnois, with a biſhop's ſee. It is ſeated near the ſea, in W. Long. 3. 55. N. Lat. 48. 41.

Leon, a province of Spain, with the title of a kingdom; bounded on the north by Aſturias; on the weſt by Galicia and Portugal; and on the ſouth by Eſtremadura and Caſtile, which alſo bounds it on the eaſt. It is about 125 miles in length, and 100 in breadth; and is divided into almoſt two equal parts by the river Duero, or Douro. It produces all the neceſſaries of life, and Leon is the capital town.

Leon, an ancient and large epiſcopal town of Spain, and capital of the kingdom of that name, built by the Romans in the time of Galba. It has the fineſt cathedral church in all Spain. It was formerly more rich and populous than at preſent, and had the honour of being the capital of the firſt Chriſtian kingdom in Spain. It is ſeated between two ſources of the river Eſra, in W. Long. 5. 13. N. Lat. 42. 55.

LEON (Peter Cicca de), author of the hiſtory of Peru. He left Spain his native country at 13 years of age, in order to go into America, where he reſided 17 years; and obſerved ſo many remarkable things, that he reſolved to commit them to writing. The firſt part of his hiſtory was printed at Sevil in 1553. He began it in 1541, and ended it in 1550. He was at Lima, the capital of the kingdom of Peru, when he gave the finiſhing ſtroke to it, and was then 32 years of age.

Leon *de Nicaragua*, a town of North America, in New Spain, and in the province of Nicaragua; the reſidence of the governor, and a biſhop's ſee. It conſiſts of about 1000 houſes, and has ſeveral monaſteries and nunneries belonging to it. At one end of the town is a lake which ebbs and flows like the ſea. The town is ſeated at the foot of a volcano, which renders it ſubject to earthquakes. It was taken by the bucaneers in 1685, in ſight of a Spaniſh army who were ſix to one. W. Long. 86. 10. N. Lat. 12. 25.

LEONARD de Noblet (St.), an ancient town of France, in the province of Guienne and territory of Limoſin, with a conſiderable manufactory of cloth and paper. It is ſeated on the river Vienne, in E. Long. 1. 35. N. Lat. 45. 50.

LEONARDO da vinci. See Vinci.

LEONCLAVIUS (John), one of the moſt learned men of the 16th century, was a native of Weſtphalia. He travelled into Turky, and collected excellent materials for compoſing *The Ottoman hiſtory*; and it is to him the public is indebted for the beſt account we have of that empire. To his knowledge in the learned languages, he had added that of the civil law; whereby he was very well qualified to tranſlate the *Baſilica*. His other verſions were eſteemed, tho' critics pretend to have found many faults in them. He died in 1593, aged 60.

LEONIDAS I. king of Sparta, a renowned warrior, ſlain in defending the ſtraits of Thermopylæ againſt Xerxes, 480 B. C. See Sparta.

LEONINE, in poetry, is applied to a kind of verſes which rhime at every hemiſtic, the middle always chiming to the end. Of which kind we find ſeveral ancient hymns, epigrams, prophecies, &c.—For inſtance, Muretus ſpeaking of the poetry of Lorenzo Gambara of Breſſe, ſays,

> *Brixia, veſtr*atis *merdoſa volumina* vatis,
> *Non ſunt noſtr*ates *tergere digna n*ates.

The following one is from the ſchool of Salernum:

> *Ut vites* pœnam *de potibus incipe* cœnam.

The origin of the word is ſomewhat obſcure: Paſquier derives it from one Leoninus, or Leonius, who excelled in this way, and dedicated ſeveral pieces to pope Alexander III.; others derive it from pope Leo; and others from the beaſt called *lion*, by reaſon it is the loftieſt of all verſes.

LEONTICE, lion's leaf; a genus of the monogynia order, to the hexandria claſs of plants. There are four ſpecies, natives of the ſouthern parts of Europe, two of which are ſometimes cultivated in this country. Theſe are, 1. The chryſogonum with winged leaves; and, 2. The leontopetalum with decompounded leaves. Both thoſe plants are natives of the Archipelago iſlands, and alſo grow in the corn-fields about Aleppo in Syria, where they flower ſoon after Chriſtmaſs. They have large tuberous roots like thoſe of the cyclamen, covered with a dark-brown bark. The flowers ſit upon naked footſtalks: thoſe of the firſt ſort ſuſtain many yellow flowers, but the flowers of the ſecond are of a paler colour. Both ſpecies are propagated by ſeeds, which muſt be ſown ſoon after they are ripe, otherwiſe they ſeldom ſucceed. When ſent to diſtant countries, they muſt be preſerved in ſand. The plants are, however, very difficult to be preſerved in this country: for they will not thrive in pots; and when they are planted in the full ground, the froſt frequently deſtroys them. The beſt way is to ſow the ſeed as ſoon as it comes from abroad, covering it with glaſſes in the winter to protect it from froſt; and, in the ſpring, when the plants begin to appear, they muſt have free air admitted to them at all times when the weather is mild, otherwiſe they will be weak.

LEONTINI, or Leontium, (anc. geog.) a town of Sicily on the ſouth ſide of the river Terias, 20 miles north-weſt of Syracuſe. The territory, called *Campi Leontini*, was extremely fertile, (Cicero): theſe were the *Campi Læſtrigonii*, anciently ſo called; the ſeat of the Læſtrigons, according to the commentators on the poets. The name *Leontini* is from *Leo*, the impreſſion on their coin being a lion. Now called *Lentini*, a town ſituate in the Val di Noto, in the ſouth-eaſt of Sicily.

LEONTIUM, one of the twelve towns of Achaia, whether on, or more diſtant from, the bay of Corinth, is uncertain. *Leontium* of Sicily. See Leontini.

LEONTODON, dandelion; a genus of the polygamia æqualis order, belonging to the ſyngeneſia claſs of plants. There are nine ſpecies, of which the only remarkable one is the Taraxacum, or common dandelion, found on the road-ſides, in paſtures, and on the banks of ditches. Early in the ſpring, the leaves whilſt yet white and hardly unfolded are an excellent ingredient in ſalads. The French eat the roots and tender leaves with bread and butter. Children that eat it in the evening experience its diuretic effects in the night, which is the reaſon that other European nations as well as ourſelves vulgarly call it *piſs-a-bed*. When a ſwarm of locuſts had deſtroyed the harveſt in the iſland of Minorca, many of the inhabitants ſubſiſted upon this plant. The expreſſed juice has been given to the quantity of four ounces three or four times a-day; and Boerhaave had a great opinion of the utility of this and other lacteſcent plants in viſceral obſtructions. Goats eat it; ſwine devour it greedily; ſheep and cows are not fond of it, and horſes refuſe it. Small birds are fond of the ſeeds.

LEONURUS, lion's-tail; a genus of the gymnoſpermia order, belonging to the didynamia claſs of plants.

Species. 1. The Africana, with ſpear-ſhaped leaves, is a native of Ethiopia. It riſes with a ſhrubby ſtalk ſeven or eight feet high, ſending out ſeveral four-cornered branches, garniſhed with oblong narrow leaves, acutely indented on their edges, hairy on their upper ſide, and veined on the under ſide, ſtanding oppoſite. The flowers are produced in whorls, each of the branches having two or three of theſe whorls towards their ends. They are of the lip kind, ſhaped ſomewhat like thoſe of the dead nettle; but are much longer, and covered with ſhort hairs. They are of a golden ſcarlet colour, ſo make a fine appearance. The flowers commonly appear in October and November, and ſometimes continue till the middle of December, but are not ſucceeded by ſeeds in this country. There is a variety with variegated leaves which is admired by ſome, but the whorls of flowers are ſmaller than thoſe of the plain ſort. 2. The nepetæfolia, with oval leaves, is a native of the Cape of Good Hope. This riſes with a ſquare ſhrubby ſtalk about three feet high, ſending out ſeveral four-cornered branches, garniſhed with oval crenated leaves, rough on their under ſide like the dead-nettle, but veined on the upper ſide, and placed oppoſite. The flowers come out in whorls like thoſe of the former ſort, but are not ſo long nor ſo deep-coloured. They appear at the ſame ſeaſon with the firſt, and continue as long in beauty. There are three other ſpecies, but the above are the moſt remarkable.

Culture. Both ſorts are propagated by cuttings, which ſhould be expoſed to the air long enough to harden the ſhoots, and planted in the beginning of July, after which they will take root very freely. They ſhould be planted in a loamy border to an eaſtern aſpect; and if they are covered cloſely with a bell or hand-glaſs to exclude the air, and ſhaded from the ſun, it will forward their putting forth roots. As ſoon as they have taken good root, they ſhould be taken up and planted each in a ſeparate pot filled with ſoft loamy earth, and placed in the ſhade till they have taken new root. In October they muſt be removed into the green-houſe.

LEOPARD. See Felis.

Leopard's *Bane*, in botany. See Doronicum.

LEPANTO, a ſtrong and very conſiderable town of Turky in Europe, and in Livadia, with an archbiſhop's ſee and a ſtrong fort. It is built on the top of a mountain, in form of a ſugar-loaf; and is divided into four towns, each ſurrounded by walls, and commanded by a caſtle on the top of the mountain. The harbour is very ſmall, and may be ſhut up by a chain, the entrance being but 50 feet wide. It was taken from the Turks by the Venetians in 1687; but was afterwards evacuated, and the caſtle demoliſhed in 1699, in conſequence of the treaty of Carlowik. It was near this town that Don John of Auſtria obtained the famous victory over the Turkiſh fleet in 1571. The produce of the adjacent country is wine, oil, corn, and rice. Turky leather is alſo manufactured here. The wine would be exceedingly good if they did not pitch their veſſels on the inſide, but this renders the taſte very diſagreeable to thoſe who are not accuſtomed to it. The Turks have ſix or ſeven moſques here, and the Greeks two churches. It is ſeated on a gulph of the ſame name, in E. Long. 22. 13. N. Lat. 38. 34.

LEPIDIUM, dittander, or *Pepperwort*, a genus of the ſiliculoſa order, belonging to the tetradynamia claſs of plants. There are 19 ſpecies, of which the only remarkable one is the latifolium or common dittander. This is a native of many parts both of Scotland and England. It hath ſmall, white, creeping roots, by which it multiplies very faſt, and is difficult to be eradicated after it has long grown in any place. The ſtalks are ſmooth, riſe two feet high, and ſend out many ſide-branches. The flowers grow in cloſe bunches towards the top of the branches, coming out from the ſide; they are ſmall, and compoſed of four ſmall white petals. The ſeeds ripen in autumn. The whole plant has a hot biting taſte like pepper; and the leaves have been often uſed by the country-people to give a reliſh to their viands inſtead of that ſpice, whence the plant has got the appellation of *poor man's pepper*. It is reckoned an antiſcorbutic, and was formerly uſed inſtead of the *horſe raddiſh ſcurvy-graſs*.

LEPIDOPTERA, in zoology, an order of inſects, with four wings, which are covered with imbricated ſquamulæ. See ZOOLOGY.

LEPIUM, in natural hiſtory, a genus of foſſils of the harder gypſum, compoſed of very ſmall particles, and of a leſs glittering hue.

There is only one ſpecies of this genus, being one of the leaſt valuable and moſt impure of the claſs of gypſums. It is of an extremely rude, irregular, coarſe, and unequal ſtructure; a little ſoft to the touch, of a very dull appearance, and of different degrees of a greyiſh white. It is burnt in plaſter for the coarſer works; it calcines very ſlowly and unequally, and makes but a very coarſe and ordinary plaiſter.

LEPROSY, a foul cutaneous diſeaſe, appearing in dry, white, thin, ſcurfy ſcabs, either on the whole body, or only ſome part of it, and uſually attended with a violent itching and other pains. See (the *Index* ſubjoined to) MEDICINE.

LEPTODECORHOMBES, in natural hiſtory, a genus of foſſils of the order of the ſelenitæ; conſiſting of 10 planes, each ſo nearly equal to that oppoſite to it as very much to approach to a decahedral parallelopepid, though never truly or regularly ſo.

Of this genus there are only five known ſpecies. 1. A thin, fine, pellucid, and ſlender-ſtreaked one, with tranſverſe ſtriæ, found in conſiderable quantities in the ſtrata of clay in moſt parts of England, particularly near Heddington in Oxfordſhire. 2. A thin, dull-looking, opake, and ſlender-ſtreaked one, more ſcarce than the former, and found principally in Leiceſterſhire and Staffordſhire. 3. A thin fine-ſtreaked one, with longitudinal ſtriæ, found in the clay-pits at Richmond, and generally lying at great depths. This has often on its top and bottom a very elegant ſmaller rhomboide, deſcribed by four regular lines. 4. A rough kind, with thick tranſverſe ſtriæ, and a ſcabrous ſurface, very common in Leiceſterſhire and Yorkſhire. And, 5. A very ſhort kind, with thick plates, common in the clay-pits of Northamptonſhire and Yorkſhire.

LEPTOPOLYGINGLIMI, in natural hiſtory, a genus of foſſil ſhells, diſtinguiſhed by a number of minute teeth at the cardo; whereof we find great numbers at Harwich-cliff, and in the marle-pits of Suſſex.

LEPTURA, in zoology, a genus of inſects belonging to the order of coleoptera, the characters of which are theſe:—The feelers are briſtly; the elytra are attenuated towards the apex: and the thorax is ſomewhat cylindrical. There are 25 ſpecies, principally diſtinguiſhed by their colour.

LEPUS, in zoology, a genus of quadrupeds belonging to the order of glires. The characters are theſe:—They have two fore-teeth in each jaw; thoſe in the upper-jaw are double, the interior ones being ſmalleſt. There are four ſpecies, viz.

1. The timidus, or hare, has a ſhort tail; the points of the ears are black; the upper-lip is divided up to the noſtrils; the length of the body is generally about a foot and a half; and the colour of the hair is reddiſh, interſperſed with white. The hare is naturally a timid animal. He ſleeps in his form, or ſeat, during the day; and feeds, copulates, &c. in the night. In a moon-light evening, a number of them are ſometimes ſeen ſporting together, leaping and purſuing each other: But the leaſt motion, the falling of a leaf, alarms them; and then they all run off ſeparately, each taking a different route. They are extremely ſwift in their motion, which is a kind of gallop, or a ſucceſſion of quick leaps. When purſued, they always take to the higher grounds: as their fore-feet are much ſhorter than the hind-ones, they run with more eaſe up-hill than down-hill. The hare is endowed with all thoſe inſtincts which are neceſſary for his own preſervation. In winter he chooſes a form expoſed to the ſouth, and in ſummer to the north. He conceals himſelf among vegetables of the ſame colour with himſelf. Mr Fouilloux ſays, that he obſerved a hare, as ſoon as he heard the ſound of the horn, or the noiſe of the dogs, although at a mile's diſtance, riſe from her ſeat, ſwim acroſs a rivulet, then lie down among the ruſhes, and by this means evade the ſcent of the dogs. After being chaſed for a couple of hours, a hare will ſometimes puſh another from his form, and lie down in it himſelf. When hard preſſed, the hare will mingle with a flock of ſheep, run up an old wall and conceal himſelf among the graſs on the top of it, or croſs a river ſeveral times at ſmall diſtances. He never runs againſt the wind, or ſtraight forward; but conſtantly doubles about, in order to make the dogs loſe their ſcent.

It is remarkable, that the hare, although ever ſo frequently purſued by the dogs, ſeldom leaves the place where ſhe was brought forth, or even the form in which ſhe uſually ſits. It is common to find them in the ſame place next day, after being long and keenly chaſed the day before. The females are more groſs than the males, and have leſs ſtrength and agility; they are likewiſe more timid, and never allow the dogs to approach ſo near their form before riſing as the males. They likewiſe practiſe more arts, and double more frequently, than the males.

The hare is diffuſed almoſt over every climate; and, notwithſtanding they are every-where hunted, their ſpecies never diminiſhes. They are in a condition of propagating the firſt year of their lives; the females go with young about 30 days, and produce four or five at a time; and as ſoon as they have brought forth, they again admit the embraces of the male; ſo that they may be ſaid to be always pregnant. The eyes of the young are open at birth; the mother ſuckles them about 20 days, after which they ſeparate from her, and procure their own food. The young never go far from the place where they were brought forth; but ſtill they live ſolitary, and make forms about 30 paces diſtant from each other: Thus, if a young hare be found any-where, you may almoſt be certain of finding ſeveral others within a very ſmall diſtance. The hare is not ſo ſavage as his manners would indicate. He is gentle, and ſuſceptible of a kind of education. He is pretty eaſily tamed, and will even ſhow a kind of attachment to the people of the houſe: But ſtill this attachment is not ſo ſtrong or laſting as to engage him to become altogether domeſtic; for although taken when very young, and brought up in the houſe, he no ſooner arrives at a certain age, than he takes the firſt opportunity of recovering his liberty, and flying to the fields. The hare lives about ſeven or eight years. He feeds upon graſs, and other vegetables. His fleſh is excellent food.

Mr Pennant deſcribes a ſpecies called the *Alpine hare*, which inhabits the ſummits of the Highland mountains, never deſcends into the vales, or mixes itſelf with the common kind, which is frequent in the bottoms: it lives among the rocks with ptarmigans, natives of the loftieſt ſituations. It does not run faſt; and, if purſued, is apt to take ſhelter beneath ſtones and in clefts of rocks: is eaſily tamed, and is very ſprightly and full of frolic. It is fond of honey and carraway comfits, and is obſerved to eat its own dung before a ſtorm. It is leſs than the common hare, weighing only 6½ lb. whereas the former weighs from 8 lb. to 12 lb. Its hair is ſoft and full; the predominant colour grey, mixed with a little black and tawny. In winter it entirely changes to a ſnowy whiteneſs, except the edges and tips of the ears, which retain their black colour. The alteration begins in September, and firſt appears about the neck and rump. In April it again reſumes its grey coat. This is the caſe in Styria; but in the polar tracts it never varies from white, the perpetual colour of the country. In the intermediate climates between temperate and frigid, ſuch as Scotland and Scandinavia, it regularly experiences theſe viciſſitudes of colour.

Hares are very ſubject to fleas. Linnæus tells us, that the Dalecarlians make a ſort of cloth, called *filt*, of the fur; which, by attracting theſe inſects, preſerves the wearer from their troubleſome attacks. The hair of this creature makes a great article in the hat-manufacture; and, as our country cannot ſupply a ſufficient quantity, a great deal is annually imported from Ruſſia and Siberia. The hare was reckoned a great delicacy among the Romans; the Britons, on the contrary, thought it impious even to taſte it: yet this animal was cultivated by them, either for the pleaſure of the chace, or for the purpoſes of ſuperſtition; as we are informed, that Boadicea, immediately before her laſt conflict with the Romans, let looſe a hare ſhe had concealed in her boſom, which taking what was deemed a fortunate courſe, animated her ſoldiers by the omen of an eaſy victory over a timid enemy.

2. The cuniculus, or rabbit, has a very ſhort tail, and naked ears. Its native country is Spain, where they were formerly taken with ferrets, as is practiſed in this country at preſent; which animals were firſt introduced into that country from Africa. They love a temperate and warm climate, and are incapable of bearing great cold; ſo that in Sweden they are obliged to be kept in houſes. They abound in Britain; their furs make a conſiderable article in the hat manufactories; and, of late, ſuch part of the fur as is unfit for that purpoſe, has been found as good as feathers for ſtuffing beds and bolſters. Numbers of the ſkins are annually exported into China. The Engliſh counties moſtly noted for rabbits are Lincolnſhire, Norfolk, and Cambridgeſhire. Methold, in the laſt county, is famous for the beſt kind for the table: the ſoil there is ſandy, and full of moſſes and the *carex* graſs. Rabbits ſwarm in the iſles of Orkney, where their ſkins form a conſiderable article of commerce. Excepting otters, brown rats, common mice, and ſhrews, no other quadrupeds are found there. The rabbits of thoſe iſles are in general grey; thoſe which inhabit the hills grow hoary in winter.—Formerly the ſilver-haired rabbits were in great eſteem for lining of clothes, and their ſkins ſold for three ſhillings a-piece; but ſince the introduction of more elegant furs, their price has fallen to 6d. The *Sunk Iſland* in the Humber was once famous for a mouſe-coloured ſpecies, which has ſince been extirpated by reaſon of the injury they did to the banks by burrowing.

The fecundity of the rabbit is ſtill greater than that of the hare. They will breed ſeven times in the year, and the female ſometimes brings eight young ones at a time. Suppoſing this to happen regularly for four years, the number of rabbits from a ſingle pair will amount to 1,274,840. By this account we might juſtly apprehend being overſtocked with theſe animals: but a great number of enemies prevents their increaſe; not only men, but hawks and beaſts of prey making dreadful havoc among them. Notwithſtanding all theſe different enemies, however, we are told by Pliny and Strabo, that they once proved ſuch a nuiſance to the inhabitants of the Balearic iſlands, that they were obliged to implore the aſſiſtance of a military force from Auguſtus, in order to exterminate them. They devour herbage of all kinds, roots, grain, fruits, &c. They are in a condition for generating at the end of ſix months; and, like the hare, the female is almoſt conſtantly in ſeaſon; ſhe goes with young about 30 days, and brings forth from four to eight at a litter. A few days before littering, ſhe digs a hole in the earth, not in a ſtraight line, but in a zig-zag form: the bottom of this hole ſhe enlarges every way, and then pulls off a great quantity of hair from her belly, of which ſhe makes a kind of bed for her young. During the two firſt days after birth, ſhe never leaves them, but when preſſed with hunger, and then ſhe eats quickly and returns: and in this manner ſhe ſuckles and attends her young for ſix weeks. All this time both the hole and the young are concealed from the male; ſometimes when the female goes out, ſhe, in order to deceive the male, fills up the mouth of the hole with earth mixed with her own urine. But when the young ones begin to come to the mouth of the hole, and to eat ſuch herbs as the mother brings to them, the father ſeems to know them: he takes them betwixt his paws, ſmooths their hair, and careſſes them with great fondneſs.

3. The capenſis has a tail about the length of his head, and red legs. It is a native of the Cape of Good Hope.

4. The braſilienſis has no tail. It is a native of South-America.

Lepus, in aſtronomy. See there, nº 206.

LERI (John de), a Proteſtant miniſter of the province of Burgundy. He was ſtudying at Geneva when it was reported there that Villegagnon deſired they would ſend him ſome paſtors into Brazil. He made that voyage with two miniſters, whom the church of Geneva ſent thither in 1556; and wrote an account of that voyage, which has been much commended by Thuanus and others.

LERIA, or LEIRIA, a ſtrong town of Eſtremadura in Portugal, with a caſtle and biſhop's ſee. It contains about 3,500 inhabitants, and was formerly the reſidence of the kings of Portugal. W. Long. 7. 50. N. Lat. 39. 40.

LERIDA, an ancient, ſtrong, and large town of Spain, in Catalonia, with a biſhop's ſee, an univerſity, and a ſtrong caſtle. This place declared for king Charles after the reduction of Barcelona in 1705; but it was retaken by the duke of Orleans in 1707, after the battle of Almanza. It is ſeated on a hill near the river Segra, and in a fertile ſoil, in E. Long. 0. 35. N. Lat. 41. 31.

LERINS, the name of two iſlands in the Mediterranean Sea, lying on the coaſt of Provence in France, five miles from Antibes; that near the coaſt, called *St Margaret*, is guarded by invalids, ſtate-priſoners being ſent here. It was taken by the Engliſh in 1746, but marſhal Belleiſle retook it in 1747. The other is called *St Honorat;* and is leſs than the former, but has a Benedictine abbey.

LERMA, a town of Spain, in Old Caſtile, ſeated on the river Arlanza, with the title of a *duchy*. W. Lon. 3. 5. N. Lat. 42. 2.

LERNICA, formerly a large city in the iſland of Cyprus, as appears from its ruins; but is now no more than a large village, ſeated on the ſouthern coaſt of that iſland, where there is a good road, and a ſmall fort for its defence.

LERO, or LEROS, an iſland of the Archipelago, and one of the Sporades; remarkable, according to ſome authors, for the birth of Patroclus. E. Long. 26. 15. N. Lat. 37. 0.

LE ROY LE VEUT, the king's aſſent to public bills. See the articles BILL, STATUTE, and PARLIAMENT.

LESBOS, LESBUS, or *Leſbia*, (anc. geogr.), an iſland on the coaſt of Troas and Myſia, in the Hither Aſia, inhabited by Æolians, (Scylax); taking its name from Leſbos, grandſon of Æolus, according to Diodorus Siculus. In length from north to ſouth 560 ſtadia; in compaſs, 1500. A noble and pleaſant iſland, ſays Tacitus; famous for the fertility of its ſoil, the generouſneſs of its wines, and the beauty of its women: the native place of Sappho the poeteſs. Anciently called *Laſia*, *Pelaſgia*, *Ægira*, *Æthiope*, and *Macaria*, (Pliny); *Leſbius*, and *Leſbous*, the epithets, (Horace); *Leſbia regula* (Ariſtotle), a proverbial ſaying for bringing down the rule to our actions, inſtead of our actions up to the rule. The iſland is now called *Leſbos*, or *Metelin*. See METELIN.

LESCAILLE (James), a celebrated Dutch poet and printer, was born at Geneva. He and his daughter Catharine Leſcaille have excelled all the Dutch poets. That lady, who was ſurnamed the *Sappho of Holland*, and *the tenth Muſe*, died in 1711. A collection of her poems has been printed, in which are the Tragedies of Genſeric, Wenceſlaus, Herod and Mariamne, Hercules and Dejaneira, Nicomedes, Ariadne, Caſſandra, &c. James Leſcaille her father deſerved the poet's crown, with which the emperor Leopold honoured him in the year 1663: he died about the year 1677, aged 67.

LESCAR, a town of Gaſcony, in France, and in the territory of Bearn, with a biſhop's ſee; ſeated on a hill, in W. Long. 0. 30. N. Lat. 43. 23.

LESKARD, a town in Cornwall, ſeated in a level, is a corporation, and ſends to members to parliament. It had formerly a caſtle, now in ruins; and has a good free-ſchool, and a conſiderable manufacture of yarns, which is chiefly ſold at Exeter. W. Lat. 4. 45. N. Lat. 50. 34.

LESLIE (John), biſhop of Roſs in Scotland, the ſon of Gavin Leſly an eminent lawyer, was born in the year 1526, and educated at the univerſity of Aberdeen; of which dioceſe he was made official, when but a youth. He was ſoon after created doctor of civil and canon law; but being peculiarly addicted to the ſtudy of divinity, he took orders, and became parſon of Une.

When the reformation began to ſpread in Scotland, and diſputes about religion ran high, Dr Leſly, in 1560, diſtinguiſhed himſelf at Edinburgh as a principal advocate for the Romiſh church, and was afterwards deputed by the chief nobility of that religion to condole with queen Mary on the death of her huſband the king of France, and to invite her to return to her native dominions. Accordingly, after a ſhort reſidence with her majeſty, they embarked together at Calais in 1561, and landed at Leith. She immediately made him one of her privy-council, and a ſenator of the college of juſtice. In 1564, he was made abbot of Lundores; and, on the death of Sinclair, was promoted to the biſhopric of Roſs. Theſe accumulated honours he wiſhed not to enjoy in luxurious indolence. The influence derived from them he exerted to the proſperity of his country. It is to him that Scotland is indebted for the publication of its laws, commonly called "The *black* acts of parliament," from the Saxon character in which they were printed. At his moſt earneſt deſire, the reviſion and collection of them were committed to the great officers of the crown.

In 1568, queen Mary having fled to England for refuge, and being there detained a priſoner, queen Elizabeth appointed certain commiſſioners at York to examine into the cauſe of the diſpute between Mary and her ſubjects. Theſe commiſſioners were met by others from the queen of Scots. The biſhop of Roſs was of the number, and pleaded the cauſe of his royal miſtreſs with great energy, though without ſucceſs: Elizabeth had no intention to releaſe her.

Mary, diſappointed in her expectations from the conference at York, ſent the biſhop of Roſs ambaſſador to Elizabeth, who paid little attention to his complaints. He then began to negotiate a marriage between his royal miſtreſs and the duke of Norfolk; which negociation, it is well known, proved fatal to the duke, and was the cauſe of Leſly's being ſent to the tower. In 1573 he was baniſhed the kingdom, and retired to Holland. The two following years he ſpent in fruitleſs endeavours to engage the powers of Europe to eſpouſe the cauſe of his queen. His laſt application was to the pope; but the power of the heretic Elizabeth had no leſs weight with his holineſs, than with the other Roman catholic princes of Europe.

rope. Finding all his perſonal applications ineffectual, he had recourſe to his pen in queen Mary's vindication; but Elizabeth's *ultima ratio regum* was too potent for all his arguments.

Biſhop Leſly, during his exile, was made coadjutor to the archbiſhop of Rouen. He was at Bruſſels when he received the account of queen Mary's execution; and immediately retired to the convent of Guirternberg near that city, where he died in the year 1596.

It was during the long and unfortunate captivity of Mary, that he amuſed himſelf in writing the hiſtory of Scotland, and his other works. The elegance and charms of literary occupations ſerved to aſſuage the violence of his woes. His knowledge and judgement as an hiſtorian are equally to be commended. Where he acts as the tranſcriber of Boece, there may be diſtinguiſhed, indeed, ſome of the inaccuracies of that writer. But, when he ſpeaks in his own perſon, he has a manlineſs, a candour, and a moderation, which appear not always even in authors of the Proteſtant perſuaſion. His works are, 1. *Afflicti animi conſolationes*, &c. compoſed for the conſolation of the captive queen. 2. *De origine, moribus, et geſtis Scotorum.* 3. *De titulo et jure ſereniſſimæ Mariæ Scotorum reginæ, quo regni Angliæ ſucceſſionem ſibi juſte vindicat.* 4. *Paræneſis ad Anglos et Scotos.* 5. *De illuſt. fœminarum in republ. adminiſtranda*, &c. 6. *Oratio ad reginam Elizabetham pro libertate impetranda.* 7. *Paræneſis ad nobilitatem populumque Scoticum.* 8. An account of his proceedings during his embaſſy in England from 1568 to 1572; manuſcript, Oxon. 9. Apology for the biſhop of Roſs, concerning the duke of Norfolk; manuſcript, Oxon. 10. Several letters, manuſcript.

Leslie (Charles), an Iriſh divine, and a zealous Proteſtant: but being attached to the houſe of Stuart, he left Ireland, and went to the pretender at Bar le Duc, and reſided with him till near the time of his death; conſtantly endeavouring to make him a proteſtant, but without effect. He died in 1722. His principal works are, 1. A ſhort and eaſy method with the Deiſts. 2. A ſhort and eaſy method with the Jews. 3. The ſnake in the graſs. 4. Hereditary right to the Crown of England aſſerted. 5. The Socinian controverſy diſcuſſed. 6. The charge of Sociniaſm againſt Dr Tillotſon conſidered; and many others. All his theological pieces, except that againſt archbiſhop Tillotſon, were collected and publiſhed by himſelf, in 2 vols folio.

LESSER tone, in muſic. See Tone.

LESSINES, a town of the Auſtrian Netherlands, in Hainault, ſeated on the river Dender, and famous for its linen manufacture. W. Long. 3. 53. N. Lat. 51. 41.

LESSONS, among eccleſiaſtical writers, portions of the holy ſcripture, read in Chriſtian churches, at the time of divine ſervice.

In the ancient church, reading the ſcriptures was one part of the ſervice of the catechumens; at which all perſons were allowed to be preſent, in order to obtain inſtruction.

The church of England, in the choice of leſſons, proceeds as follows: for the firſt leſſon on ordinary days, ſhe directs, to begin at the beginning of the year with Geneſis, and ſo continue on, till the books of the old Teſtament are read over; only omitting the Chronicles, which are for the moſt part the ſame with the books of Samuel and Kings, and other particular chapters in other books, either becauſe they contain names of perſons, places, or other matters leſs profitable to ordinary readers.

The courſe of the firſt leſſons for Sundays is regulated after a different manner. From Advent to Septuageſima-Sunday, ſome particular chapters of Iſaiah are appointed to be read, becauſe that book contains the cleareſt prophecies concerning Chriſt. Upon Septuageſima-Sunday Geneſis is begun, becauſe that book which treats of the fall of man, and the ſevere judgment of God inflicted on the world for ſin, beſt ſuits with a time of repentance and mortification. After Geneſis, follow chapters out of the books of the Old Teſtament, as they lie in order; only on feſtival Sundays, ſuch as Eaſter, Whitſunday, &c. the particular hiſtory relating to that day is appointed to be read; and on the Saints-days, the church appoints leſſons out of the moral books, ſuch as Proverbs, Eccleſiaſtes, Eccleſiaſticus, &c. as containing excellent inſtructions for the conduct of life.

As to the ſecond leſſons, the church obſerves the ſame courſe both on Sundays and week-days: reading the goſpels and Acts of the Apoſtles in the morning, and the epiſtles in the evening, in the order they ſtand in the New Teſtament: excepting on ſaints days and holy-days, when ſuch leſſons are appointed as either explain the myſtery, relate the hiſtory, or apply the example to us.

LESTOFF, or Leostoff, a town of Suffolk, in England, ſeated on the ſea-ſhore, is concerned in the fiſheries of the North-ſea, cod, herrings, mackerels, and ſprats; has a church, and a diſſenting meeting-houſe; and for its ſecurity, ſix 18-pounders, which they can move as occaſion requires; but it has no battery. The town conſiſts of 500 houſes; but the ſtreets, though tolerably paved, are narrow. The coaſt is there very dangerous for ſtrangers. E. Long. 1. 45. N. Lat. 52. 37.

L'ESTRANGE (Sir Roger), a noted writer in the 17th century, was deſcended from an ancient family, ſeated at Hunſtanton-hall in the county of Norfolk, where he was born in 1616, being the youngeſt ſon of Sir Hammond L'Eſtrange baronet, a zealous royaliſt. Having in 1644 obtained a commiſſion from king Charles I. for reducing Lynn in Norfolk, then in poſſeſſion of the parliament, his deſign was diſcovered, and his perſon ſeized. He was tried by a court martial at Guildhall in London, and condemned to die as a ſpy; but was reprieved, and continued in Newgate for ſome time. He afterward went beyond ſea; and in Auguſt 1653 returned to England, where he applied himſelf to the protector Oliver Cromwell, and having once played before him on the baſs-viol, he was by ſome nicknamed *Oliver's fiddler*. Being a man of parts, maſter of an eaſy humorous ſtyle, but withal in narrow circumſtances, he ſet up a newſpaper, under the title of *The public intelligencer*, in 1663; but which he laid down, upon the publication of the firſt London gazette in 1665, having being allowed, however, a conſideration by government. Some time after the Popiſh plot, when the Tories began to gain the aſcendant over the Whigs, he, in a paper called the *Obſervator*, became a zealous champion for the former. He was afterward knighted, and ſerved in the parliament called by king James II. in 1685. But things taking a different turn in that prince's reign, in point of liberty of conſcience, from what moſt people expected, our author's *Obſervators* were diſuſed as not at all ſuiting the times. However, he continued licenſer of the preſs till king William's acceſſion, in whoſe reign he met with ſome trouble as a diſaffected perſon. However, he went to his grave in peace, after he had in a manner ſurvived his intellectuals. He publiſhed a great many political tracts, and tranſlated ſeveral works from the Greek, Latin, and Spaniſh: viz. Joſephus's works, Cicero's Offices, Seneca's Morals, Eraſmus's Colloquies, Æſop's Fables, and Bonas's Guide to Eternity. The character of his ſtyle has been variouſly repreſented; his language being obſerved by ſome to be eaſy and humorous, while Mr Gordon ſays, "that his productions are not fit to be read by any who have taſte or good-breeding. They are full of phraſes picked up in the ſtreets, and nothing can be more low or nauſeous."

LESTWEITHEL, a town of Cornwall, in England, ſeated on the river Foy, not far from its fall into Foy-haven. Formerly ſhips came as far up as the town; but the channel is now ſtopped up. It is a corporation, and ſends two members to parliament. They alſo keep courts here belonging to the ſtannery; and the county-gaol is likewiſe here. It is conveened by a mayor, 6 capital burgeſſes, and 17 common-council men. The town conſiſts of about 100 houſes; but the ſtreets, though paved, are bad. W. Long. 5. 0. N. Lat. 50. 30.

LETHARGY. See (*Index* ſubjoined to) MEDICINE.

LETHARGY, in farriery. See there, § 9.

LETHE, in the ancient mythology, one of the rivers of hell, ſignifying oblivion or forgetfulneſs; its waters having, according to poetic fiction, the peculiar quality of making thoſe who drank them forget every thing that was paſt.

LETI (Gregorio), an eminent Italian writer, was deſcended of a family which once made a conſiderable figure at Bologna: Jerom, his father, was page to prince Charles de Medicis; ſerved ſome time in the troops of the grand duke as captain of foot; and ſettling at Milan, married there in 1628. He was afterward governor of Almantea in Calabria, and died at Salerno in 1639. Our author was born at Milan in 1630, ſtudied under the Jeſuits at Coſenza, and was afterward ſent by an uncle to Rome, who would have him enter into the church; but he being averſe to it, went to Geneva, where he ſtudied the government and the religion there. Thence he went to Lauſanne; and contracting an acquaintance with John Anthony Guerin, an eminent phyſician, lodged at his houſe, made profeſſion of the Calviniſt religion, and married his daughter. He ſettled at Geneva; where he ſpent almoſt twenty years, carrying on a correſpondence with learned men, eſpecially thoſe of Italy. Some conteſts obliged him to leave that city in 1679; upon which he went to France, and then into England, where he was received with great civility by Charles II. who, after his firſt audience, made him a preſent of a thouſand crowns, with a promiſe of the place of hiſtoriagrapher. He wrote there the hiſtory of England; but that work not pleaſing the court on account of his too great liberty in writing, he was ordered to leave the kingdom. He went to Amſterdam in 1682, and was honoured with the place of hiſtoriographer to that city. He died ſuddenly in 1701. He was a man of indefatigable application, as the multiplicity of his works ſhow. The principal of theſe are, 1. The nepotiſm of Rome. 2. The univerſal monarchy of Lewis XIV. 3. The life of pope Sixtus V. 4. The life of Philip II. king of Spain. 5. The life of the emperor Charles V. 5. The life of Elizabeth, queen of England. 7. The hiſtory of Oliver Cromwell. 8. The hiſtory of Great Britain, 5 vols, 12mo. 9. The hiſtory of Geneva, &c.

LETRIM, a county of Ireland, in the province of Connaught, 44 miles in length, and 17 in breadth; bounded on the eaſt and north-eaſt by Cavan and Fermanagh, by Sligo and Roſcommon on the weſt and ſouth-weſt, and by Longford on the eaſt and ſouth-eaſt. It is a hilly country, with rank graſs, which feeds a great number of cattle. The chief town is Letrim, ſeated not far from the river Shannon. It contains 4000 houſes, 21 pariſhes, 5 baronies, 2 boroughs, and ſends 6 members to parliament.

LETTER, a character uſed to expreſs one of the ſimple ſounds of the voice; and as the different ſimple ſounds are expreſſed by different letters, theſe, by being differently compounded, become the viſible ſigns or characters of all the modulations and mixtures of ſounds uſed to expreſs our ideas in a regular language. Thus, as by the help of ſpeech we render our ideas audible; by the aſſiſtance of letters we render them viſible, and by their help we can wrap up our thoughts, and ſend them to the moſt diſtant parts of the earth, and read the tranſactions of different ages. As to the firſt letters, what they were, who firſt invented them, and among what people they were firſt in uſe, there is ſtill room to doubt: Philo attributes this great and noble invention to Abraham; Joſephus, St Irenæus, and others, to Enoch; Bibliander, to Adam; Euſebius, Clemens Alexandrinus, Cornelius Agrippa, and others, to Moſes; Pomponius Mela, Herodian, Rufus Feſtus, Pliny, Lucan, &c. to the Phœnicians; St Cyprian, to Saturn; Tacitus, to the Egyptians; ſome, to the Ethiopians; and others, to the Chineſe: but, with reſpect to theſe laſt, they can never be entitled to this honour, ſince all their characters are the ſigns of words, formed without the uſe of letters; which renders it impoſſible to read and write their language, without a vaſt expence of time and trouble; and abſolutely impoſſible to print it by the help of types, or any other manner but by engraving, or cutting in wood. See PRINTING.

There have alſo been various conjectures about the different kinds of letters uſed in different languages: thus, according to Crinitus, Moſes invented the Hebrew letters; Abraham, the Syriac and Chaldee; the Phœnicians, thoſe of Attica, brought into Greece by Cadmus, and from thence into Italy by the Pelaſgians; Nicoſtrata, the Roman; Iſis, the Egyptian; and Vulſilas, thoſe of the Goths.

It is probable, that the Egyptian hieroglyphics were the firſt manner of writing: but whether Cadmus and the Phœnicians learned the uſe of letters from the

Letter.

Egyptians, or from their neighbours of Judea or Samaria, is a queſtion; for ſince ſome of the books of the Old Teſtnment were then written, they are more likely to have given them the hint, than the hieroglyphics of Egypt. But whereſoever the Phœnicians learned this art, it is generally agreed, that Cadmus, the ſon of Agenor, firſt brought letters into Greece; whence, in following ages, they ſpread over the reſt of Europe.

Letters make the firſt part or elements of grammar; an aſſemblage of theſe compoſe ſyllables and words, and theſe compoſe ſentences. The alphabet of every language conſiſts of a number of letters, which ought each to have a different ſound, figure, and uſe. As the difference of articulate ſounds was intended to expreſs the different ideas of the mind, ſo one letter was originally intended to ſignify only one ſound, and not, as at preſent, to expreſs ſometimes one ſound and ſometimes another; which practice has brought a great deal of confuſion into the languages, and rendered the learning of the modern tongues much more difficult than it would otherwiſe have been. This conſideration, together with the deficiency of all the known alphabets, from their wanting ſome letters to expreſs certain ſounds, has occaſioned ſeveral attempts towards an univerſal alphabet, to contain an enumeration of all ſuch ſingle ſounds or letters as are uſed in any language. See ALPHABET.

Grammarians diſtinguiſh letters into vowels, conſonants, mutes, liquids, diphthongs, and characteriſtics. They are likewiſe divided into capital and ſmall letters. They are alſo denominated from the ſhape and turn of the letters; and in writing are diſtinguiſhed into different hands, as round-text, German-text, round-hand, Italian, &c. and in printing, into roman, italic, and black letter.

The term LETTER, or *type*, among printers, not only includes the CAPITALS, SMALL CAPITALS, and ſmall letters, but all the points, figures, and other marks caſt and uſed in printing; and alſo the large ornamental letters, cut in wood or metal, which take place of the illumined letters uſed in manuſcripts. The letters uſed in printing are caſt at the ends of ſmall pieces of metal, about three quarters of an inch in length; and the letter being not indented, but raiſed, eaſily gives the impreſſion, when, after being blacked with a glutinous ink, paper is cloſely preſſed upon it. See the articles PRINTING and TYPE. A fount of letters includes ſmall letters, capitals, ſmall capitals, points, figures, ſpaces, &c. but beſides they have different kinds of two-lined letters, only uſed for titles, and the beginning of books, chapters, &c. See FOUNT.

LETTER, is alſo a writing addreſſed and ſent to a perſon. See EPISTLE.

The art of epiſtolary writing, as the late tranſlator of Pliny's Letters has obſerved, was eſteemed by the Romans in the number of liberal and polite accompliſhments; and we find Cicero mentioning with great pleaſure, in ſome of his letters to Atticus, the elegant ſpecimen he had received from his ſon, of his genius in this way. It ſeems indeed to have formed part of their education; and, in the opinion of Mr Locke, it well deſerves to have a ſhare in ours. "The writing of letters (as that judicious author obſerves) enters ſo much into all the occaſions of life, that no gentleman can avoid ſhewing himſelf in compoſitions of this kind. Occurrences will daily force him to make this uſe of his pen, which lays open his breeding, his ſenſe, and his abilities, to a ſeverer examination than any oral diſcourſe." It is to be wondered we have ſo few writers in our own language, who deſerve to be pointed out as models upon ſuch an occaſion. After having named Sir William Temple, it would perhaps be difficult to add a ſecond. The elegant writer of Cowley's life mentions him as excelling in this uncommon talent; but as that author declares himſelf of opinion, "That letters which paſs between familiar friends, if they are written as they ſhould be, can ſcarce ever be fit to ſee the light," the world is deprived of what, no doubt, would have been well worth its inſpection. A late diſtinguiſhed genius treats the very attempt as ridiculous, and profeſſes himſelf "a mortal enemy to what they call *a fine letter*." His averſion however was not ſo ſtrong, but he knew to conquer it when he thought proper; and the letter which cloſes his correſpondence with biſhop Atterbury is, perhaps, the moſt genteel and manly addreſs that ever was penned to a friend in diſgrace. The truth is, a fine letter does not conſiſt in ſaying fine things, but in expreſſing ordinary ones in an uncommon manner. It is the *proprie communia dicere*, the art of giving grace and elegance to familiar occurrences, that conſtitutes the merit of this kind of writing. Mr Gay's letter, concerning the two lovers who were ſtruck dead with the ſame flaſh of lightening, is a maſter-piece of the ſort; and the ſpecimen he has there given of his talents for this ſpecies of compoſition makes it much to be regretted we have not more from the ſame hand.

Ward's Oratory.

Of the Style of Epiſtolary Compoſition. Purity in the choice of words, and juſtneſs of conſtruction, joined with perſpicuity, are the chief properties of this ſtyle. Accordingly Cicero ſays: "In writing letters, we make uſe of common words and expreſſions." And Seneca more fully: "I would have my letters to be like my diſcourſes, when we either ſit or walk together, unſtudied and eaſy." And what prudent man, in his common diſcourſe, aims at bright and ſtrong figures, beautiful turns of language, or laboured periods? Nor is it always requiſite to attend to exact order and method. He that is maſter of what he writes, will naturally enough expreſs his thoughts without perplexity and confuſion; and more than this is ſeldom neceſſary, eſpecially in familiar letters.

Indeed, as the ſubjects of epiſtles are exceedingly various, they will neceſſarily require ſome variety in the manner of expreſſion. If the ſubject be ſomething weighty and momentous, the language ſhould be ſtrong and ſolemn; in things of a lower nature, more free and eaſy; and upon lighter matters, jocoſe and pleaſant. In exhortations, it ought to be lively and vigorous; in conſolations, kind and compaſſionate; and in adviſing, grave and ſerious. In narratives, it ſhould be clear and diſtinct; in requeſts, modeſt; in commendations, friendly; in proſperity cheerful, and mournful in adverſity. In a word, the ſtyle ought to be accommodated to the particular nature of the thing about which it is converſant.

Beſides, the different character of the perſon, to whom the letter is written, requires a like difference in the modes of expreſſion. We do not uſe the ſame language to private perſons, and thoſe in a public ſtation; to ſuperiors, inferiors, and equals. Nor do we expreſs ourſelves alike to old men and young, to the grave and facetious, to courtiers and philoſophers, to our friends and ſtrangers. Superiors are to be addreſſed to with reſpect, inferiors with courteſy, and equals with civility; and every one's character, ſtation, and circumſtances in life, with the relation we ſtand in to him, occaſions ſome variety in this reſpect. But when friends and acquaintances correſpond by letters, it carries them into all the freedom and good-humour of converſation; and the nearer it reſembles that the better, ſince it is deſigned to ſupply the room of it. For when friends cannot enjoy each others company, the next ſatisfaction is to converſe with each other by letters. Indeed, ſometimes greater freedom is uſed in epiſtles, than the ſame perſons would have taken in diſcourſing together; becauſe, as Cicero ſays, "A letter does not bluſh." But ſtill nothing ought to be ſaid in a letter, which, conſidered in itſelf, would not have been fit to ſay in diſcourſe; though modeſty perhaps, or ſome other particular reaſon, might have prevented it. And thus it frequently happens in requeſts, reproofs, and other circumſtances of life. A man can aſk that by writing, which he could not do by words, if preſent; or blame what he thinks amiſs in his friend with greater liberty when abſent, than if they were together. From hence it is eaſy to judge of the fitneſs of any expreſſion to ſtand in an epiſtle, only by conſidering, whether the ſame way of ſpeaking would be proper in talking with the ſame perſon. Indeed, this difference may be allowed, that as perſons have more time to think, when they write, than when they ſpeak; a greater accuracy of language may ſometimes be expected in one, than the other. However, this makes no odds as to the kind of ſtyle; for every one would chooſe to ſpeak as correctly as he writes, if he could. And therefore all ſuch words and expreſſions, as are unbecoming in converſation, ſhould be avoided in letters; and a manly ſimplicity free of all affectation, plain, but decent and agreeable, ſhould run through the whole. This is the uſual ſtyle of Cicero's epiſtles, in which the plainneſs and ſimplicity of his diction, is accompanied with ſomething ſo pleaſant and engaging, that he keeps up the attention of his reader, without ſuffering him to tire. On the other hand, Pliny's ſtyle is ſuccinct and witty; but generally ſo full of turns and quibbles upon the ſound of words, as apparently render it more ſtiff and affected than agrees with converſation, or than a man of ſenſe would chooſe in diſcourſe, were it in his power. You may in ſome meaſure judge of Pliny's manner, by one ſhort letter to his friend, which runs thus: "How fare you? "As I do in the country? pleaſantly? that is, at "leiſure? For which reaſon I do not care to write long "letters, but to read them; the one as the effect of "niceneſs, and the other of idleneſs. For nothing "is more idle than your nice folks, or curious than "your idle ones. Farewell." Every ſentence here conſiſts of an antitheſis, and a jingle of words, very different from the ſtyle of converſation, and plainly the effect of ſtudy. But this was owing to the age in which he lived, at which time the Roman eloquence was ſunk into puns, and an affectation of wit; for he was otherwiſe a man of fine ſenſe, and great learning.

LETTER *of Attorney*, in law, is a writing by which one perſon authoriſes another to do ſome lawful act in his ſtead; as to give ſeiſin of lands, to receive debts, ſue a third perſon, &c.

The nature of this inſtrument is to tranſfer to the perſon to whom it is given, the whole power of the maker, to enable him to accompliſh the act intended to be performed. It is either general or ſpecial: and ſometimes it is made revocable, which is when a bare authority is only given; and ſometimes it is irrevocable, as where debts, &c. are aſſigned from one perſon to another. It is generally held, that the power granted to the attorney muſt be ſtrictly purſued; and that where it is made to three perſons, two cannot execute it. In moſt caſes, the power given by a letter of attorney determines upon the death of the perſon who gave it. No letter of attorney made by any ſeaman, &c. in any ſhip of war, or having letters of marque, or by their executors, &c. in order to empower any perſon to receive any ſhare of prizes or bounty-money, ſhall be valid, unleſs the ſame be made revocable, and for the uſe of ſuch ſeamen, and be ſigned and executed before, and atteſted by, the captain and one other of the ſigning officers of the ſhip, or the mayor or chief magiſtrate of ſome corporation.

LETTER *of Mart*, or *Marque*. See MARQUE.

LETTERS *Patent*, or *Overt*, are writings ſealed with the great ſeal of England, whereby a man is authoriſed to do, or enjoy any thing, which, of himſelf, he could not do. See PATENT.—They are ſo called, by reaſon of their form; as being *open*, with the ſeal affixed, ready to be ſhewn for the confirmation of the authority given by them.

LETTUCE, in botany. See LACTUCA.

LEVANT, in geography, ſignifies any country ſituated to the eaſt of us, or in the eaſtern ſide of any continent or country, or that on which the ſun riſes.

LEVANT, is alſo a name given to the eaſtern part of the Mediterranean ſea, bounded by Natolia or the leſſer Aſia on the north, by Syria and Paleſtine on the eaſt, by Egypt and Barca on the ſouth, and by the iſland of Candia and the other part of the Mediterranean on the weſt.

LEVATOR, in anatomy, a name given to ſeveral muſcles. See ANATOMY, *Table of the Muſcles*.

LEUCA, in antiquity, a geographical meaſure of length in uſe among the later Gauls; which according to Jornandes, who calls it *Leuga*, contained fifteen hundred paces, or one mile and a half. Hence the name of *league*, now reckoned at three miles. In the lower age called *leuva*.

LEUCADIA, formerly called *Neritis*, and a peninſula of Acarnania, (Homer); but afterwards, by cutting through the peninſula, made an iſland, as it is at this day; called *St Maura*.

LEUCAS, (anc. geog.), formerly called *Neritos* and *Neritum*, a town of Leucadia or Leucas; ſituated near a narrow neck of land, or iſthmus, on a hill facing the eaſt and Acarnania: the foot or lower part of the town was a plain lying on the ſea by which

Leucadia was divided from Acarnania, (Livy); though Thucydides places *Leucas* more inward in the Iſland, which was joined to the continent by a bridge. It was an illuſtrious city, the capital of Acarnania, and the place of general aſſembly.

LEUCATA or LEUCATE, (anc. geog.); a promontory of Leucadia according to Strabo, a white rock projecting into the ſea towards Cephalenia, on which ſtood a temple of Apollo ſurnamed *Leucadius*. This place was famous for being the laſt reſource of deſpairing lovers; from which they took a leap into the ſea, as Sappho is ſaid to have done.

LEUCIPPUS, a celebrated Greek philoſopher and mathematician; firſt author of the famous ſyſtem of atoms and vacuums, and of the hypotheſis of ſtorms; ſince attributed to the moderns. He flouriſhed about 428 B. C.

LEUCOGÆUS, (anc. geog.), a hill ſituated between Puteoli and Neapolis in Campania, abounding in ſulphur; now *l'Alumera*. Whence there were alſo ſprings called *Leucogæi fontes*, the waters of which, according to Pliny, gave a firmneſs to the teeth, clearneſs to the eyes, and proved a cure in wounds.

LEUCOJUM, GREAT SNOW-DROP; a genus of the monogynia order, belonging to the hexandria claſs of plants.

Species. 1. The vernum, vernal, or ſpring leucojum, hath an oblong bulbous root, ſending up ſeveral flat leaves ſix or eight inches long; and amidſt them an upright, channelled, hollow, naked ſtalk, about a foot high, terminated by a ſpatha, protruding one or two white flowers on ſlender footſtalks drooping downwards, and appearing in March. 2. The æſtivum, or ſummer leucojum, hath a large, oblong, bulbous root, crowned with ſeveral long, flat, broad leaves; and amidſt them an upright, thick, hollow ſtalk, 15 or 18 inches high; terminated by a ſpatha, protruding many white flowers, on ſlender footſtalks, drooping downwards; flowering in May. 3. The autumnale, or autumnal leucojum, hath a large oblong bulbous root, crowned with many narrow leaves, an upright, naked, hollow ſtalk, terminated by a ſpatha protruding many white flowers on long weak footſtalks, hanging downwards, and flowering in autumn.

Culture. All the three ſpecies are very hardy, durable in root, and increaſe exceedingly by offſets, which may be ſeparated every two or three years.

LEUCOMA, in ſurgery, a diſtemper of the eye, otherwiſe called *albugo*. See ALBUGO, and (*Index* ſubjoined to) MEDICINE.

LEUCOPHLEGMATIA, in medicine, a kind of dropſy, otherwiſe called *anaſarca*. See (*Index* ſubjoined to) MEDICINE.

LEUCTRA, (anc. geog.), a town of Bœotia, to the weſt of Thebes, or lying between Plateæ and Theſpiæ, where the Lacedemonians had a great defeat given them by Epaminondas and Pelopidas the Theban generals. The Theban army conſiſted at moſt but of 6000 men, whereas that of the enemy was at leaſt thrice that number: but Epaminondas truſted moſt in his horſe, wherein he had much the advantage, both in their quality and good management; the reſt he endeavoured to ſupply by the diſpoſition of his men, and the vigour of the attack. He even refuſed to ſuffer any to ſerve under him in the engagement, but ſuch as he knew to be fully reſolved to conquer or die. He put himſelf at the head of the left wing, oppoſite to Cleombrotus king of Sparta, and placed the main ſtreſs of the battle there; rightly concluding, that, if he could break the body of the Spartans, which was but 12 men deep, whereas his own was 50, the reſt would be ſoon put to flight. He cloſed his own with the ſacred band, which was commanded by Pelopidas; and placed his horſe in the front. His right, from which he had drawn ſo many men, he ordered to fall back, in a ſlanting line, as if they declined to fight, that they might not be too much expoſed to the enemy, and might ſerve him for a corps of reſerve in caſe of need. This was the wiſe diſpoſition which the two Theban generals made of their few, but reſolute forces; and which ſucceeded, in every part, according to their wiſh. Epaminondas advanced with his left wing, extending it obliquely, in order to draw the enemy's right from the main body; and Pelopidas charged them with ſuch deſperate ſpeed and fury, at the head of his battalion, before they could reunite, that their horſe, not being able to ſtand the ſhock, were forced back upon their infantry, which threw the whole into the greateſt confuſion: ſo that though the Spartans were of all the Greeks the moſt expert in recovering from any ſurprize, yet their ſkill on this occaſion either failed them or proved of no effect; for the Thebans, obſerving the dreadful impreſſion they had made on them with their horſe, puſhed furiouſly upon the Spartan king, and opened their way to him with a great ſlaughter.

Upon the death of Cleombrotus, and ſeveral officers of note, the Spartans, according to cuſtom, renewed the fight with double vigour and fury, not ſo much to revenge his death as to recover his body, which was ſuch an eſtabliſhed point of honour as they could not give up without the greateſt diſgrace: but here our Theban general wiſely choſe rather to gratify them in that point, than to hazard the ſucceſs of a ſecond onſet; and left them in poſſeſſion of their king, whilſt himſelf marched ſtraight againſt their other wing, which was commanded by Archidamus, and conſiſted chiefly of ſuch auxiliaries and allies as had not heartily engaged in the Spartan intereſt: and theſe were ſo diſheartened at the death of the king, and the defeat of that wing, that they betook themſelves to flight, and were preſently after followed by the reſt of the army. The Thebans, however, purſued them ſo cloſely, that they made a ſecond dreadful ſlaughter among them; which completed Epaminondas's victory, who remained maſter of the field, and erected a trophy in memory of it. This was the concluſion of the famed battle of Leuctra, in which the Lacedemonians loſt 4000 men, and the Thebans but 300.

LEVEL, an inſtrument wherewith to draw a line parallel to the horizon, by means of which the true level, or the difference of aſcent or deſcent between ſeveral places, may be found for conveying water, draining fens, &c.

There are ſeveral inſtruments of different contrivance and matter, invented for the perfection of levelling; all of which, for the practice, may be reduced to thoſe that follow.

Air-LEVEL, that which ſhews the line of level by means

Level. means of a bubble of air incloſed with ſome liquor in a glaſs-tube of an indeterminate length and thickneſs, whoſe two ends are hermetically ſealed. When the bubble fixes itſelf at a certain mark, made exactly in the middle of the tube, the plane or ruler wherein it is fixed is level. When it is not level, the bubble will riſe to one end. This glaſs-tube may be ſet in another of braſs, having an aperture in the middle, whence the bubble of air may be obſerved. The liquor wherewith the tube is filled, is oil of tartar, or aqua ſecunda; thoſe not being liable to freeze as common water, nor to rarefaction and condenſation, as ſpirit of wine is. There is one of theſe inſtruments with ſights, being an improvement upon that laſt deſcribed, which, by the addition of more apparatus, becomes more commodious and exact. It conſiſts of an air-level, n° 1. about eight inches long, and ſeven or eight lines in diameter, ſet in a braſs-tube, 2, with an aperture in the middle, C. The tubes are carried in a ſtrong ſtraight ruler, a foot long; at whoſe ends are fixed two ſights, 3, 3, exactly perpendicular to the tubes, and of an equal height, having a ſquare hole, formed by two fillets of braſs croſſing each other at right angles, in the middle whereof is drilled a very little hole, through which a point on a level with the inſtrument is deſcried. The braſs-tube is faſtened on the ruler by means of two ſcrews; one whereof, marked 4, ſerves to raiſe or depreſs the tube at pleaſure, for bringing it towards a level. The top of the ball and ſocket is rivetted to a little ruler that ſprings, one end whereof is faſtened with ſcrews to the great ruler, and at the other end has a ſcrew, 5, ſerving to raiſe and depreſs the inſtrument when nearly level.

Plate CLXII. fig. 1.

This inſtrument, however, is yet leſs commodious than the following one; becauſe though the holes be ever ſo ſmall, yet they will ſtill take in too great a ſpace to determine the point of level preciſely.

This inſtrument conſiſts of an air-level, with teleſcope ſights. This level (*ibid.* n° 2.) is like the laſt; with this difference, that, inſtead of plain ſights, it carries a teleſcope to determine exactly a point of level at a good diſtance. The teleſcope is a little braſs-tube, about 15 inches long, faſtened on the ſame ruler as the level. At the end of the tube of the teleſcope, marked 1, enters the little tube 1, carrying the eye-glaſs and an hair horizontally placed in the focus of the object-glaſs, 2; which little tube may be drawn out, or puſhed into the great one, for adjuſting the teleſcope to different ſights: at the other end of the teleſcope is placed the object-glaſs. The ſcrew 3, is for raiſing or lowering the little fork, for carrying the hair, and making it agree with the bubble of air when the inſtrument is level; and the ſcrew 4, is for making the bubble of air, D or E, agree with the teleſcope: the whole is fitted to a ball and ſocket. M. Huygens is ſaid to be the firſt inventor of this level; which has this advantage, that it may be inverted by turning the ruler and teleſcope half round; and if then the hair cut the ſame point that it did before, the operation is juſt.

It may be obſerved, that one may add a teleſcope to any kind of level, by applying it upon, or parallel to, the baſe or ruler, when there is occaſion to take the level of remote objects.

Dr Deſaguliers contrived an inſtrument, by which the difference of level of two places, which could not be taken in leſs than four or five days with the beſt teleſcope-levels, may be taken in as few hours. The inſtrument is as follows. To the ball C (*ibid.* n° 3.) is joined a recurve tube BA, with a very fine bore, and a ſmall bubble at top, A, whoſe upper-part is open. It is evident from the make of this inſtrument, that if it be inclined in carrying, no prejudice will be done to the liquor, which will always be right both in the ball and tube when the inſtrument is ſet upright. If the air at C be ſo expanded with heat, as to drive the liquor to the top of the tube, the cavity A will receive the liquor, which will come down again and ſettle at D, or near it, according to the level of the place where the inſtrument is, as ſoon as the air at C returns to the ſame temperament as to heat and cold. To preſerve the ſame degree of heat, when the different obſervations are made, the machine is fixed in a tin veſſel EF, filled with water up to *g h*, above the ball, and a very ſenſible thermometer has alſo its ball under water, that one may obſerve the liquor at D, in each experiment, when the thermometer ſtands at the ſame height as before. The water is poured out when the inſtrument is carried; which one may do conveniently by means of the wooden frame, which is ſet upright by the three ſcrews S, S, S, *ibid.* n° 4. and a line and plummet PP, n° 5. At the back part of the wooden frame, from the piece at top K, hangs the plummet P, over a braſs point at N; M *m* are brackets to make the upright board KN continue at right angles with the horizontal one at N. N° 6. repreſents a front view of the machine, ſuppoſing the fore part of the tin-veſſel tranſparent; and here the braſs-ſocket of the recurve-tube, into which the ball is ſcrewed, has two wings at II, fixed to the bottom, that the ball may not break the tube by its endeavour to emerge when the water is poured in as high as *g h*.

After the Doctor had contrived this machine, he conſidered, that as the tube is of a very ſmall bore, if the liquor ſhould riſe into the ball at A, n° 3. in carrying the inſtrument from one place to another, ſome of it would adhere to the ſides or the ball A, and upon its deſcent in making the experiment, ſo much might be left behind, that the liquor would not be high enough at D to ſhew the difference of the level: therefore, to prevent that inconveniency, he contrived a blank ſcrew, to ſhut up the hole at A, as ſoon as one experiment is made, that, in carrying the machine, the air in A may balance that in C, ſo that the liquor ſhall not run up and down the tube, whatever degree of heat and cold may act upon the inſtrument, in going from one place to another. Now, becauſe one experiment may be made in the morning, the water may be ſo cold, that when a ſecond experiment is made at noon the water cannot be brought to the ſame degree of cold it had in the morning; therefore, in making the firſt experiment, warm water muſt be mixed with the cold, and when the water has ſtood ſome time before it comes to be as cold as it is likely to be at the warmeſt part of that day, obſerve and ſet down the degree of the thermometer at which the ſpirit ſtands, and likewiſe the degree of the water in the barometer at D; then ſcrew on the cape at A, pour out the water, and carry the inſtrument to the place whoſe level you would know; then pour in your water, and when the thermometer is come to the ſame degree as before, open the ſcrew at top, and obſerve the liquor in the barometer.

The Doctor's ſcale for the barometer is ten inches long, and divided into tenths; ſo that ſuch an inſtrument will ſerve for any heights not exceeding ten feet, each tenth of an inch anſwering to a foot in height.

The Doctor made no allowance for the decreaſe of denſity in the air, becauſe he did not propoſe this machine for meaſuring mountains, (tho', with a proper allowance for the decreaſing denſity of the air, it will do very well), but for heights that want to be known in gardens, plantations, and the conveyance of water, where an experiment that anſwers two or three feet in a diſtance of 20 miles, will render this a very uſeful inſtrument.

Artillery Foot-LEVEL is in form of a ſquare, having its two legs or branches of an equal length; at a juncture whereof is a little hole, whence hangs a thread and plummet playing on a perpendicular line in the middle of a quadrant. It is divided into twice 45 degrees from the middle, *ibid.* n° 7.

This inſtrument may be uſed on other occaſions, by placing the ends of its two branches on a plane; for when the thread plays perpendicularly over the middle diviſion of the quadrant, that plane is aſſuredly level. To uſe it in gunnery, place the two ends on the piece of artillery, which you may raiſe to any propoſed height, by means of the plummet, whoſe thread will give the degree above the level.

Carpenters and Paviour's LEVEL, conſiſts of a long ruler, in the middle whereof is fitted, at right angles, another ſomewhat bigger, at the top of which is faſtened a line, which, when it hangs over a fiducial line at right angles with the baſe, ſhews that the ſaid baſe is horizontal. Sometimes this level is all of one board. *Ibid.* n° 8.

Gunners LEVEL, for levelling cannons and mortars, conſiſts of a triangular braſs plate, about four inches high, *ibid.* 9. at the bottom of which is a portion of a circle, divided into 45 degrees; which number is ſufficient for the higheſt elevation of cannons and mortars, and for giving ſhot the greateſt range: on the centre of this ſegment of a circle is ſcrewed a piece of braſs, by means of which it may be fixed or ſcrewed at pleaſure: the end of this piece of braſs is made ſo as to ſerve for a plummet and index, in order to ſhew the different degrees of elevation of pieces of artillery. This inſtrument has alſo a braſs foot, to ſet upon cannons or mortars, ſo as, when thoſe pieces are horizontal, the inſtrument will be perpendicular. The foot of this inſtrument is to be placed on the piece to be elevated, in ſuch a manner, as that the point of the plummet may fall on the proper degree: this is what they call *levelling the piece*.

Maſon's LEVEL, is compoſed of three rules, ſo joined as to form an iſoſceles-rectangle, ſomewhat like a roman A; at the vertex whereof is faſtened a thread, from which hangs a plummet, that paſſes over a fiducial line, marked in the middle of the baſe, when the thing to which the level is applied is horizontal; but declines from the mark, when the thing is lower on the one ſide than on the other.

Plumb or *Pendulum* LEVEL, that which ſhews the horizontal lines by means of another line perpendicular to that deſcribed by a plummet or pendulum. This inſtrument, *ibid.* n° 10. conſiſts of two legs or branches, joined together at right angles, whereof that which carries the thread and plummet is about a foot and a half long; the thread is hung towards the top of the branch, at the point 2. The middle of the branch where the thread paſſes is hollow, ſo that it may hang free every where: but towards the bottom, where there is a little blade of ſilver, whereon is drawn a line perpendicular to the teleſcope, the ſaid cavity is covered by two pieces of braſs, making as it were a kind of caſe, leſt the wind ſhould agitate the thread; for which reaſon the ſilver blade is covered with a glaſs G, to the end that it may be ſeen when the thread and plummet play upon the perpendicular: the teleſcope is faſtened to the other branch of the inſtrument, and is about two feet long; having an hair placed horizontally acroſs the focus of the object-glaſs, which determines the point of the level. The teleſcope muſt be fitted at right angles to the perpendicular. It has a ball and ſocket, by which it is faſtened to the foot, and was invented by M. Picard.

Reflecting LEVEL, that made by means of a pretty long ſurface of water repreſenting the ſame object inverted which we ſee erected by the eye, ſo that the point where theſe two objects appear to meet is a level with the place where the ſurface of the water is found. This is the invention of M. Marriotte.

There is another reflecting level conſiſting of a mirror of ſteel, or the like, well poliſhed, and placed a little before the object-glaſs of a teleſcope, ſuſpended perpendicularly. This mirror muſt make an angle of 45° with the teleſcope, in which caſe the perpendicular line of the ſaid teleſcope is converted into a horizontal line, which is the ſame with the line of level. This is the invention of M. Caſſini.

Water-LEVEL, that which ſhews the horizontal line by means of a ſurface of water or other liquor; founded on this principle, that water always places itſelf level.

The moſt ſimple is made of a long wooden trough, or canal, whoſe ſides are parallel to the baſe; ſo that being equally filled with water, its ſurface ſhews the line of level. This is the chorobates of the ancients. See CHOROBATA.

It is alſo made with two cups fitted to the two ends of a pipe, three or four feet long, about an inch in diameter, by means whereof the water communicates from the one to the other cup; and this pipe being moveable on its ſtand by means of a ball and ſocket, when the two cups become equally full of water, their two ſurfaces mark the line of level.

This inſtrument, inſtead of cups, may alſo be made with two ſhort cylinders of glaſs three or four inches long, faſtened to each extreme of the pipe with wax or maſtic. Into the pipe is poured ſome common or coloured water, which ſhews itſelf through the cylinders, by means whereof the line of level is determined; the height of the water, with reſpect to the centre of the earth, being always the ſame in both cylinders: this level, though very ſimple, is yet very commodious for levelling ſmall diſtances.

LEVEL *of Mr Huygens's invention*, conſiſts of a teleſcope *a*, *ibid.* n° 11. in form of a cylinder, going through a ferril, in which it is faſtened by the middle. This ferril has two flat branches *b b*, one above, and the other below: at the ends whereof are faſtened little moving pieces, which carry two rings, by one of which the teleſcope is ſuſpended to an hook at the end of the ſcrew 3, and by the other a pretty heavy weight is ſuſpended, in order to keep the teleſcope *in æquilibrio*. This weight hangs in the box 5, which is almoſt filled with linſeed oil, oil of walnuts, or other matter that will not eaſily coagulate, for more aptly ſettling the balance of the weight and teleſcope. The inſtrument carries two teleſcopes cloſe and very parallel to each other; the eye-glaſs of the one being againſt the object-glaſs of the other, that one may ſee each way without turning the level. In the focus of the object-glaſs of each teleſcope muſt a little hair be ſtrained horizontally, to be raiſed and lowered as occaſion requires by a little ſcrew. If the tube of the teleſcope be not found level when ſuſpended, a ferril or ring, 4, is put on it, and is to be ſlid along till it fixes to a level. The hook on which the inſtrument is hung, is fixed to a flat wooden croſs; at the ends of each arm whereof there is a hook ſerving to keep the teleſcope from too much agitation in uſing or carriage. To the ſaid flat croſs is applied another hollow one, that ſerves as a caſe for the inſtrument; but the two ends are left open, that the teleſcope may be ſecured from the weather, and always in a condition to be uſed. The foot of this inſtrument is a round braſs plate, to which are faſtened three braſs ferrils, moveable by means of joints wherein are put ſtaves, and on this foot is placed the box.

N° 12. marked I, is a balance-level; which being ſuſpended by the ring, the two ſights, when *in æquilibrio*, will be horizontal, or in a level.

LEVELLING, the art of finding a line parallel to the horizon at one or more ſtations, in order to determine the height of one place with regard to another. See the preceding article.

A truly level ſurface is a ſegment of a ſpherical ſurface, which is concentric to the globe of the earth. A true line of level is an arch of a great circle, which is imagined to be deſcribed upon a truly level ſurface. This apparent level is a ſtraight line drawn tangent to an arch or line of true level. Every point of the apparent level, except the point of contact, is higher than the true level: thus let EAG (n° 1.) be an arch of a great circle drawn upon the earth; to a perſon who ſtands upon the earth at A, the line HD is the apparent level parallel to his rational horizon RR: but this line, the farther it is extended from his ſtation A, the farther it recedes from the centre; for BC is longer than AC, and DC is longer than BC, &c. The common methods of levelling are ſufficient for laying pavements of walks, for conveying water to ſmall diſtances, for placing horizontal dials, or aſtronomical inſtruments: but in levelling the bottoms of canals which are to convey water to the diſtance of many miles, the difference between the apparent and true level muſt be taken into the account. Thus let IAL (*ibid.* n° 2.) be an arch of a great circle upon the earth: let it be required to cut a canal whoſe bottom ſhall be a true level from A to B, of the length of 5078 feet: the common method is to place the levelling inſtrument in the bottom of the canal at A; and, looking through the ſights placed horizontally at a ſtick ſet up perpendicular at B, to make a mark where the viſual ray or point of the apparent level points at E, and then to ſink the bottom of the canal at B as much below E as A is below D. But this will not give the true level: for, according to Caſſini's calculation, at the diſtance of 5078 feet the apparent level is ſeven inches above the true; and therefore, to make a true level, B muſt be ſunk ſeven inches lower than the apparent level directs; ſo that if A be four feet below D, B muſt be four feet ſeven inches below the mark E. We have here mentioned the error which will ariſe from placing the level at one end of the line to be levelled, and ſhewn how to correct it; but in moſt caſes it is better to take a ſtation in the middle of the line to be levelled: thus, if the points H and B are to be levelled, place the inſtrument in the middle at A, and ſetting up ſticks perpendicular at H and B, make marks upon each ſtick where the apparent level points, as E and F; thoſe points are level: and if you ſink H as much below F, as B is below E, HAB will be a true level.

Plate CLXII. fig. 2.

The operation of levelling is as follows. Suppoſe the height of the point A (*ibid.* n° 3.) on the top of a mountain above that of the point B, and at the foot thereof, be required. Place the level about the middle diſtance between the two points as in D, and ſtaffs in A and B; and let there be perſons inſtructed with ſignals for raiſing and lowering, on the ſaid ſtaffs, little marks of paſteboard or other matter, the level being placed horizontally by the bubble, &c. Look towards the ſtaff AE, and cauſe the mark ſo raiſed to be lowered till the middle, upper edge, or other moſt conſpicuous part, appear in the viſual ray. Then meaſuring exactly the perpendicular height of the point E above the point A, which ſuppoſe ſix feet four inches; ſet that down in your book: then turn the level horizontally about, that the eye-glaſs of the teleſcope may be ſtill next the eye when you look the other way; if you have only plain ſights, the inſtrument need not be turned; and cauſe the perſon at the ſtaff B, to raiſe or lower his mark, till ſome conſpicuous part of it fall in the viſual ray, as at C: then meaſure the perpendicular height of C above B, which ſuppoſe ſixteen feet ſix inches: ſet this alſo down in the book above the other number of the firſt obſervation; ſubtract the one from the other, and the remainder will be ten feet two inches, which is the difference of the level between A and B, or the height of the point A above the point B.

If the point D, where the inſtrument is fixed, be in the middle between the two points A and B, there will be no neceſſity for reducing the apparent level to the true level; the viſual ray in that caſe being raiſed equally above the true level. If it be further required to know whether there be a ſufficient deſcent for conveying water from the ſpring A (*ibid.* n° 4.) to the point B. Here, in regard the diſtance from A to B is conſiderable, it is required that ſeveral operations be made. Having then choſen a proper place for the firſt ſtation, as at I, ſet up a ſtaff in the point A, near the ſpring, with a proper mark to ſlide up and down the ſtaff, as L; and meaſure the diſtance from A to I, which ſuppoſe 2000 yards. Then the level being adjuſted in the point I, let the mark L be raiſed and lowered till ſuch time as you ſpy ſome conſpicuous part of it through the teleſcope or ſights of the level, and meaſure the height AL, which ſuppoſe thirteen feet five inches. But in regard the diſtance AI is 2000 yards, you muſt have recourſe to your table for a reduction, ſubtracting 11 inches, which will leave the height of AL twelve feet ſix inches; and this note down in your book. Now turn the level horizontally about, ſo that the eye-glaſs of the teleſcope may be towards A; and, fixing up another ſtaff at H, cauſe the mark G to be moved up and down till you ſpy ſome conſpicuous part through the teleſcope or ſights. Meaſure the height HG, which ſuppoſe ſeven yards one foot two inches. Meaſure likewiſe the diſtance of the points IH, which ſuppoſe 1300 yards; for which diſtance four inches eight lines muſt be ſubtracted from the height HG, which conſequently will only leave ſeven yards nine inches four lines, to be taken down in your book. This done, remove the level fowards to ſome other eminence, as E, whence the ſtaff H may be viewed; as alſo another ſtaff at D, near the place whither the water is to be conveyed. The level being again adjuſted in the point E, look back to the ſtaff H; and managing the mark as before, the viſual ray will give the point F. Meaſure the height HF, which ſuppoſe eleven feet ſix inches. Meaſure likewiſe the diſtance HE, which ſuppoſe 1000 yards, for which there is two inches nine lines of abatement; which being taken from the height HF, there will remain eleven feet three inches three lines; which enter in your book: Laſtly, turning the level to look at the next ſtaff D, the viſual ray will give the point D. Meaſure the height of D from the ground, which ſuppoſe eight feet three inches. Meaſure alſo the diſtance from the ſtation E to B, which ſuppoſe 900 yards, for which diſtance there are two inches three lines of abatement; which being taken from the height BD, there will remain eight feet nine lines; which enter as before.

For the manner of entering down obſervations in your book, obſerve, that when a proper place or ſtation for the level between the two points has been pitched upon, write down the two heights obſerved at that ſtation in two different columns, viz. under the firſt column, thoſe obſerved in looking through the teleſcope when the eye was from the ſpring, or towards the point, which we may call *back-ſights;* and under the ſecond column, thoſe obſerved when the eye was next the ſpring, which we call *fore-ſights.* Having ſummed up the heights of each column ſeparately, ſubtract the leſſer from the greater, the remainder will be the difference of the level between the points A and B. If the diſtance of the two points be required, add all the diſtances meaſured together; and dividing the difference of height by the yards of the diſtances, for each 200 yards you will have a deſcent of about two inches nine lines.

Dr Halley ſuggeſts a new method of levelling, performed wholly by means of the barometer, in which the mercury is found to be ſuſpended to ſo much the leſs height, as the place is farther remote from the centre of the earth; whence the different heights of the mercury in two places give the difference of level. This method has been put in practice by ſome of the French academy.

Levelling-*Staves*, inſtruments uſed in levelling, ſerving to carry the marks to be obſerved, and at the ſame time to meaſure the heights of thoſe marks from the ground. They uſually conſiſt each of two long wooden rulers, made to ſlide over one another, and divide into feet, inches, &c.

LEVER, in mechanics, is a bar of iron or wood, one part of which being ſupported by a prop, all other parts turn upon that prop as their centre of motion. This inſtrument is of two kinds. Firſt, the common ſort, where the weight we deſire to raiſe, reſts at one end of it, our ſtrength is applied at the other end, and the prop is between both. When we ſtir up the fire with a poker, we make uſe of this lever; the poker is the lever, it reſts upon one of the bars of the grate as a prop, the incumbent fire is the weight to be overcome, and the other end held in the hand is the ſtrength or power. In this, as in all the reſt, we have only to increaſe the diſtance between the ſtrength and prop, to give the man that works the inſtrument greater power.

The lever of the ſecond kind, has the prop at one end, the ſtrength is applied to the other, and the weight to be raiſed reſts between them. Thus in raiſing the water-plug in the ſtreets, the workman puts his iron lever through the hole of the plug till he reaches the ground on the other ſide, and, making that his prop, lifts the plug with his ſtrength at the other end of the lever. In this lever alſo, the greater the diſtance of the prop from the ſtrength, the greater is the workman's power.

Theſe inſtruments, as we ſee, aſſiſt the ſtrength; but ſometimes a workman is obliged to act at a diſadvantage, in raiſing either a piece of timber or a ladder upon one end. We cannot, with grammatical propriety, call this a *lever*, ſince ſuch a piece of timber in fact in no way contributes to raiſe the weight. In this caſe, the man, who is the ſtrength or power, is in the middle, the part of the beam already raiſed is the weight, the part yet at the ground is the prop, on which the beam turns or reſts. Here the man's ſtrength will be diminiſhed, in proportion to the weight it ſuſtains. The weight will be greater the farther it is from the prop, therefore the man will bear the greater weight the nearer he is to the prop. See Mechanics.

LEVERET, among ſportſmen, denotes a hare in the firſt year of her age.

LEVIGATION, in pharmacy and chemiſtry, the reducing hard and ponderous bodies to an impalpable powder, by grinding them on a porphyry, or in a mill. See Chemistry, n° 97.

LEWDNESS. See Fornication.

LEVITE, in a general ſenſe, means all the deſcendants of Levi, among whom were the Jewiſh prieſts themſelves, who, being deſcended from Aaron, were likewiſe of the race of Levi.—In a more particular ſenſe, *Levite* is uſed for an order of officers in that church, who were employed in performing the manual ſervice of the temple; ſuch as in fetching wood, water, and other things neceſſary for the ſacrifices; and in ſinging, and playing upon inſtruments of muſic.

The conſecration of the Levites was to be performed with the following ceremonies: They were to be ſprinkled with the water of expiation, to ſhave all their fleſh, and waſh their clothes: they were then to bring two bullocks before the door of the tabernacle, where the whole congregation laid their hands upon the Levites heads: the bullocks were then ſacrificed, one for a burnt-offering, and the other for a ſin-offering; and, laſtly, they were to be preſented to the high-prieſt, who was to conſecrate them to the Lord.

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LEUWENHOEK (Anthony de), a celebrated Dutch phyſician and naturaliſt, was born at Delft, in 1632, of an ancient family of that city; and acquired a very great reputation throughout all Europe, by his experiments and diſcoveries. He particularly excelled in making glaſſes for microſcopes and ſpectacles, and died in 1723. His letters to the royal ſociety of London, of which he was a member, were printed at Leyden, in 1722, in 4to.

LEVY, in law, ſignifies to gather or collect; as to levy money, and to levy a fine of lands in the paſſing a fine.

LEWENTZ, a town of Upper Hungary, in the county of Gran, and on the river of the ſame name, where the Turks were defeated in 1644. E. Long. 18. 19. N. Lat. 48. 15.

LEWES, a town of Suſſex in England, ſeated on an eminence on the banks of the river Ouſe. It is a large well built place, hath two ſtreets paved, and ſix pariſh-churches built with flint-ſtone. It contains about 1500 houſes, and upwards of 6000 inhabitants. E. Long. 0. 5. N. Lat. 50. 50.

LEWIS, one of the largeſt of the Hebrides or weſtern iſlands of Scotland, extending 100 miles in length from north to ſouth, and from 13 to 14 in breadth, conſiſting of a great number of iſles and rocks, and parted by the ſea into two diviſions, called *Lewis* and *Harries*, the former lying to the weſtward of the other. Lewis belongs to the ſhire of Roſs; is divided by ſeveral channels, diſtinguiſhed by ſeveral names, and portioned out among different proprietors; but the *Lewis*, ſtrictly ſo called, ſtretches about 36 miles in length, from the north point of Bowling-head to the ſouthern extremity of Huſſineſs in Harries. The air is temperately cold, moiſt, and healthy; great parts of the low ground is flooded with lakes; the reſt is arable in many places, and has been counted fruitful in oats, barley, rye, flax, and hemp. The ſoil in theſe parts is a light ſand, which the inhabitants manure with ſoot and ſea-ware; but great part of the iſland is covered with heath. The labouring people dig the land with ſpades, and break the clods with ſmall harrows, the foremoſt teeth of which are made of wood, and the remainder of rough heath, which ſmooths what the others have broke; and this harrow is drawn by one man, having a ſtrong trace of horſe-hair acroſs his breaſt. Of their corn they not only make malt for ale, but likewiſe a ſtrong ſpirit called *treſtareg*, which is the whiſky, or uſquebaugh, three times diſtilled. Lewis abounds with convenient bays and harbours, namely, Lochſtornvay, on the eaſt ſide; the Birken iſles, about ſeven miles farther ſouthward; Loch-crefort, three miles more to the ſouth; Loch-ſeafort, about five miles ſtill farther in the ſame direction; Loch-carlvay, a capacious and ſecure harbour, about 24 miles to the ſouth-weſt; and Loch-rague, four miles more ſoutherly on the ſame coaſt: all theſe bays abound with cod, ling, and herring: here are likewiſe whales of different ſizes, which the natives drive into the bays, and kill with harpoons. Fifty young whales have been killed on this coaſt in one ſeaſon; and their fleſh was eaten by the natives, who count it ſalutary and toothſome, diſtinguiſhing it by the name of *ſea-pork*. Theſe bays afford great plenty of ſhell-fiſh; ſuch as clams, oyſters, cockles, muſſels, lympits, welks; and ſuch a prodigious quantity of ſpout-fiſh is ſometimes caſt up from the ſand off Loch-tua, that they infect the air, and render it unhealthy to the neighbouring inhabitants, who are not able to conſume them, either by eating, or uſing them as manure for the ground. Some of theſe lochs and bays likewiſe produce ſmall coral and coralline. The freſh-water lakes are well ſtored with trout and eels, and the rivers yield plenty of ſalmon. Along the coaſt are found a great number of caves, which ſerve as ſhelter for the ſeals

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ſeals and otters, which are alſo eaten as dainties by the inhabitants; and vaſt numbers of ſea-fowl build upon the rocks and promontories.

The land-animals reared in this iſland, are cows, horſes, ſheep, goats, hogs, and deer; all theſe are of a diminutive ſize. The beef, mutton, and pork, are juicy and delicious; the horſes are active and hardy: the deer, which are of the red kind, confine themſelves to the chace of Oſervaul, about 15 miles in compaſs, which affords tolerable paſturage; but in the winter, when the ground is covered with froſt and ſnow, theſe animals are forced to feed on ſea-ware, and endure all the rigour of the ſeaſon, without any ſhelter from wood or copſe, for there is not a tree to be ſeen; nevertheleſs, the roots of very large trees, which have been cut by the ax, are found in different places. There is likewiſe a ſmall grove of birch and hazle on the ſouth-weſt ſide of Loch-Stornway.

The inhabitants of Lewis are in general well-proportioned, tall, fair, ſanguine, ſtrong, and healthy. The ſmall-pox ſometimes makes terrible havock among them. The other diſeaſes to which they are ſubject, are the chin-cough in children, the fever, the diarrhæa, dyſentery, ſore-throats, jaundice, ſtitches, pleuriſies, coughs, and rheums. As a medicine for the diarrhæa and dyſentery, they adminiſter the kernel of the black Molucca beans, powdered and drank in boiled milk; and ſometimes the patient ſwallows a ſmall doſe of their ſtrong whiſky diluted with water. This is likewiſe preſcribed to children in the ſmall-pox, when the pulſe ſinks and the puſtules do not fill. Inflammatory diſorders they cure by repeated bleeding; coughs and colds are removed by drinking plentifully of warm brochan, or water-gruel, with butter or honey, taken at bed-time; which not only acts as a balſamic pectoral, but wonderfully promotes the diſcharge of ſweat and urine. When the uvula is enlongated, they ſnip off part of it with a pair of ſciſſars: for the jaundice, they ſluice a pail-full of cold water by ſurpriſe on the patient's naked back, or ſear the vertebræ with an actual cautery when he dreams of no ſuch application. Green wounds they cure with ointments made of vulnerary plants and freſh-butter.

The natives of Lewis are quick of apprehenſion; ingenious in mechanics; and much addicted to poetry and muſick, many of them learning to play on the bagpipe and violin. They are in general ſober, circumſpect, and hoſpitable; dexterous in ſhooting, ſwimming, leaping; bold and ſkilful mariners; and ſo temperate, that they will tug at the oar all day, without any other proviſion than bread and water, with a ſnuſh of tobacco.

Along this coaſt we ſee ſeveral natural mounts or forts, called *Dun*, ſuch as Dun-rowly, Dun-coradel, and Dun-eiſten. There are alſo the remains of ſome old caſtles, and other monuments of antiquity. At Stornvay village we ſee the ruins of a fortreſs deſtroyed by the Engliſh garriſon ſent thither by Oliver Cromwell. To the northward of Brago there is a round tower built of large ſtones, three ſtories high, tapering towards the top, with a double wall, and a circular ſtaircaſe between, by which one may go quite round the building. On the heaths and ſummits of hills there are ſeveral cairns or heaps of ſtones, which ſerved either for graves or beacons. In the pariſh of Barvas we ſee a ſingle ſtone called the *thruſbel*, ſtanding upright, above 20 feet high, and almoſt as much in breadth. Three ſtones, about 12 feet high each, are ſeen ſtanding on the north ſide of Loch-carlvay; and many others ſtanding ſingle at great diſtances, and in remote parts of the iſland. But the moſt remarkable monument of this kind appears by the village of Claſſerniſs. Here we find 39 pyramidal ſtones ſtanding upright, about ſix or ſeven feet high from the ſurface, each about two feet in breadth. They are placed in form of an avenue, eight feet wide; the diſtance between every ſtone amounting to ſix feet, and a ſingle piece ſtands at the entrance. This avenue leads to a circle of 12 ſtones of the ſame dimenſions, with one in the centre 13 feet in length, and ſhaped like a rudder: on the eaſt, ſouth, and weſt ſides of this circle, are four ſtones, ſuch as thoſe that compoſe this round and avenue, forming three lines, or as it were rays, from the body of the circle. This is ſuppoſed to have been a Druid temple; and tradition reports, that the chief Druid ſtood by the large ſtone in the centre, and harangued the audience. At the diſtance of a quarter of a mile there is another circle of the ſame nature; but without the range and avenue. In all probability, theſe, as well as the monuments we have deſcribed in our account of the Orkneys, and Stone-henge on Saliſbury-plain, were places of worſhip erected by the Druids in time of Pagan ſuperſtition. The chief town in Lewis is called *Storn-bay*, from its ſituation at the head of the bay known by this name: it is a village, conſiſting of about 60 families, with a church, a grammar-ſchool, and ſome public-houſes: here alſo reſides the ſteward for the laird of Macleod, who is a proprietor of the iſland.

There is a conſiderable number of inferior adjacent iſles and rocks, ſome of which hardly deſerve to be mentioned; ſuch as the ſmall iſland Garve at the mouth of Loch Carlvay, Berinſay, Fladda, Bernera Minor, and Bernera Major, Kialiſy, Cavay, Carvay, Greuim, Pabay, Shirem, Vexay, Wuya the Larger and Leſſer, and the Flannan iſlands, which the ſeamen denominate the *northern hunters*. Theſe are viſited every ſummer by the inhabitants of the Lewis, who go thither in queſt of fowls, eggs, down, quills, and feathers, as well as to ſheer or kill the ſheep that are kept here for paſture. As theſe iſlands are very ſteep and rocky, the viſitors, after having landed and climbed up the rock by a ladder, uncover their heads, and, making a turn ſun-ways, thank God for having eſcaped the danger they have undergone. In the largeſt iſland are the ruins of a chapel dedicated to St Flannan, from whom the iſles derive their name. Thither the fowlers repairing, ſtrip themſelves of their upper garments, which being laid upon a ſtone, they advance towards the altar, and repeat three prayers; an exerciſe which is performed every morning and evening. They obſerve many other ſuperſtitious cuſtoms during their reſidence on theſe rocks; and when they have landed their boat with their purchaſe, return to the larger iſlands. Among the iſlands belonging to the Lewis, we may likewiſe take notice of the ſmall iſle of Pigmies, ſo called, becauſe bones reſembling thoſe of human creatures, but of very ſmall dimenſions, have been dug out of the ground.

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LEUTMERITZ, a town of Bohemia, capital of a circle of the ſame name, with a biſhop's ſee, ſeated on the river Elbe, in E. Long. 14. 25. N. Lat. 50. 34.

LEWARDEN, a handſome, rich, and ſtrong town of the United Provinces, capital of Oſtergow, Weſtergow, Sevenwolden, and Weſt Frieſland. It was the uſual place of reſidence of the Stadtholder; and in buildings, as well public as private, is very magnificent. It has ſeveral canals running through the ſtreets, which are of great ſervice to their trade, eſpecially as they are continued to the ſea and to the moſt conſiderable towns of the province. E. Long. 5. 42. N. Lat. 53. 12.

LEUWENHOEK (Anthony de), a celebrated Dutch phyſician and naturaliſt, was born at Delft, in 1632, of an ancient family of that city; and acquired a very great reputation throughout all Europe, by his experiments and diſcoveries. He particularly excelled in making glaſſes for microſcopes and ſpectacles, and died in 1723. His letters to the royal ſociety of London, of which he was a member, were printed at Leyden, in 1722, in 4to.

LEVY, in law, ſignifies to gather or collect; as to levy money, and to levy a fine of lands in the paſſing a fine.

LEWENTZ, a town of Upper Hungary, in the county of Gran, and on the river of the ſame name, where the Turks were defeated in 1644. E. Long. 18. 19. N. Lat. 48. 15.

LEWES, a town of Suſſex in England, ſeated on an eminence on the banks of the river Ouſe. It is a large well built place, hath two ſtreets paved, and ſix pariſh-churches built with flint-ſtone. It contains about 1500 houſes, and upwards of 6000 inhabitants. E. Long. 0. 5. N. Lat. 50. 50.

LEWIS, one of the largeſt of the Hebrides or weſtern iſlands of Scotland, extending 100 miles in length from north to ſouth, and from 13 to 14 in breadth, conſiſting of a great number of iſles and rocks, and parted by the ſea into two diviſions, called *Lewis* and *Harries*, the former lying to the weſtward of the other. Lewis belongs to the ſhire of Roſs; is divided by ſeveral channels, diſtinguiſhed by ſeveral names, and portioned out among different proprietors; but the *Lewis*, ſtrictly ſo called, ſtretches about 36 miles in length, from the north point of Bowling-head to the ſouthern extremity of Huſſineſs in Harries. The air is temperately cold, moiſt, and healthy; great parts of the low ground is flooded with lakes; the reſt is arable in many places, and has been counted fruitful in oats, barley, rye, flax, and hemp. The ſoil in theſe parts is a light ſand, which the inhabitants manure with ſoot and ſea-ware; but great part of the iſland is covered with heath. The labouring people dig the land with ſpades, and break the clods with ſmall harrows, the foremoſt teeth of which are made of wood, and the remainder of rough heath, which ſmooths what the others have broke; and this harrow is drawn by one man, having a ſtrong trace of horſe-hair acroſs his breaſt. Of their corn they not only make malt for ale, but likewiſe a ſtrong ſpirit called *treſtareg*, which is the whiſky, or uſquebaugh, three times diſtilled. Lewis abounds with convenient bays and harbours, namely, Lochſtornvay, on the eaſt ſide; the Birken iſles, about ſeven miles farther ſouthward; Loch-creſort, three miles more to the ſouth; Loch-ſeafort, about five miles ſtill farther in the ſame direction; Loch-carlvay, a capacious and ſecure harbour, about 24 miles to the ſouth-weſt; and Loch-rague, four miles more ſoutherly on the ſame coaſt: all theſe bays abound with cod, ling, and herring: here are likewiſe whales of different ſizes, which the natives drive into the bays, and kill with harpoons. Fifty young whales have been killed on this coaſt in one ſeaſon; and their fleſh was eaten by the natives, who count it ſalutary and toothſome, diſtinguiſhing it by the name of *ſea-pork*. Theſe bays afford great plenty of ſhell-fiſh; ſuch as clams, oyſters, cockles, muſſels, lympits, welks; and ſuch a prodigious quantity of ſpout-fiſh is ſometimes caſt up from the ſand off Loch-tua, that they infect the air, and render it unhealthy to the neighbouring inhabitants, who are not able to conſume them, either by eating, or uſing them as manure for the ground. Some of theſe lochs and bays likewiſe produce ſmall coral and coralline. The freſh-water lakes are well ſtored with trout and eels, and the rivers yield plenty of ſalmon. Along the coaſt are found a great number of caves, which ſerve as ſhelter for the

Lewis.

ſeals and otters, which are alſo eaten as dainties by the inhabitants; and vaſt numbers of ſea-fowl build upon the rocks and promontories.

The land-animals reared in this iſland, are cows, horſes, ſheep, goats, hogs, and deer; all theſe are of a diminutive ſize. The beef, mutton, and pork, are juicy and delicious; the horſes are active and hardy: the deer, which are of the red kind, confine themſelves to the chace of Oſervaul, about 15 miles in compaſs, which affords tolerable paſturage; but in the winter, when the ground is covered with froſt and ſnow, theſe animals are forced to feed on ſea-ware, and endure all the rigour of the ſeaſon, without any ſhelter from wood or copſe, for there is not a tree to be ſeen; nevertheleſs, the roots of very large trees, which have been cut by the ax, are found in different places. There is likewiſe a ſmall grove of birch and hazle on the ſouth-weſt ſide of Loch-Stornway.

The inhabitants of Lewis are in general well-proportioned, tall, fair, ſanguine, ſtrong, and healthy. The ſmall-pox ſometimes makes terrible havock among them. The other diſeaſes to which they are ſubject, are the chin-cough in children, the fever, the diarrhæa, dyſentery, ſore-throats, jaundice, ſtitches, pleuriſies, coughs, and rheums. As a medicine for the diarrhæa and dyſentery, they adminiſter the kernel of the black Molucca beans, powdered and drank in boiled milk; and ſometimes the patient ſwallows a ſmall doſe of their ſtrong whiſky diluted with water. This is likewiſe preſcribed to children in the ſmall-pox, when the pulſe ſinks and the puſtules do not fill. Inflammatory diſorders they cure by repeated bleeding; coughs and colds are removed by drinking plentifully of warm brochan, or water-gruel, with butter or honey, taken at bed-time; which not only acts as a balſamic pectoral, but wonderfully promotes the diſcharge of ſweat and urine. When the uvula is enlongated, they ſnip off part of it with a pair of ſciſſars: for the jaundice, they ſluice a pail-full of cold water by ſurpriſe on the patient's naked back, or ſear the vertebræ with an actual cautery when he dreams of no ſuch application. Green wounds they cure with ointments made of vulnerary plants and freſh-butter.

The natives of Lewis are quick of apprehenſion; ingenious in mechanics; and much addicted to poetry and muſick, many of them learning to play on the bag-pipe and violin. They are in general ſober, circumſpect, and hoſpitable; dexterous in ſhooting, ſwimming, leaping; bold and ſkilful mariners; and ſo temperate, that they will tug at the oar all day, without any other proviſion than bread and water, with a ſnuſh of tobacco.

Along this coaſt we ſee ſeveral natural mounts or forts, called *Dun*, ſuch as Dun-rowly, Dun-coradel, and Dun-eiſten. There are alſo the remains of ſome old caſtles, and other monuments of antiquity. At Stornvay village we ſee the ruins of a fortreſs deſtroyed by the Engliſh garriſon ſent thither by Oliver Cromwell. To the northward of Brago there is a round tower built of large ſtones, three ſtories high, tapering towards the top, with a double wall, and a circular ſtaircaſe between, by which one may go quite round the building. On the heaths and ſummits of hills there are ſeveral cairns or heaps of ſtones, which ſerved either for graves or beacons. In the pariſh of Barvas we ſee a ſingle ſtone called the *thruſbel*, ſtanding upright, above 20 feet high, and almoſt as much in breadth. Three ſtones, about 12 feet high each, are ſeen ſtanding on the north ſide of Loch-carlvay; and many others ſtanding ſingle at great diſtances, and in remote parts of the iſland. But the moſt remarkable monument of this kind appears by the village of Claſſerniſs. Here we find 39 pyramidal ſtones ſtanding upright, about ſix or ſeven feet high from the ſurface, each about two feet in breadth. They are placed in form of an avenue, eight feet wide; the diſtance between every ſtone amounting to ſix feet, and a ſingle piece ſtands at the entrance. This avenue leads to a circle of 12 ſtones of the ſame dimenſions, with one in the centre 13 feet in length, and ſhaped like a rudder: on the eaſt, ſouth, and weſt ſides of this circle, are four ſtones, ſuch as thoſe that compoſe this round and avenue, forming three lines, or as it were rays, from the body of the circle. This is ſuppoſed to have been a Druid temple; and tradition reports, that the chief Druid ſtood by the large ſtone in the centre, and harangued the audience. At the diſtance of a quarter of a mile there is another circle of the ſame nature; but without the range and avenue. In all probability, theſe, as well as the monuments we have deſcribed in our account of the Orkneys, and Stone-henge on Saliſbury-plain, were places of worſhip erected by the Druids in time of Pagan ſuperſtition. The chief town in Lewis is called *Storn-bay*, from its ſituation at the head of the bay known by this name: it is a village, conſiſting of about 60 families, with a church, a grammar-ſchool, and ſome public-houſes: here alſo reſides the ſteward for the laird of Macleod, who is a proprietor of the iſland.

There is a conſiderable number of inferior adjacent iſles and rocks, ſome of which hardly deſerve to be mentioned; ſuch as the ſmall iſland Garve at the mouth of Loch Carlvay, Berinſay, Fladda, Bernera Minor, and Bernera Major, Kialiſy, Cavay, Carvay, Greuim, Pabay, Shirem, Vexay, Wuya the Larger and Leſſer, and the Flannan iſlands, which the ſeamen denominate the *northern hunters*. Theſe are viſited every ſummer by the inhabitants of the Lewis, who go thither in queſt of fowls, eggs, down, quills, and feathers, as well as to ſheer or kill the ſheep that are kept here for paſture. As theſe iſlands are very ſteep and rocky, the viſitors, after having landed and climbed up the rock by a ladder, uncover their heads, and, making a turn ſun-ways, thank God for having eſcaped the danger they have undergone. In the largeſt iſland are the ruins of a chapel dedicated to St Flannan, from whom the iſles derive their name. Thither the fowlers repairing, ſtrip themſelves of their upper garments, which being laid upon a ſtone, they advance towards the altar, and repeat three prayers; an exerciſe which is performed every morning and evening. They obſerve many other ſuperſtitious cuſtoms during their reſidence on theſe rocks; and when they have landed their boat with their purchaſe, return to the larger iſlands. Among the iſlands belonging to the Lewis, we may likewiſe take notice of the ſmall iſle of Pigmies, ſo called, becauſe bones reſembling thoſe of human creatures, but of very ſmall dimenſions, have been dug out of the ground.

The iſlands of Lewis are divided into the two pariſhes

Lewis. of Barvas and Eye, and in each of theſe one miniſter is ſettled; but there is a great number of churches and chapels dedicated to different ſaints, in the different iſles which compoſe this cluſter. All theſe were ſanctuaries before the reformation, but now they are diveſted of that privilege. The people of theſe iſlands are Preſbyterians, with a few Proteſtants of the Engliſh communion, and a ſtill ſmaller number of Roman Catholics. The Proteſtants obſerve the feſtivals of Chriſtmas, Good Friday, Eaſter and Michaelmas; on the laſt of which the individuals of both ſexes perform an univerſary cavalcade.

LEWIS, or LOUIS, the name of ſeveral kings of France. See FRANCE.

LEWIS VII. anno 1137, was the firſt who had the courage to oppoſe the encroachments of the popes on the regal authority: pope Innocent II. excommunicated him for appointing an archbiſhop of Bourges; but Lewis defended his prerogatives, and put the prieſts to death who had been the authors of the quarrel. In 1147, he put himſelf at the head of an army of 80,000 men, and marched againſt the Saracens, in the ſecond cruſade, but was defeated; and returning into France by ſea, was taken by the Greeks, but reſcued by Roger king of Sicily. His queen Eleonora accompanied him in this expedition; and being ſuſpected of infidelity with Saladin, a young Turk, Louis divorced her, and ſhe was married ſix weeks after to Henry duke of Normandy, (Henry II. king of England). Lewis died in 1180, aged 60.

LEWIS IX. anno 1226, (canonized), was one of the greateſt monarchs of France; equally memorable for his valour and his virtues, but unfortunately miſled by the ſuperſtition of the times: he ſacrificed his own repoſe, and the welfare of his kingdom, to the folly of cruſading. In 1248, leaving France to the care of his mother, he embarked for Egypt, attended by his queen, his three brothers, and the flower of the French nobility. At firſt, his victories were rapid: he took Damietta in 1249; but the following year he was defeated and taken priſoner by the Turks, with all the nobility in his train, and the greateſt part of his army. The ſultan ſent to him in priſon, to demand an exorbitant ſum for his ranſom; and his anſwer being truly noble, deſerves to be recorded: "Tell the "ſultan, that a king of France is not to be ranſomed "with money; I will give the ſum required for my "people, and Damietta for myſelf." Theſe terms were accepted, and a peace of 10 years enſued. Upon his return to France, he diminiſhed the taxes, revoked thoſe which the cupidity of the financiers had introduced; iſſued ſeveral ſalutary edicts; founded ſeveral churches and hoſpitals; and effectually overturned the eccleſiaſtical juriſdiction of the court of Rome, by his pragmatic ſanction in 1269, which eſtabliſhed the independency of the Gallican church. Thirteen years reſidence in his capital indemnified his ſubjects for his abſence; but his pious zeal prevented the enjoyment of this happineſs: he embarked for the ſixth cruſade in 1270; and died the ſame year, at the ſiege of Tunis, aged 55.

LEWIS XI. anno 1461. His oppreſſions obliged his ſubjects to enter into a league againſt him, ſtyled, "*Ligue du bien publiq*," in which his brother the duke of Berri and ſome of the principal nobility were concerned: they ſolicited ſuccours from John duke of Calabria, who joined them with 500 Swiſs (the firſt introduction of Swiſs ſoldiers into the French armies). His reign was almoſt one continued ſcene of civil war; and it is computed that 4000 of his ſubjects were executed in public and privately, either for being in arms againſt him, or ſuſpected by him. In his laſt illneſs, he drank the warm blood of children, in the vain hope of reſtoring his decayed ſtrength. He died in 1483, aged 60. The poſts for letters were eſtabliſhed in his reign, owing to his eagerneſs for news; the firſt inſtitution of this nature in Europe.

LEWIS XII. anno 1492, ſtyled *the Juſt*, and *the Father of his people*; memorable for his valour in the field, and his wiſdom in the cabinet. A great general; but unfortunate towards the end of his reign, when he did not command his troops in perſon: his orders tranſmitted from home were miſunderſtood, or wilfully diſobeyed; and he had the mortification, before he died, to ſee the total expulſion of the French from the poſſeſſions he had acquired for them by his perſonal bravery. At 53 years of age, he married the princeſs Mary of England, ſiſter of Henry VIII. and being of a delicate conſtitution, fell a victim (according to the French hiſtorians) to amorous dalliance; for he died in about two months after his nuptials, in 1515.

LEWIS XIII. anno 1610, increaſed the military reputation of his country, and made conſiderable additions to its domains. The beginning of his reign was occupied in civil wars with his mother and his Proteſtant ſubjects; in which he was excited to continue by his famous miniſter, cardinal Richlieu, who attended him to the ſiege of Rochelle, the bulwark of the Huguenot party. This place was reduced by famine to ſurrender, in 1628, after a ſiege of more than a year. Upon this, and other occaſions, the king gave proofs of great perſonal bravery. His attachment to his ally the duke de Nevers, who ſucceeded to the duchy of Mantua, but was refuſed the inveſtiture by Charles VI. emperor of Germany, involved him in a war with that prince, the Spaniards, and the duke of Savoy; in which Lewis was victorious, and obtained a treaty of peace, by which the duke of Mantua was guarantied in the poſſeſſion of his dominions. In 1635, a new war broke out between France and Spain, and the emperor took part with the latter: it laſted 13 years againſt the emperor, and 25 againſt Spain, with various ſucceſs; and the different armies kept on foot, in the Low Countries, on the frontiers of France, and in Italy, in the firſt years of this war, paved the way for the ſignal ſucceſſes of Lewis XIV. the campaigns of theſe armies being a military ſchool of diſcipline and experience for the French officers, beſides giving them a knowledge of the countries which became the ſeat of war in the next reign. Lewis XIII. died 1643, aged 41.

LEWIS XIV. *le Grand*, (king at five years of age), anno 1643. He was at firſt ſtyled *Dieu-donne*, becauſe the French conſidered him as the gift of heaven, granted to their prayers after the queen had been barren 22 years. This princeſs (Ann of Auſtria) was declared regent by Lewis XIII. and ſaw herſelf under a neceſſity to continue the war againſt Philip IV. king of Spain, her brother. The duke d'Enguin was made general of the French armies; and ſo ſignal was the ſucceſs of this renowned warrior, (afterwards prince of Condé, and known by the ſtyle of *the Great Condé,)* that his victories brought on the advantageous treaties of Munſter in 1648, between France, the emperor Ferdinand III. and Chriſtina queen of Sweden: the baſis of the aggrandiſement of France in this reign; the principal events of which, and of the next, are related under the articles Britain, United Provinces, &c. Lewis XIV. died in 1715, aged 77.

Lewis XV. (his great-grandſon) ſucceeded in 1715. He was ſtyled, in the courſe of his reign, *the well-beloved*, which he loſt ſome years before he died; and was deteſted and deſpiſed by his ſubjects for his ſhameful attachment to a young girl, under the title of his *miſtreſs*, who, by the miniſtry of her patron the duke d'Aiguillon, governed the kingdom, and invaded the ancient rights and privileges of the people. He died in 1774, in the 64th year of his age, and 59th of his reign.

LEYDEN, in Latin *Lugdunum Batavorum*, one of the largeſt and fineſt cities in Holland, abounds with canals, along which are rows of lofty trees that afford very pleaſant walks. An arm, or ſmall branch of the Rhine, runs through it. Over the canals are 145 bridges, moſt of them of ſtone or brick. The univerſity here is the oldeſt in the United Provinces: it has large privileges; a library well furniſhed, and particularly rich in manuſcripts; a phyſic-garden well ſtocked with all ſorts of plants, many of which have been brought from the Cape of Good Hope and the Eaſt Indies; an anatomy-hall, well provided with ſkeletons; and an obſervatory. The profeſſors, who are generally very eminent, read public lectures four times a-week, for which they take no money; but about three guineas are paid for a courſe of private lectures, which laſts a whole year. The ſtudents have no diſtinct habit, but all wear ſwords, though they generally go to the public and private lectures in their night-gowns and ſlippers. The ſalaries of the profeſſors are from 100l. to 200l. a-year: they wear gowns only when they preſide at public diſputations, read public lectures, or meet in the ſenate; and their lectures are always in Latin. The ſtudents do not lodge in the univerſity, but where they pleaſe in the town. The cloth manufacture here is much decayed, which formerly flouriſhed to ſuch a degree, that 100,000 pieces, it is ſaid, have ſometimes been made in a year. The city is famous for the long and ſevere ſiege it maintained in 1573 againſt the Spaniards. We cannot help mentioning the reply of that illuſtrious magiſtrate, Adrian de Verf, when the citizens repreſented to him the havoc made by the famine during the ſiege, and inſiſted upon his ſurrendering: "Friends, (ſaid he), here is my body, divide it among you to ſatiſfy your hunger, but baniſh all thoughts of ſurrendering to the cruel and perfidious Spaniard." They took his advice, in regard to their not ſurrendering, and never would liſten to any overtures; but told the Spaniards, they would hold out as long as they had an arm to eat and another to fight. There are ſome fine churches here, and many long, broad, handſome ſtreets; but the Papiſts, as at Harlem, are more numerous than the Proteſtants.

Leyden *Phial*, a phial coated on the inſide and outſide with tinfoil, or other proper conducting ſubſtance, and furniſhed with a braſs wire and knob, for giving the electrical ſhock. See Electricity, nº 25, 38, 62, 102, &c.

LEYTE, one of the Philippine iſlands in the Eaſt Indies, ſituated in E. Long. 118. 0. N. Lat. 11. 0. Its greateſt length is about 40 leaves, and its circumference about 90 or 100. Its ſoil on the eaſt ſide is very fruitful; but there are very high mountains which cut it almoſt through the middle, and occaſion ſo great an alteration in the air, that when it is winter on the north-ſide, it is ſummer on the ſouthern part of the iſland. Thus when the inhabitants of one half of the year reap, the others ſow; and they have two plentiful harveſts in a year, to which the rivers running down from the abovementioned mountains contribute not a little. The iſland contains about 9000 inhabitants, who pay tribute to the Spaniards in rice, wax, and quilts. The people have two good cuſtoms; the firſt, to entertain each other interchangeably when they travel; the other, never to alter the price of proviſions on account of any ſcarcity, and this under ſevere penalties.

LHUYD, or Lhoyd (Humphrey), a learned antiquarian of the 16th century, born at Denbigh, who applied himſelf to the ſtudy of phyſic; and living moſtly within the walls of Denbigh caſtle, practiſed there as a phyſician; ſometimes diverted himſelf with muſic; and died in 1570, with the character of a well-bred gentleman. He wrote, and tranſlated, ſeveral pieces relative to hiſtory and antiquities; in particular "The hiſtory of Cambria, now called *Wales*, from Caradoc of Langcarvan, &c." but died before it was finiſhed: however Sir Henry Sidney, lord preſident of Wales, employed Dr David Powel to finiſh it, who publiſhed it in 1584. A new and improved edition of this work was publiſhed in 1774.

LIBANIUS, a famous Greek rhetorician and ſophiſt in the 4th century, was born at Antioch, and had a great ſhare in the friendſhip of Julian the Apoſtate. That prince offered him the dignity of *Præfectus Prætorio;* but Libanius refuſed it, thinking the name of *ſophiſt*, or *profeſſor of eloquence*, much more honourable. There are ſtill extant ſeveral of his letters and Greek orations, by which he acquired great reputation; but his ſtyle is ſomewhat affected and obſcure. He was a pagan. Baſil and Chryſoſtom were his diſciples about the year 360. His letters were publiſhed at Amſterdam in 1738; his orations at Venice, 1755.

LIBANUS, the name of a chain of mountains of Turkey in Aſia, which lie between Proper Syria and Paleſtine, extending, from weſt to eaſt, from the Mediterranean Sea as far as Arabia. The ſummits of theſe mountains are ſo high, that they are always covered with ſnow; but below are very pleaſant and fruitful valleys. They were formerly famous for the great number of cedar-trees growing thereon; but now there are ſcarce any remaining. Geographers diſtinguiſh them into Libanus and Antilibanus; the latter of which lies on the ſouth ſide of the valley, riſing near the ruins of Sidon, and terminates at others in Arabia, in N. Lat. 34. They are ſeparated from each other at an equal diſtance throughout; and form a baſon, or country, called by the ancients *Cœlo-Syria*.

LIBATION, a religious ceremony among the ancient pagans, which conſiſted in an effuſion of liquors

Libaw, Libel.

poured on the head of the victims prepared for ſacrifice.

Libations were alſo in uſe among the Hebrews, who poured an hin of wine on the victim after it was killed, and the ſeveral pieces of the ſacrifice were laid on the altar, ready to be conſumed in the flames.

LIBAW, a ſea-port town of Courland, lying on the Baltic Sea, conſiſting entirely of wooden houſes. It belongs to the duke of Courland, and is ſituated in E. Long. 21. 27. N. Lat. 56. 27.

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The abſolute rights of man, conſidered as a free agent, endowed with diſcernment to know good from evil, and with power of chooſing thoſe meaſures which appear to him to be moſt deſirable, are uſually ſummed up in one general appellation, and denominated the *natural liberty of mankind.* This natural liberty conſiſts properly in a power of acting as one thinks fit, without any reſtraint or controul, unleſs by the law of nature; being a right inherent in us by birth, and one of the gifts of God to man at his creation, when he endued him with the faculty of free-will. But every man, when he enters into ſociety, gives up a part of his natural liberty, as the price of ſo valuable a purchaſe; and, in conſideration of receiving the advantages of mutual commerce, obliges himſelf to conform to thoſe laws which the community has thought proper to eſtabliſh. And this ſpecies of legal obedience and conformity is infinitely more deſireable than that wild and ſavage liberty which is ſacrificed to obtain it. For no man, that conſiders a moment, would wiſh to retain the abſolute and uncontrouled power of doing whatever he pleaſes: the conſequence of which is, that every other man would alſo have the ſame power; and then there would be no ſecurity to individuals in any of the enjoyments of life.

Political therefore, or *civil*, liberty, which is that of a member of ſociety, is no other than natural liberty ſo far reſtrained by human laws (and no farther) as is neceſſary and expedient for the general advantage of the public. Hence we may collect, that the law, which reſtrains a man from doing miſchief to his fellow citizens, though it diminiſhes the natural, increaſes the civil liberty of mankind: but every wanton and cauſeleſs reſtraint of the will of the ſubject, whether practiſed by a monarch, a nobility, or a popular aſſembly, is a degree of tyranny. Nay, that even laws themſelves, whether made with or without our conſent, if they regulate and conſtrain our conduct in matters of mere indifference, without any good end in view, are laws deſtructive of liberty: whereas, if any public advantage can ariſe from obſerving ſuch precepts, the controul of our private inclinations, in one or two particular points, will conduce to preſerve our general freedom in others of more importance; by ſupporting that ſtate of ſociety, which alone can ſecure our independence. Thus the ſtatute of king Edward IV. which forbad the fine gentlemen of thoſe times (under the degree of a lord) to wear pikes upon their ſhoes or boots of more than two inches in length, was a law that ſavoured of oppreſſion; becauſe, however ridiculous the faſhion then in uſe might appear, the reſtraining it by pecuniary penalties could ſerve no purpoſe of common utility. But the ſtatute of king Charles II. which preſcribes a thing ſeemingly as indifferent, viz. a dreſs for the dead, who were all ordered to be buried in woollen, is a law conſiſtent with public liberty; for it encourages the ſtaple trade, on which in great meaſure depends the univerſal good of the nation. So that laws, when prudently framed, are by no means ſubverſive, but rather introductive of liberty; for (as Mr Locke has well obſerved) where there is no law there is no freedom. But then, on the other hand, that conſtitution or frame of government, that ſyſtem of laws, is alone calculated to maintain civil liberty, which leaves the ſubject entire maſter

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Political therefore, or *civil*, liberty, which is that of a member of ſociety, is no other than natural liberty ſo far reſtrained by human laws (and no farther) as is neceſſary and expedient for the general advantage of the public. Hence we may collect, that the law, which reſtrains a man from doing miſchief to his fellow citizens, though it diminiſhes the natural, increaſes the civil liberty of mankind: but every wanton and cauſeleſs reſtraint of the will of the ſubject, whether practiſed by a monarch, a nobility, or a popular aſſembly, is a degree of tyranny. Nay, that even laws themſelves, whether made with or without our conſent, if they regulate and conſtrain our conduct in matters of mere indifference, without any good end in view, are laws deſtructive of liberty: whereas, if any public advantage can ariſe from obſerving ſuch precepts, the controul of our private inclinations, in one or two particular points, will conduce to preſerve our general freedom in others of more importance; by ſupporting that ſtate of ſociety, which alone can ſecure our independence. Thus the ſtatute of king Edward IV. which forbad the fine gentlemen of thoſe times (under the degree of a lord) to wear pikes upon their ſhoes or boots of more than two inches in length, was a law that ſavoured of oppreſſion; becauſe, however ridiculous the faſhion then in uſe might appear, the reſtraining it by pecuniary penalties could ſerve no purpoſe of common utility. But the ſtatute of king Charles II. which preſcribes a thing ſeemingly as indifferent, viz. a dreſs for the dead, who were all ordered to be buried in woollen, is a law conſiſtent with public liberty; for it encourages the ſtaple trade, on which in great meaſure depends the univerſal good of the nation. So that laws, when prudently framed, are by no means ſubverſive, but rather introductive of liberty; for (as Mr Locke has well obſerved) where there is no law there is no freedom. But then, on the other hand, that conſtitution or frame of government, that ſyſtem of laws, is alone calculated to maintain civil liberty, which leaves the ſubject entire maſter of his own conduct, except in thoſe points wherein the public good requires ſome direction or reſtraint.

The idea and practice of this political or civil liberty flouriſh in their higheſt vigour in theſe kingdoms, where it falls little ſhort of perfection, and can only be loſt or deſtroyed by the folly or demerits of its owner; the legiſlature, and of courſe the laws of Britain, being peculiarly adapted to the preſervation of this ineſtimable bleſſing even in the meaneſt ſubject. Very different from the modern conſtitutions of other ſtates on the continent of Europe, and from the genius of the imperial law; which in general are calculated to veſt an arbitrary and deſpotic power, of controuling the actions of the ſubject, in the prince, or in a few grandees. And this ſpirit of liberty is ſo deeply implanted in our conſtitution, and rooted even in our very ſoil, that a ſlave or a negro, the moment he lands in Britain, falls under the protection of the laws, and ſo far becomes a freeman; though the maſter's right to his ſervice may poſſibly ſtill continue.

The abſolute rights of every Briton, (which, taken in a political and extenſive ſenſe, are uſually called their *liberties*) as they are founded on nature and reaſon, ſo they are coeval with our form of government; though ſubject at times to fluctuate and change, their eſtabliſhment (excellent as it is) being ſtill human. At ſome times we have ſeen them depreſſed by overbearing and tyrannical princes; at others, ſo luxuriant as even to tend to anarchy, a worſe ſtate than tyranny itſelf, as any government is better than none at all. But the vigour of our free conſtitution has always delivered the nation from theſe embaraſſments: and, as ſoon as the convulſions conſequent on the ſtruggle have been over, the balance of our rights and liberties has ſettled to its proper level; and their fundamental articles have been from time to time aſſerted in parliament, as often as they were thought to be in danger:

Blackſt. Comment.

Firſt, by the great charter of liberties, which was obtained, ſword in hand, from king John, and afterwards, with ſome alterations, confirmed in parliament by king Henry III. his ſon. Which charter contained very few new grants; but, as Sir Edward Coke obſerves, was for the moſt part declaratory of the principal grounds of the fundamental laws of England. Afterwards, by the ſtatute called *confirmatio cartarum*, whereby the great charter is directed to be allowed as the common law; all judgments contrary to it are declared void; copies of it are ordered to be ſent to all cathedral churches, and read twice a-year to the people; and ſentence of excommunication is directed to be as conſtantly denounced againſt all thoſe that by word, deed, or counſel, act contrary thereto, or in any degree infringe it. Next by a multitude of ſubſequent corroborating ſtatutes (Sir Edward Coke reckons 32,) from the firſt Edward to Henry IV. Then, after a long interval, by *the petition of right;* which was a parliamentary declaration of the liberties of the people, aſſented to by king Charles I. in the beginning of his reign. Which was cloſely followed by the ſtill more ample conceſſions made by that unhappy prince to his parliament, before the fatal rupture between them; and by the many ſalutary laws, particularly the *habeas corpus* act, paſſed under Charles II. To theſe ſucceeded *the bill of rights*, or declaration delivered by the lords and commons to the prince and princeſs of Orange 13th February 1688; and afterwards enacted in parliament, when they became king and queen: which declaration concludes in theſe remarkable words; "and they do claim, demand, and inſiſt upon, all and ſingular the premiſes, as their undoubted rights and liberties." And the act of parliament itſelf recognizes "all and ſingular the rights and liberties aſſerted and claimed in the ſaid declaration to be the true, ancient, and indubitable rights of the people of this kingdom." Laſtly, theſe liberties were again aſſerted at the commencement of the preſent century, in the *act of ſettlement*, whereby the crown was limited to his preſent majeſty's illuſtrious houſe: and ſome new proviſions were added, at the ſame fortunate æra, for better ſecuring our religion, laws, and liberties; which the ſtatute declares to be "the birthright of the people of England," according to the ancient doctrine of the common law.

Thus much for the *declaration* of our rights and liberties. The rights themſelves, thus defined by theſe ſeveral ſtatutes, conſiſt in a number of private immunities; which will appear, from what has been premiſed, to be indeed no other, than either that *reſiduum* of natural liberty, which is not required by the laws of ſociety to be ſacrificed to public convenience; or elſe thoſe civil privileges, which ſociety hath engaged to provide, in lieu of the natural liberties ſo given up by individuals. Theſe therefore were formerly, either by inheritance or purchaſe, the rights of all mankind; but, in moſt other countries of the world, being now more or leſs debaſed and deſtroyed, they at preſent may be ſaid to remain, in a peculiar and emphatical manner, the rights of the people of Britain. And theſe may be reduced to three principal or primary articles; the right of perſonal ſecurity, the right of perſonal liberty, and the right of private property: becauſe, as there is no other known method of compulſion, or of abridging man's natural free-will, but by an infringement or diminution of one or other of theſe important rights, the preſervation of theſe, inviolate, may juſtly be ſaid to include the preſervation of our civil immunities in their largeſt and moſt extenſive ſenſe. See the article Rights.

In vain, however, would theſe rights be declared, aſcertained, and protected by the dead letter of the laws, if the conſtitution had provided no other method to ſecure their actual enjoyment. It has therefore eſtabliſhed certain other auxiliary ſubordinate rights of the ſubject, which ſerve principally as barriers to protect and maintain inviolate the three great and primary rights, of perſonal ſecurity, perſonal liberty, and private property. Theſe are,

1. The conſtitution, powers, and privileges of parliament; for which ſee Parliament,

2. The limitation of the king's prerogative, by bounds ſo certain and notorious, that it is impoſſible he ſhould exceed them without the conſent of the people; as to which, ſee Parliament. The former of theſe keeps the legiſlative power in due health and vigour, ſo as to make it improbable that laws ſhould be enacted deſtructive of general liberty: the latter is a guard upon the executive power, by reſtraining it

from acting either beyond or in contradiction to the laws that are framed and eſtabliſhed by the other.

3. A third ſubordinate right of every Briton is that of applying to the courts of juſtice for redreſs of injuries. Since the law is, in this realm, the ſupreme arbiter of every man's life, liberty, and property, courts of juſtice muſt at all times be open to the ſubject, and the law be duly adminiſtered therein. The emphatical words of *magna carta*, ſpoken in the perſon of the king, who in judgment of law (ſays Sir Edward Coke) is ever preſent and repeating them in all his courts, are theſe; *Nulli vendemus, nulli negabimus, aut differemus rectum vel juſtitiam:* "and therefore every ſubject," continues the ſame learned author, "for injury done to him *in bonis, in terris, vel perſona*, by any other ſubject, be he eccleſiaſtical or temporal, without any exception, may take his remedy by the courſe of the law, and have juſtice and right for the injury done to him, freely without ſale, fully without any denial, and ſpeedily without delay." It were endleſs to enumerate all the *affirmative* acts of parliament, wherein juſtice is directed to be done according to the law of the land: and what that law is, every ſubject knows; or may know if he pleaſes: for it depends not upon the arbitrary will of any judge; but is permanent, fixed, and unchangeable, unleſs by authority of parliament. We ſhall however juſt mention a few *negative* ſtatutes, whereby abuſes, perverſions, or delays of juſtice, eſpecially by the prerogative, are reſtrained. It is ordained by *magna carta*, that no freeman ſhall be outlawed, that is, put out of the protection and benefit of the laws, but according to the law of the land. By 2 Ed. III. c. 8. and 11 Ric. II. c. 10. it is enacted, that no commands or letters ſhall be ſent under the great ſeal, or the little ſeal, the ſignet, or privy ſeal, in diſturbance of the law; or to diſturb or delay common right: and, though ſuch commandments ſhould come, the judges ſhall not ceaſe to do right: which is alſo made a part of their oath by ſtatute 18 Ed. III. ſt. 4. And by 1 W. & M. ſt. 2. c. 2. it is declared, that the pretended power of ſuſpending or diſpenſing with laws, or the execution of laws, by regal authority without conſent of parliament, is illegal.

Not only the ſubſtantial part, or judicial deciſions, of the law, but alſo the formal part, or method of proceeding, cannot be altered but by parliament: for, if once thoſe outworks were demoliſhed, there would be an inlet to all manner of innovation in the body of the law itſelf. The king, it is true, may erect new courts of juſtice; but then they muſt proceed according to the old eſtabliſhed forms of the common law. For which reaſon it is declared in the ſtatute 16 Car. I. c. 10. upon the diſſolution of the court of ſtar-chamber, that neither his majeſty, nor his privy-counſel, have any juriſdiction, power, or authority by Engliſh bill, petition, articles, libel (which were the courſe of proceeding in the ſtar-chamber, borrowed from the civil law) or by any other arbitrary way whatſoever, to examine, or draw into queſtion, determine, or diſpoſe of the lands or goods of any ſubjects of this kingdom; but that the ſame ought to be tried and determined in the ordinary courts of juſtice, and by *courſe of law*.

4. If there ſhould happen any uncommon injury, or infringement of the rights before-mentioned, which the ordinary courſe of law is too defective to reach, there ſtill remains a fourth ſubordinate right, appertaining to every individual, namely, the right of petitioning the king, or either houſe of parliament, for the redreſs of grievances. In Ruſſia we are told, that the Czar Peter eſtabliſhed a law, that no ſubject might petition the throne, till he had firſt petitioned two different miniſters of ſtate. In caſe he obtained juſtice from neither, he might then preſent a third petition to the prince; but upon pain of death, if found to be in the wrong. The conſequence of which was, that no one dared to offer ſuch third petition; and grievances ſeldom falling under the notice of the ſovereign, he had little opportunity to redreſs them. The reſtrictions, for ſome there are, which are laid upon petitioning in Britain, are of a nature extremely different; and while they promote the ſpirit of peace, they are no check upon that of liberty. Care only muſt be taken, leſt, under the pretence of petitioning, the ſubject be guilty of any riot or tumult; as happened in the opening of the memorable parliament in 1640: and, to prevent this, it is provided by the ſtatute 13 Car. II. ſt. 1. c. 5. that no petition to the king, or either houſe of parliament, for any alteration in church or ſtate, ſhall be ſigned by above 20 perſons, unleſs the matter thereof be approved by three juſtices of the peace, or the major part of the grand jury, in the country; and in London, by the lord mayor, aldermen, and common-council: nor ſhall any petition be preſented by more than 10 perſons at a time. But, under theſe regulations, it is declared by the ſtatute 1 W. & M. ſt. 2. c. 2. that the ſubject hath a right to petition; and that all commitments and proſecutions for ſuch petitioning are illegal.

5. The fifth and laſt auxiliary right of the ſubject, that we ſhall at preſent mention, is that of having arms for their defence, ſuitable to their condition and degree, and ſuch as are allowed by law. Which is alſo declared by the ſame ſtatute 1 W. & M. ſt. 2. c. 2. and is indeed a public allowance, under due reſtrictions, of the natural right of reſiſtance and ſelf-preſervation, when the ſanctions of ſociety and laws are found inſufficient to reſtrain the violence of oppreſſion.

In theſe ſeveral articles conſiſts the rights, or, as they are frequently termed, *the liberties of Britons:* liberties more generally talked of, than thoroughly underſtood; and yet highly neceſſary to be perfectly known and conſidered by every man of rank or property, leſt his ignorance of the points whereon they are founded ſhould hurry him into faction and licentiouſneſs on the one hand, or a puſillanimous indifference and criminal ſubmiſſion on the other. And we have ſeen that theſe rights conſiſt, primarily, in the free enjoyment of perſonal ſecurity, of perſonal liberty, and of private property. So long as theſe remain inviolate, the ſubject is perfectly free; for every ſpecies of compulſive tyranny and oppreſſion muſt act in oppoſition to one or other of theſe rights, having no other object upon which it can poſſibly be employed. To preſerve theſe from violation, it is neceſſary that the conſtitution of parliaments be ſupported in its full vigour; and limits, certainly known, be ſet to the royal prerogative. And, laſtly, to vindicate theſe rights, Liberty. when actually violated or attacked, the ſubjects of Britain are entitled, in the firſt place, to the regular adminiſtration and free courſe of juſtice in the courts of law; next, to the right of petitioning the king and parliament for redreſs of grievances; and laſtly, to the right of having and uſing arms for ſelf-preſervation and defence. And all theſe rights and liberties it is our birthright to enjoy entire; unleſs where the laws of our country have laid them under neceſſary reſtraints. Reſtraints in themſelves ſo gentle and moderate, as will appear upon farther inquiry, that no man of ſenſe or probity would wiſh to ſee them ſlackened. For all of us have it in our choice to do every thing that a good man would deſire to do; and are reſtrained from nothing, but what would be pernicious either to ourſelves or our fellow-citizens. So that this review of our ſituation may fully juſtify the obſervation of a learned French author, who indeed generally both thought and wrote in the ſpirit of genuine freedom; and who hath not ſcrupled to profeſs, even in the very boſom of his native country, that the Britiſh is the only nation in the world, where political or civil liberty is the direct end of its conſtitution. Recommending therefore to the ſtudent in our laws a farther and more accurate ſearch into this extenſive and important title, we ſhall cloſe our remarks upon it with the expiring wiſh of the famous father Paul to his country, "ESTO PERPETUA!"

LIBERTY *and Neceſſity*. See METAPHYSICS, n° 78.—80.

LIBERTY *of the Preſs*. The art of printing, ſoon after its introduction, was looked upon in England, as well as in other countries, as merely a matter of ſtate, and ſubject to the coercion of the crown. It was therefore regulated with us by the king's proclamations, prohibitions, charters of privilege and licence, and finally by the decrees of the court of ſtar-chamber, which limited the number of printers, and of preſſes which each ſhould employ, and prohibited new publications unleſs previouſly approved by proper licenſers. On the demolition of this odious juriſdiction in 1641, the long parliament of Charles I. after their rupture with that prince, aſſumed the ſame powers as the ſtar-chamber had exerciſed with reſpect to the licenſing of books: and in 1643, 1647, 1649, and 1652 (Scobell. i. 44, 134. ii. 88, 230.) iſſued their ordinances for that purpoſe, founded principally on the ſtar-chamber decree of 1637. In 1662, was paſſed the ſtatute 13 & 14 Car II. c. 33. which, with ſome few alterations, was copied from the parliamentary ordinances. This act expired in 1679; but was revived by ſtatute 1 Jac. II. c. 17. and continued till 1692. It was then continued for two years longer by ſtatute 4 W. & M. c. 24. but though frequent attempts were made by the government to revive it, in the ſubſequent part of that reign (Com. Journ. 11 Feb. 1694. 26 Nov. 1695. 22 Oct. 1696. 9 Feb. 1697. 31 Jan. 1698.) yet the parliament reſiſted it ſo ſtrongly, that it finally expired, and the preſs became properly free in 1694; and has continued ſo ever ſince.

The liberty of the preſs, however, ſo eſſential to the nature of a free ſtate, conſiſts not in freedom from cenſure for any criminal matter that may be publiſhed, but in laying no previous reſtraints upon publications. Every freeman has undoubtedly a right to lay what ſentiments he pleaſes before the public; to forbid this, is to deſtroy the freedom of the preſs: but if he publiſhes what is improper, miſchievous, or illegal, he muſt take the conſequence of his own temerity *. To ſubject the preſs to the reſtrictive power of a licenſer in the manner abovementioned, is to ſubject all freedom of ſentiment to the prejudices of one man, and make him the arbitrary and infallible judge of all controverted points in learning, religion, and government. But to puniſh (as the law does at preſent) any dangerous or offenſive writings which, when publiſhed, ſhall, on a fair and impartial trial, be adjudged of a pernicious tendency, is neceſſary for the preſervation of peace and good order, of government and religion, the only ſolid foundations of civil liberty. Thus the will of individuals is ſtill left free; the abuſe only of that free-will is the object of legal puniſhment. Neither is any reſtraint hereby laid upon freedom of thought or inquiry; liberty of private ſentiment is ſtill left; the diſſeminating or making public of bad ſentiments, deſtructive of the ends of ſociety, is the crime which ſociety corrects. A man (ſays a fine writer on this ſubject) may be allowed to keep poiſons in his cloſet, but not publicly to vend them as cordials. And to this we may add, that the only plauſible argument heretofore uſed for reſtraining the juſt freedom of the preſs, "that it was neceſſary to prevent the daily abuſe of it," will entirely loſe its force, when it is ſhewn, (by a ſeaſonable exertion of the laws) that the preſs cannot be abuſed to any bad purpoſe without incurring a ſuitable puniſhment: whereas, it can never be uſed to any good one when under the controul of an inſpector. So true will it be found, that to cenſure the licentiouſneſs, is to maintain the liberty of the preſs.

LIBETHRA, (anc. geog.) the fountain of ſong, was ſituated in Magneſia, a diſtrict of Macedonia, annexed to Theſſaly; diſtinct from the town of Libethra, which ſtood on mount of Olympius, where it verges towards Macedonia: hence the Muſes are called *Libethrides*, (Virgil.) Strabo places on Helicon, not only Hippocrene, and the temple of the Muſes, but alſo the cave of the nymphs Libethrides.

LIBETHRIUS MONS, (anc. geog.) a mountain of Bœotia, diſtant from Coronea 40 ſtadia; where ſtood the ſtatues of the Muſes, and of the nymphs, ſurnamed *Libethrine*. A mountain probably conjoined with, or at leaſt very near to, Helicon.

LIBITINA, in Pagan worſhip, the goddeſs of funerals, is believed by ſome to have been the ſame with Proſerpine. She had a temple at Rome, in which every thing proper for funerals was kept; and which were either bought or borrowed of her prieſts, called *libitinarii*, as every one had occaſion.

LIBNA, (anc. geog.), a ſacerdotal city in the tribe of Judah, a place of ſtrength, as appears from Sennacherib's laying ſiege to it, 2 Kings xix. Iſaiah xxxvii. In Jerome's time, a village, called *Lobna*, in the territory of Eleutheropolis.

LIBOURNE, a town of France, in Guienne, and in Bourdelois. It is a populous trading town, and is ſeated on the river Dordogne. W. Long. 0. 10. N. Lat. 44. 55.

LIBRA, the BALANCE, in aſtronomy. See there, n° 206.

Libra, in Roman antixuity, a pound weight, alſo a coin equal in value to 20 denarii.

LIBRARY, an edifice or apartment deſtined for holding a conſiderable number of books placed regularly on ſhelves; or, the books themſelves lodged in it.

The firſt who erected a library at Athens was the tyrant Piſiſtratus, which was tranſported by Xerxes into Perſia, and afterwards brought back by Seleucus Nicanor to Athens. Plutarch ſays, that under Eumenes there was a library at Pergamus that contained 200,000 books. That of Ptolemy Philadelphus, according to A. Gellius, contained 700,000, which were all burnt by Cæſar's ſoldiers. Conſtantine and his ſucceſſors erected a magnificent one at Conſtantinople, which in the eighth century contained 300,000 volumes; and among the reſt, one in which the Iliad and Odyſſey were written in letters of gold, on the guts of a ſerpent: but this library was burnt by order of Leo Iſaurus. The moſt celebrated libraries of ancient Rome; were the Ulpian and the Palatine, and in modern Rome, that of the Vatican. The foundation of the Vatican library was laid by pope Nicholas, in the year 1450; it was afterwards deſtroyed in the ſacking of Rome by the conſtable of Bourbon, and reſtored by pope Sixtus V. and has been conſiderably enriched with the ruins of that of Heidelberg, plundered by count Tilly in 1682. One of the moſt complete libraries in Europe, is that erected by Coſmo de Medicis; though it is now exceeded by that of the French king, which was begun by Francis I. augmented by cardinal Richelieu, and completed by M. Colbert. The emperor's library at Vienna, according to Lambecius, conſiſts of 80,000 volumes, and 15,940 curious medals. The Bodleian library at Oxford exceeds that of any univerſity in Europe, and even thoſe of any of the ſovereigns of Europe, except the emperor's and the French king's, which are each of them older by 100 years. It was firſt opened in 1602, and has ſince been increaſed by a great number of benefactors: indeed, the Medicean library, that of Beſſarion at Venice, and thoſe juſt mentioned, exceed it in Greek manuſcripts; but it outdoes them all in Oriental manuſcripts; and as to printed books, the Ambroſian at Milan, and that at Wolfembuttle, are two of the moſt famous, and yet both are inferior to the Bodleian. The Cotton library conſiſts wholly of manuſcripts, particularly of ſuch as relate to the hiſtory and antiquities of Britain; which, as they are now bound, make about 1000 volumes.

In Edinburgh there is a good library belonging to the univerſity, well furniſhed with books; which are kept in good order. There is alſo a noble library of books and manuſcripts belonging to the faculty of Advocates. See Advocate.

LIBRATION, in aſtronomy, an apparent irregularity of the moon's motion, whereby ſhe ſeems to librate about her axis, ſometimes from the eaſt to the weſt, and now and then from the weſt to the eaſt. See Astronomy, nº 221.

LIBURNIA (anc. geogr.), a diſtrict of Illyricum, extending towards the Adriatic between Iſtria on the weſt, Dalmatia on the eaſt, and mount Albius on the north. *Liburni*, the people. The apparitors, who at the command of the magiſtrate ſummoned the people from the country, were called *Liburni*, becauſe generally men of *Liburnia*. *Liburna*, or *Liburnica*, (Horace), denoted a kind of light and ſwift ſkiffs, uſed by the Liburnians in their ſea-rovings or piracies, for which they were noted. *Liburnum* (Juvenal), a ſpecies of litters, made in form of Liburnian ſkiffs, wherein the noblemen of Rome were carried, and where they ſat at their eaſe, either reading or writing, (Juvenal).

LIBURNUS (Polybius), a mountain of Campania. Alſo a port of Tuſcany. Now *Livorno*, or *Leghorn*. E. Long. 11. N. Lat. 43. 30.

LIBYA, in general, according to the Greeks, denoted Africa. An appellation derived from *Lub*, "thirſt," being a dry and thirſty country.

Libya, in a more reſtrained ſenſe, was the middle part of Africa, extending north and weſt, (Pliny); between the Mediterranean to the north, the Atlantic to the weſt, the Ethiopic to the ſouth, and Ethiopia to the eaſt; and was two-fold, the *Hither* or *Exterior Libya;* and the *Farther* or *Interior*. The former lay between the Mediterranean on the north, and the *Farther Libya* and Ethiopia beyond Egypt on the ſouth, (Ptolemy). The *Farther* or *Interior Lbyia*, was a vaſt country, lying between the *Hither Libya* on the north, the Atlantic ocean on the weſt, the Ethiopic on the ſouth, and Ethiopia beyond Egypt on the eaſt, (Ptolemy).

Libya, in a ſtill more reſtrained ſenſe, called, for diſtinction's ſake, *Libya Propria*, was a northern diſtrict of Africa, and a part of the *Hither Libya;* ſituated between Egypt to the eaſt, the Mediterranean to the north, the Syrtis Major and the Regio Tripolitana to the weſt, the Garamantes and Ethiopia beyond Egypt to the ſouth. Now the kingdom and deſart of *Barca*. This Libya was again ſubdivided into *Libya*, taken in the ſtricteſt ſenſe of all, and into Marmarica and Cyrenaica. *Libya* in the ſtricteſt ſenſe, otherwiſe the *Exterior*, was the moſt eaſtern part of *Libya Propria*, next to Egypt, with Marmarica on the weſt, the Mediterranean on the north, and the Nubi, now called *Nubia*, to the ſouth, (Ptolemy).

LICE. See Pediculus.

Crab-**Lice**, ſo called from their reſemblance to crab-fiſh. They infeſt the arm-pits, eye-lids, eyebrows, and pudenda of grown perſons. They are flattiſh, and ſtick ſo cloſe to the ſkin, that they can ſcarce be removed. They are alſo called *plactulæ*, *petolæ*, *peſſolatæ*, and, from their often infeſting the pubes, they are called *pediculi inguinales*. They are deſtroyed either with black ſoap, mercurial ointments, oil of lavender, or a ſolution of ſublimate in roſe-water; of which laſt the proportion may be one drachm of ſublimate to a pound of the water.

LICENCE, in law, an authority given to a perſon to do ſome lawful act.

Licenser *of the Preſs*. See Liberty *of the Preſs*.

LICENTIATE, one who has obtained the degree of a licence.—The greateſt number of the officers of juſtice in Spain are diſtinguiſhed by no other title than that of *licentiate*. In order to paſs *licentiate* in common law, civil law, and phyſic, they muſt have ſtudied ſeven years, and in divinity 10. Among us a *licentiate* uſually means a phyſician who has a licence to practiſe, granted by the college of phyſicians.

LICHEN, LIVER WORT; a genus of the order of algæ, belonging to the cryptogamia claſs of plants. There are upwards of 100 ſpecies, all natives of Britain. The moſt remarkable are,

1. The geographicus; it is frequent in rocks, and may be readily diſtinguiſhed at a diſtance. The cruſt or ground is of a bright greeniſh-yellow colour, ſprinkled over with numerous plain black tubercles; which frequently run into one another, and form lines reſembling the rivers in a map, from which laſt circumſtance it takes its name.

2. The calcareous, or black-nobbed dyer's lichen, is frequent on calcareous rocks; and hath a hard, ſmooth, white, ſtoney, or tartareous cruſt, cracked or teſſilated on the ſurface, with black tubercles. Dillenius relates, that this ſpecies is uſed in dyeing, in the ſame manner as the *tartareus* after-mentioned.

3. The ventoſus, or red ſpangled tartareous lichen, hath a hard tartareous cruſt, cracked and teſſelated on the ſurface, of a pale-yellow colour when freſh, and a light olive when dry. The tubercles are of a blood-red colour at top, their margin and baſe of the ſame colour as the cruſt. The texture and appearance of this, (according to Mr Lightfoot) indicate that it would anſwer the purpoſes of dyeing as well as ſome others of this tribe, if proper experiments were made.

4. The candelarius, or yellow farinaceous lichen, is common upon walls, rocks, boards, and old pales. There are two varieties. The firſt has a farinaceous cruſt, of no regular figure, covered with numerous, ſmall, greeniſh-yellow, or olive ſhields, and grows commonly upon old boards. The other has a ſmooth, hard, circular cruſt, wrinkled and lobed at the circumference, which adheres cloſely to rocks and ſtones. In the centre are numerous ſhields of a deeper yellow or orange colour, which, as they grow old, ſwell in the middle, and aſſume the figure of tubercles. The inhabitants of Smaland in Sweden ſcrape this lichen from the rocks, and mix it with their tallow, to make golden candles to burn on feſtival days.

5. The tartareus, or large yellow-ſaucer'd dyer's lichen, is frequent on rocks, both in the Highlands and Lowlands of Scotland. The cruſt is thick and tough, either white, or greeniſh-white, and has a rough warted ſurface. The ſhields are yellow or buff-coloured, of various ſizes, from that of a pin's head to the diameter of a ſilver penny. Their margins are of the ſame colour as the cruſt. This lichen is much uſed by the Highlanders for dyeing a fine claret or pompadour colour. For this purpoſe, after ſcraping it from the rocks, and cleaning it, they ſteep it in urine for a quarter of a year. Then taking it out, they make it into cakes, and hang them up in bags to dry. Theſe cakes are afterwards pulveriſed, and the powder is uſed to impart the colour with an addition of alum.

6. The parellus, or crawfiſh-eye lichen, grows upon wall and rocks, but is not very common. The cruſts ſpread cloſely upon the place where they grow, and cover them to a conſiderable extent. They are rough, tartareous, and aſh-coloured, of a tough coriaceous ſubſtance. The ſhields are numerous and crowded, having white or aſh-coloured, ſhallow, plain diſcs, with obtuſe margins. This is uſed by the French for dying a red colour.

7. The ſaxatiles, or grey-blue pitted lichen, is very common upon trunks of trees, rocks, tiles, and old wood. It forms a circle two or three inches diameter. The upper ſurface is of a blue-grey and ſometimes of a whitiſh aſh-colour, uneven, and full of numerous ſmall pits or cavities; the under-ſide is black, and covered all over, even to the edges, with ſhort ſimple hairs or radicles. A variety ſometimes occurs with leaves tinged of a red or purple colour. This is uſed by finches and other ſmall birds in conſtructing the outſide of their curiouſly formed neſts.

8. The omphalodes, or dark-coloured dyers lichen, is frequent upon rocks. It forms a thick widely expanded cruſt of no regular figure, compoſed of numerous imbricated leaves of a brown or dark-purple colour, divided into ſmall ſegments. The margins of the ſhields are a little criſped and turned inwards, and their outſide aſh-coloured. This lichen is much uſed by the Highlanders in dying a reddiſh brown colour. They ſteep it in urine for a conſiderable time, till it becomes ſoft and like a paſte; then, forming the paſte into cakes, they dry them in the ſun, and preſerve them for uſe in the manner already related of the Tartareus.

9. The parietinus, or common yellow wall-lichen, is very common upon walls, rocks, tiles of houſes, and trunks of trees. It generally ſpreads itſelf in circles of two or three inches diameter, and is ſaid to dye a good yellow or orange colour with alum.

10. The iſlandicus, or eatable Iceland lichen, grows on many mountains both of the Highlands and Lowlands of Scotland. It conſiſts of nearly erect leaves about two inches high, of a ſtiff ſubſtance when dry, but ſoft and pliant when moiſt, variouſly divided without order into broad diſtant ſegments, bifid or trifid at the extremities. The upper or interior ſurface of the leaves is concave, cheſtnut-colour, ſmooth, and ſhining, but red at the baſe; the under or exterior ſurface is ſmooth and whitiſh, a little pitted, and ſprinkled with very minute black warts. The margins of the leaves and all the ſegments from bottom to top are ciliated with ſmall, ſhort, ſtiff, hair-like ſpinules, of a dark cheſtnut colour, turning towards the upper ſide. The ſhields are very rarely produced. For the uſes of this as an eſculant herb, ſee ICELAND nº 16. Made into broth or gruel, it is ſaid to be very ſerviceable in coughs and conſumptions; and, according to Haller and Scopoli, is much uſed in theſe complaints in Vienna.

11. The pulmonarius, or lungwort lichen, grows in ſhady woods upon the trunks of old trees. The leaves are as broad as a man's hand, of a kind of leather-like ſubſtance, hanging looſe from the trunk on which it grows, and laciniated into wide angular ſegments. Their natural colour, when freſh, is green; but in drying, they turn firſt to a glaucous and afterwards to a fuſcous colour. It has an aſtringent, better taſte; and, according to Gmelin, is boiled in ale in Siberia, inſtead of hops. The ancients uſed it in coughs and aſthmas, &c. but it is not uſed in modern practice.

12. The calicaris, or beaked lichen, grows ſometimes upon trees but more frequently upon rocks, eſpecially on the ſea-coaſts, but is not very common. It is ſmooth, gloſſy, and whitiſh, producing flat or convex

ſhields, of the ſame colour as the leaves, very near the ſummits of the ſegments, which are acute and rigid, and, being often reflected from the perpendicular by the growth of the ſhields, appear from under their limbs like a hooked beak. This will dye a red colour; and promiſes, in that intention, to rival the famous *Lichen Rocolla* or *Argol*, which is brought from Canary Iſlands, and ſometimes ſold at the price of 80l. per ton. It was formerly uſed inſtead of ſtarch to make hair-powder.

13. The prunaſtri, or common ragged hoary lichen, grows upon all ſorts of trees; but is generally moſt white and hoary on the ſloe and old plum trees or upon old pales. This is the moſt variable of the whole tribe of lichens, appearing different in figure, magnitude and colour, according to its age, place of growth, and ſex. The young plants are of a glaucous colour, ſlightly divided into ſmall acute creſted ſegments. As they grow older, they are divided like a ſtag's horn, into more and deeper ſegments, ſomewhat broad, flat, ſoft, and pitted on both ſides, the upper ſurface of a glaucous colour, the under one white and hoary.—The *male* plants, as Linnæus terms them, are ſhort, ſeldom more than an inch high, not hoary on the under-ſide; and have pale glaucous ſhields ſituated at the extremities of the ſegments, ſtanding on ſhort peduncles, which are only ſmall ſtiff portions of the leaf produced.—The female ſpecimens have numerous farinaceous tubercles both on the edges of their leaves, and the wrinkles of their ſurface.—The pulverized leaves have been uſed as a powder for the hair, and alſo in dying yarn of a red-colour.

14. The juniperinus, or common yellow tree-lichen, is common upon the trunks and branches of elms and many other trees. Linnæus ſays it is very common upon the juniper. The Gothland Swedes dye their yarn of a yellow colour with it, and give it as a ſpecific in the jaundice.

15. The caninus, or aſh-coloured ground-liverwort, grows upon the ground among moſs, at the roots of trees in ſhady woods, and is frequent alſo in heaths and ſtony places. The leaves are large, gradually dilated towards the extremities, and divided into roundiſh elevated lobes. Their upper ſide, in dry weather, is aſh-coloured; in rainy weather, of a dull fuſcous green colour; their under-ſide white and hoary, having many thick downy nerves from which deſcend numerous, long, white, pencil-like radicles. The peltæ, or ſhields, grow at the extremities of the elevated lobes, ſhaped like the human nail; of a roundiſh oval form, convex above, and concave beneath; of a chocolate colour on the upper ſide, and the ſame colour with the leaves on the under. There are two varieties, the one called *reddiſh*, and the other *many-fingered* ground-liverwort. The former is more common than the other. This ſpecies has been rendered famous by the celebrated Dr Mead, who aſſerted that it was an infallible preventative of the dreadful conſequences attending the bite of a mad dog. He directed half an ounce of the leaves dried and pulveriſed to be mixed with two drachms of powdered black pepper. This was to be divided into four doſes, one of which was to be taken by the patient every morning faſting, for four mornings ſucceſſively, in half a pint of warm cow's milk; after which he was to uſe the cold bath every morning for a month.—It is much to be lamented, however, that the ſucceſs of this medicine, or indeed any other recommended for the ſame purpoſe, hath not always anſwered the expectation. There are inſtances where the application hath not prevented the hydrophobia, and it is even uncertain whether it has ever been inſtrumental in keeping off that diſorder.

16. The aphthoſus, or green ground-liverwort with black warts, grows upon the ground at the roots of trees in woods, and other ſtoney and moſſy places. It differs very little from from the foregoing, and according to ſome is only a variety of it. Linnæus informs us, that the country-people of Upland in Sweden give an infuſion of this lichen in milk to children that are troubled with the diſorder called the *thruſh* or *aphthæ*, which induced that ingenious naturaliſt to beſtow upon it the trivial name of *aphthoſus*. The ſame writer alſo tells us, that a decoction of it in water purges upwards and downwards, and will deſtroy worms.

17. The cocciferus, or ſcarlet-tipped cup-lichen, is frequent in moors and heaths. It has in the firſt ſtate a granulated cruſt for its ground, which is afterwards turned into ſmall laciniated leaves, green above, and hoary underneath. The plant aſſumes a very different aſpect, according to the age, ſituation, and other accidents of its growth; but may be in general readily diſtinguiſhed by its fructifications, which are fungous tubercles of a fine ſcarlet colour, placed on the rim of the cup, or on the top of the ſtalk. Theſe tubercles, ſteeped in an alcaline lixivium, are ſaid to dye a fine durable red colour.

18. The rangiferinus, or rein-deer lichen, is frequent in woods, heaths, and mountainous places. Its general height, when full-grown, is about two inches. The ſtalk is hollow, and very much branched from bottom to top; the branches are divided and ſubdivided, and at laſt terminated by two, three, four, or five very fine, ſhort, nodding horns. The axillæ of the branches are often perforated. The whole plant is of a hoary white or grey colour, covered with white farinaceous particles, light and brittle when dry, ſoft and elaſtic when moiſt. The fructifications are very minute, round, fuſcous, or reddiſh-brown tubercles, which grow on the very extremities of the fineſt branches; but theſe tubercles are very ſeldom found. The plant ſeems to have no foliaceous ground for the baſe, nor ſcarcely any viſible roots.—Linnæus tells us, that in Lapland this moſs grows ſo luxuriant that it is ſometimes found a foot high. There are many varieties of this ſpecies, of which the principal is the ſylvaticus, or brown-tipt rein-deer lichen. The moſt remarkable difference between them is, that the ſylvaticus turns fuſcous by age, while the other always continues white. For the uſes of theſe ſpecies, ſee Lapland.

19. The plicatus, or officinal ſtringy lichen, grows on the branches of old trees, but is not very common. The ſtalks are a foot or more in length, cylindrical, rigid, and ſtring-ſhaped, very irregularly branched, the branches entangled together, of a cinereous or aſh-colour, brittle and ſtringy if doubled ſhort, otherwiſe tough and pliant, and hang pendent from the trees on which they grow. The ſhields grow generally

rally at the extremities of the branches, are nearly flat, or ſlightly concave, thin, aſh-coloured above, pale-brown underneath, and radiated with fine rigid fibres. As the plant grows old, the branches become covered with a white, rough, warty cruſt; but the young ones are deſtitute of it. It was formerly uſed in the ſhops as an aſtringent to ſtop hæmorrhages, and to cure ruptures; but is out of the modern practice. Linnæus informs us, that the Laplanders apply it to their feet to relieve the excoriations occaſioned by much walking.

20. The barbatus, or bearded lichen, grows upon the branches of old trees in thick woods and pine-foreſts. The ſtalks or ſtrings are ſlightly branched and pendulous, from half a foot to two feet in length, little bigger than a taylor's common ſewing thread; cylindrically jointed towards the baſe; but ſurrounded every where elſe with numerous, horizontal, capillary fibres, either ſimple, or ſlightly branched. Their colour is a whitiſh green. This has an aſtringent quality like the preceding. When ſteeped in water, it acquires an orange colour; and, according to Dillenius, is uſed in Penſylvania for dying that colour.

21. The vulpinus, or gold-wiry lichen, grows upon the trunks of old trees, but is not very common. It is produced in erect tufts, from half an inch to two inches in height, of a fine yellow or lemon colour, which readily diſcovers it. The filaments which compoſe it are not cylindrical, but a little compreſſed and uneven on the ſurface, variouſly branched, the angles obtuſe, and the branches ſtraggling and entangled one with another. Linnæus informs us, that the inhabitants of Smaland in Sweden dye their yarn of a yellow colour with this lichen; and that the Norwegians deſtroy wolves by ſtuffing dead carcaſſes with this moſs reduced to powder, and mixed with pounded glaſs, and ſo expoſing them in the winter-ſeaſon to be devoured by thoſe animals.

LICHTENBERG, a caſtle of France, in Lower Alſace, and the chief place of a county of the ſame name; ſeated on a rock, near the mountains Voſges, and is looked upon as impregnable. E. Long. 7. 35. N. Lat. 48. 55.

LICHTENBURG, a town of Germany, in the circle of Franconia, and margravate of Cullembach. E. Long. 12. 0. N. Lat. 50. 26.

LICHTENFELS, a town of Germany, in the circle of Franconia, and biſhoprick of Bamberg, ſeated on the river Mayne, in E. Long. 11. 10. N. Lat. 50. 20.

LICHTENSTEIN, a town of Swiſſerland, in Tockerberg, ſeated on the river Thour. E. Long. 2. 15. N. Lat. 47. 25.

LICHTSTALL, an handſome town of Swiſſerland, in the county of Baſle; ſeated on the river Ergetz. in E. Long. 7. 57. N. Lat. 47. 40.

LICINIUS STOLO, a famous Roman tribune, ſtyled *Stolo* on account of a law he made, while tribune, that no Roman citizen ſhould poſſeſs more than 500 acres of land; alleging, that when they occupied more, they could not cultivate it with care, nor pull up the uſeleſs ſhoots (*ſtolones*) that grow from the roots of trees. He is memorable alſo for enacting, that one of the conſuls ſhould always be of a Plebeian family. He lived about 362 B. C.

LICOLA, or LAGO-DI-LICOLA, a lake in the kingdom of Naples, formerly famous for plenty of excellent fiſh; but in the year 1538 an exploſion of a volcano changed one part of it into a mountain of aſhes, and the other into a moraſs. It was anciently known by the name of the Lucrine-lake.

LICTORS, in Roman antiquity, twelve officers or ſerjeants, appointed by Romulus the founder of Rome, to attend him whenever he ſhould appear in public; each of them bearing a battle-ax ſtuck in a bundle of rods, which was then the uſual ſymbol of ſovereignty in the petty ſtates of Hetruria. It was alſo a part of their office to be the public executioners in beheading, ſcourging, &c.

LIDD, a town of Kent in England, ſeated in Rumney-marſh, and is one of the Cinque-ports. On the eaſt ſide of it is a heap of ſtones, which they pretend was the tomb of Criſpin and Criſpianus.

LIDKOPING a town of Weſt Gothland in Sweden, ſeated on the lake Wenar, in E. Long. 13. 40. N. Lat. 58. 25.

LIECHTENAU, a town of Germany, in the circle of Franconia and Margravate of Anſpach, ſubject to Nurenburg. E. Long. 9. 5. N. Lat. 48. 43.

LIEGE, (*Ligeus*), in law, is uſed for *liege-lord*, and ſometimes for *liege-man*: *liege-lord* is he that acknowledgeth no ſuperior, and *liege-man* is he who oweth allegiance to his *liege-lord*, 34 & 35 H. VIII. The king's ſubjects are called *lieges* or *liege-people*, becauſe they owe and are bound to pay allegiance to him. Stat. 8. H. VI. *c.* 10, 14. H. VIII. *c.* 2. But in ancient times, private perſons, as lords of manors, &c. had their lieges. Skene ſays that this word is derived from the Italian *Liga*, a bond or league.

LIEGE-*Pouſtie*, in Scots law, is oppoſed to death-bed; and ſignifies a perſon's enjoying that ſtate of health in which only he can diſpoſe of his property at pleaſure.

LIEGE, a biſhopric of Germany, in the circle of Weſtphalia; bounded to the north by Brabant, to the ſouth by Champagne and Luxemberg, to the eaſt by Limburg and Juliers, and to the weſt by Brabant, Namur, and Hainault. It is very unequal both in length and breadth; the former being in ſome places above 90 miles, in others not half ſo much; and the latter in ſome places 45, in others hardly 25. The air here is very temperate; and the ſoil fruitful in corn, wine, wood, and paſture. Here alſo are mines of lead and iron, pits of coal, quarries of marble and ſtone, and ſome celebrated mineral waters, as thoſe of Spa and Chau-fontaine. The principal rivers are, the Maes and Sambre. The manufactures and commodities of the country, are chiefly beer, arms, nails, ſerge, leather, with the products we have juſt mentioned. The ſtates of the biſhopric are compoſed of three bodies: the firſt is the chapter of Liege; the ſecond, the nobility of the country; and the third, the deputies of the capital and the other towns. The three eſtates are ſeldom called together, except to raiſe taxes for the ſervice of the province, or upon ſome particular emergency; but there is a committee of the ſtates, who meet thrice a-week, and in time of war daily. They are always about the prince-biſhop, to make remonſtrances, and demand the redreſs of grievances. The biſhop is ſpiritual and temporal lord of the whole country; but, as biſhop, is ſuffragan to the archbiſhop of Cologne. He ſtyles himſelf *by the grace of God, biſhop and prince of Liege, duke of Bouillon, marquis of Franchimont, count of Looz, Hoorn,* &c. His arms for Liege, are, a pillar argent, on a pedeſtal of the ſame, with a crown or, in a field ruby. In the matricula he was formerly rated at 50 horſe, and 170 foot; or 1280 florins monthly, in lieu of them, but now only at 826. An abatement of one third has alſo been granted of the ancient aſſeſſment to the chamber-court, which was 360 rix-dollars 62½ kruitzers for each term. Here are ſeveral colleges which ſit at Liege, for the government of the country, and the deciſion of cauſes, civil, criminal, ſpiritual and feudal, and of ſuch alſo as relate to the finances. The chapter conſiſts of 60 perſons, who muſt either prove their nobility for four generations, both by father and mother, before they can be admitted; or if they cannot do that, muſt at leaſt have been doctors or licentiates of divinity for ſeven years, or, of law, for five years, in ſome famous univerſity. The biſhopric is very populous and extenſive, containing 1500 pariſhes, in which are 24 walled towns, beſides others, 52 baronies, beſides counties and ſeigniories, 17 abbeys for men, who muſt be all gentlemen, and 11 for ladies, excluſive of others.

LIEGE, the capital of the biſhopric of the ſame name, ſtands upon the Maes, in a fine valley, ſurrounded with woods and hills, being a free imperial city, and one of the largeſt and moſt eminent in Europe. Though it is 100 miles from the ſea by water, the Maes is navigable up to it. The city has 16 gates; 17 bridges, ſome of them very handſome; 154 ſtreets, many of them ſtraight and broad; a fine epiſcopal palace; a very large ſtately cathedral, in which, beſides five great ſilver coffers full of reliques, are ſeveral ſilver ſtatues of ſaints, and a St George on horſeback of maſſy gold, preſented to the cathedral by Charles the Bold, by way of atonement for uſing the inhabitants cruelly in the year 1468. Of the other churches, that of St Paul is the moſt remarkable, both for its ſtructure and fine ornaments in painting and marble. The city is well fortified, and there are alſo two caſtles on the mountain of the Holy Walburg for its defence. Beſides a great number of other convents of both ſexes, here is a college of Engliſh Jeſuits, founded in the year 1616, and a fine nunnery of Engliſh ladies. Indeed, churches, convents, and other religious foundations, take up the greater part of it. The reader, therefore, no doubt, will take it for granted, that it is a moſt bleſſed, holy, and happy city. But however it may fare with the profane, unhallowed laity, it is certainly the paradiſe of prieſts, as it is expreſsly called, by way of eminence. It is divided into the old and new, or the upper and lower; and the latter again into the iſland, and the quarter beyond the Maes. The houſes are high, and built of bluiſh marble. In the town and ſuburbs are 12 public places or ſquares, 10 hoſpitals, a beguin-houſe, and two fine keys, planted with ſeveral rows of trees, for the burghers to take the air; but a great part of that within the walls is taken up with orchards and vineyards. The manufactures of this city are arms, nails, leather, ſerge, and beer. In St William's convent, without the city, is the tomb of the famous Engliſh traveller Sir John Mandeville, with an inſcription in barbarous French, requeſting thoſe who read it to pray for his ſoul. Near it are kept the ſaddle, ſpurs, and knife, that he made uſe of in his travels. After having ſeen moſt of the cities of any note in the world, he made choice of this to ſpend the eve of his life in. A little way from the city, on the other ſide the Maes, ſtands the epiſcopal palace of Seraing, in which the biſhops generally reſide during the ſummer. The latitude of this city is 50° 36'. and the longitude 5° 40'.

LIENTERY, a flux of the belly, in which the aliments are diſcharged as they are ſwallowed, or very little altered either in colour or ſubſtance. See (*Index* ſubjoined to) MEDICINE.

LIEUTENANT, an officer who ſupplies the place and diſcharges the office of a ſuperior in his abſence. Of theſe, ſome are civil, as the lords lieutenants of kingdoms, and the lords-lieutenants of counties; and others are military, as the lieutenant-general, lieutenant-colonel, &c.

Lord LIEUTENANT *of Ireland*, is properly a viceroy; and has all the ſtate and grandeur of a king of England, except being ſerved upon the knee. He has the power of making war and peace, of beſtowing all the offices under the government, of dubbing knights, and of pardoning all crimes except high treaſon; he alſo calls and prorogues the parliament, but no bill can paſs without the royal aſſent. He is aſſiſted in his government by a privy-council; and, on his leaving the kingdom, he appoints the lords of the regency, who govern in his abſence.

Lord LIEUTENANTS *of Counties*, are officers, who, upon any invaſion or rebellion, have power to raiſe the militia, and to give commiſſions to colonels and other officers, to arm and form them into regiments, troops, and companies. Under the lords-lieutenants, are deputy-lieutenants, who have the ſame power; theſe are choſen by the lords-lieutenants, out of the principal gentlemen of each county, and preſented to the king for his approbation.

LIEUTENANT-*Colonel*. See COLONEL.

LIEUTENANT-*General*. See GENERAL.

LIEUTENANT, in the land-ſervice, is the ſecond commiſſioned officer in every company of both foot and horſe, and next to the captain, and who takes the command upon the death or abſence of the captain.

LIEUTENANT *of Artillery*. Each company of artillery hath four; 1 firſt and 3 ſecond lieutenants. The firſt lieutenant has the ſame detail of duty with the captain; becauſe in his abſence he commands the company: he is to ſee that the ſoldiers are clean and neat; that their clothes, arms, and accoutrements, are in good and ſerviceable order; and to watch over every thing elſe which may contribute to their health. He muſt give attention to their being taught the exerciſe, ſee them punctually paid, their meſſes regularly kept, and to viſit them in the hoſpitals when ſick. He muſt aſſiſt at all parades, &c. He ought to underſtand the doctrine of projectiles and the ſcience of artillery, with the various effects of gun powder, however managed or directed; to enable him to conſtruct and diſpoſe his batteries to the beſt advantage; to plant his cannon, mortars, and howitzers, ſo as to produce the greateſt annoyance to an enemy. He is to be well ſkilled in the attack and defence of fortified places; and to be converſant in arithmetic, mathematics, mechanics, &c.

Second LIEUTENANT *in the Artillery*, is the ſame as an enſign in an infantry regiment, being the youngeſt commiſſioned officer in the company, and muſt aſſiſt the firſt lieutenant in the detail of the company's duty. His other qualifications ſhould be equal with thoſe of the firſt lieutenant.

LIEUTENANT *of a Ship of War*, the officer next in rank and power to the captain, in whoſe abſence he is accordingly charged with the command of the ſhip, as alſo the execution of whatever orders he may have received from the commander relating to the king's ſervice.

The lieutenant who commands the watch at ſea, keeps a liſt of all the officers and men thereto belonging, in order to muſter them when he judges it expedient, and report to the captain the names of thoſe who are abſent from their duty. During the night-watch, he occaſionally viſits the lower decks, or ſends thither a careful officer, to ſee that the proper centinels are at their duty, and that there is no diſorder amongſt the men; no tobacco ſmoked between decks, nor any fire or candles burning there, except the lights which are in lanthorns, under the care of a proper watch, on particular occaſions. He is expected to be always upon deck in his watch, as well to give the neceſſary orders with regard to trimming the ſails and ſuperintending the navigation, as to prevent any noiſe or confuſion; but he is never to change the ſhip's courſe without the captain's directions, unleſs to avoid an immediate danger.

The lieutenant, in time of battle, is particularly to ſee that all the men are preſent at their quarters, where they have been previouſly ſtationed according to the regulations made by the captain. He orders and exhorts them every where to perform their duty; and acquaints the captain at all other times of the miſbehaviour of any perſon in the ſhip, and of whatever elſe concerns the ſervice or diſcipline.

The youngeſt lieutenant in the ſhip, who is alſo ſtyled *lieutenant at arms*, beſides his common duty, is particularly ordered, by his inſtructions, to train the ſeamen to the uſe of ſmall arms, and frequently to exerciſe and diſcipline them therein. Accordingly his office in time of battle, is chiefly to direct and attend them; and at all other times to have a due regard to the preſervation of the ſmall arms, that they be not loſt or embezzled, and that they are kept clean and in good condition for ſervice.

LIEUTENANT *Reformed*, he whoſe company or troop is broke or diſbanded, but continued in whole or half-pay, and ſtill preſerves his right of ſeniority and rank in the army.

LIFE, is peculiarly uſed to denote the animated ſtate of living creatures, or the time that the union of their ſoul and body laſts.

LIFE-*Rent*, in Scots law. When the uſe and enjoyment of a ſubject is given to a perſon during his life, it is ſaid to belong to him in life-rent.

LIGAMENT, in anatomy, a ſtrong compact ſubſtance, ſerving to join two bones together.

LIGARIUS (Quintus), a Roman proconſul in Africa, 49 B.C. Taking part with Pompey, he was forbid by Julius Ceſar to return to Rome: to obtain his pardon, Cicero made that admired oration in his defence which has immortalized the memory of the client with that of his celebrated advocate.

LIGATURE, in ſurgery, is a cord, band, or ſtring; or the binding any part of the body with a cord, band, fillet, &c. whether of leather, linen, or any other matter.

Ligatures are uſed to extend or replace bones that are broken or diſlocated; to tie the patients down in lithotomy and amputations; to tie upon the veins in phlebotomy, or the arteries in amputations, or in large wounds; to ſecure the ſplints that are applied to fractures; to tie up the proceſſes of the peritonæum with the ſpermatic veſſels in caſtration; and laſtly, in taking off warts or other excreſcences by ligature.

LIGHT, in the moſt common acceptation of the word, ſignifies that inviſible etherial matter which makes objects perceptible to our ſenſe of ſeeing. Figuratively, it is alſo uſed for whatever conveys inſtruction to our minds, and likewiſe for that inſtruction itſelf.

1 Opinions of the fi philoſophers co cerning light.

The nature of light hath been a ſubject of ſpeculation from the earlieſt ages of philoſophy. Some of thoſe firſt diſtinguiſhed by the appellation of philoſophers even doubted whether objects became viſible by means of any thing proceeding from them, or from the eye of the ſpectator. The fallacy of this notion muſt very ſoon have been apparent, becauſe, in that caſe, we ought to have ſeen as well in the night as in the day. The opinion was therefore qualified by Empedocles and Plato; who maintained, that viſion was occaſioned by particles continually flying off from the ſurfaces of bodies which met with others proceeding from the eye; but Pythagoras aſcribed it ſolely to the particles proceeding from the external objects and entering the pupil of the eye.

2 Opinion of Des Cartes.

Among the modern philoſophers there have been two celebrated opinions, viz. the Carteſian and Newtonian. According to the former, light is an inviſible fluid preſent at all times and in all places, but which requires to be ſet in motion by an ignited or otherwiſe properly qualified body in order to make objects viſible to us.—The Newtonians maintain, that light is not a fluid *per ſe*, but conſiſts of a vaſt number of exceedingly ſmall particles ſhaken off in all directions from the luminous body with inconceivable velocity by a repulſive power; and which moſt probably never return again to the body from which they were emitted. Theſe particles are alſo ſaid to be emitted in right lines by the body from whence they proceed: and this rectilinear direction they preſerve until they are turned out of their original path by the attraction of ſome other body near which they paſs, and which is called *inflection*; by paſſing through a medium of different denſity, which is called *refraction*; or by being thrown obliquely or directly forward by ſome body which oppoſes their paſſage, and which is called *reflection*; or, laſtly, till they are totally ſtopped by the ſubſtance of any body into which they penetrate, and which is called their *extinction*. A ſucceſſion of theſe particles following one another in an exactly ſtraight line is called a *ray of light*; and this ray, in whatever manner it hath its direction changed, whether by refraction, reflection, or, inflection, always preſerves its recti-

3 Of Sir Iſaac N ton.

rectilinear courſe, neither is it poſſible by any art whatever to make it paſs on in the ſegment of a circle, ellipſis, or other curve.—From ſome obſervations on the eclipſes of Jupiter's ſatellites, and alſo on the aberration of the fixed ſtars, it appears that the particles of light move at the rate of little leſs than 200,000 miles in a ſecond of time. See Astronomy, n° 126, 127, 284.

To this doctrine concerning the nature of light ſeveral objections have been made; the moſt conſiderable of which is, That in this caſe, as rays of light are continually paſſing in different directions from every viſible point, they muſt neceſſarily interfere with and deſtroy each other in ſuch a manner as entirely to confound all diſtinct perception of objects, if not to deſtroy the ſenſe of ſeeing altogether; not to mention the continual waſte of ſubſtance which a conſtant emiſſion of particles muſt occaſion in the luminous body, and which ſince the creation ought to have greatly diminiſhed the ſun and ſtars, as well as increaſed the bulk of the earth and planets by the vaſt quantity of particles of light abſorbed by them in ſuch a long period of time.

In anſwer to this objection, Mr Melville gives ſome ingenious illuſtrations concerning the extreme ſubtilty of light, or the ſmallneſs of the particles of which it conſiſts, and of which few perſons, even of thoſe who admit the hypotheſis, have any idea. He obſerves, that there is probably no phyſical point in the viſible horiſon that does not ſend rays to every other point, unleſs where opaque bodies interpoſe. Light, in its paſſage from one ſyſtem to another, often paſſes thro' torrents of light iſſuing from other ſuns and ſyſtems, without ever interfering or being diverted in its courſe, either by it, or by the particles of that elaſtic medium which ſome phænomena give us reaſon to ſuppoſe are diffuſed through all the mundane ſpace. To account for this fact and others ſimilar to it, he concludes, that the particles of which light conſiſts muſt be incomparably rare, even when they are the moſt denſe; that is, that the ſemidiameters of the two neareſt particles, in the ſame or in different beams, ſoon after their emiſſion, are incomparably leſs than their diſtance from one another. This difficulty concerning the non-interference of the particles of light is not ſolved, as he obſerves, by ſuppoſing with Mr Boſcovich and others, that each particle is endued with an inſuperable impulſive force; becauſe, in that caſe, their ſpheres of impulſion would even be more liable to interfere, and they would on that account be more likely to diſturb one another.

The difficulty, according to Mr Canton, will nearly vaniſh, if a very ſmall portion of time be allowed between the emiſſion of every particle and the next that follows in the ſame direction. Suppoſe, for inſtance, that one lucid point of the ſun's ſurface emits 150 particles in a ſecond, which are more than ſufficient to give continual light to the eye without the leaſt appearance of intermiſſion; yet ſtill the particles of which it conſiſts, will on account of their great velocity be more than 1000 miles behind each other, and thereby leave room enough for others to paſs in all directions.

8 By Mr Mairan.

In order to determine whether light really conſiſted of particles emitted from the luminous body, or only in the vibrations of a ſubtile fluid, it hath been attempted to find out its momentum, or the force with which it moves. The firſt who ſet about this matter with any tolerable pretenſions to accuracy was M. Mairan. Others indeed, particularly Hartſocker and Homberg, had pretended, that in certain caſes this momentum was very perceptible; but M. Mairan proved, that the effects mentioned by them were owing to currents of heated air produced by the burning-glaſſes uſed in their experiments, or to ſome other cauſes overlooked by the ſephiloſophers. To decide the matter therefore, if poſſible, he began with trying the effects of rays collected by lenſes of four and ſix inches diameter, and thrown upon the needle of a compaſs; but the reſult was nothing more than ſome tremulous motion from whence he could draw no concluſion. After this, he and Mr du Fay conſtructed a kind of mill of copper, which moved with an exceeding ſlight impulſe; but though they threw upon it the focus of a lens of ſeven or eight inches diameter, they were ſtill unable to draw any concluſions from the reſult.

M. Mairan afterwards procured a horizontal wheel of iron three inches in diameter, having ſix radii, at the extremity of each of which was a ſmall wing fixed obliquely. The axis of the wheel, which was alſo of iron, was ſuſpended by a magnet. The wheel and the axis together did not weigh more than 30 grains; but though a motion was given to this wheel when the focus of the burning-glaſs was thrown upon the extremities of the radii, yet it was ſo irregular that he could not but conclude that it was occaſioned by the motion of the heated air. He then intended to have made his experiment *in vacuo*, but he concluded that it was unneceſſary. For, beſides the difficulty of making a vacuum, he was perſuaded that there was in our atmoſphere a thinner medium which freely penetrates even glaſs itſelf, the exiſtence of which he imagined that he had ſufficiently proved in his treatiſe on the aurora borealis. See Aurora Borealis, n° 5.

9 By Mr Mitchell.

Mr Michell ſome years ago endeavoured to aſcertain the momentum of light in a manner ſtill more accurate. The inſtrument he made uſe of for this purpoſe conſiſted of a very thin plate of copper, a little more than an inch ſquare, which was faſtened to one end of a ſlender harpſichord-wire about ten inches long. To the middle of this was fixed an agate cap, ſuch as is commonly uſed for ſmall mariner's-compaſſes, after the manner of which it was intended to turn; and at the other end of the wire was a middling ſized ſhot-corn, as a counterpoiſe to the copper-plate. The inſtrument had alſo fixed to it in the middle, at right angles to the length of the wire, and in an horizontal direction, a ſmall bit of a very ſlender ſewing needle, about one third, or perhaps half an inch long, which was made magnetical. In this ſtate the whole inſtrument might weigh about 10 grains. It was placed on a very ſharp pointed needle, on which the agate cap turned extremely freely; and to prevent its being diſturbed by any motion of the air, it was included in a box, the lid and front of which were of glaſs. This box was about 12 inches long, ſix or ſeven inches deep, and and about as much in width; the needle ſtanding upright in the middle. At the time of making the experiment, the box was placed in ſuch a manner that a line drawn from the ſun paſſed at right angles to the length of it; and the inſtrument was brought to range in the ſame direction with the box, by means of the magnetical bit of needle abovementioned, and a magnet properly placed on the outſide, which would retain it, though with extremely little force, in any ſituation. The rays of the ſun were now thrown upon the copperplate abovementioned from a concave mirror of about two feet diameter, which, paſſing through the front-glaſs of the box, were collected into the focus of the mirror upon the copperplate. In conſequence of this the plate began to move, with a ſlow motion of about an inch in a ſecond of time, till it had moved through a ſpace of about two inches and a half, when it ſtruck againſt the back of the box. The mirror being removed, the inſtrument returned to its former ſituation by means of the little needle and magnet; and the rays of the ſun being then again thrown upon it, it again began to move, and ſtruck againſt the back of the box as before; and this was repeated three or four times with the ſame ſucceſs.—The inſtrument was then placed the contrary way in the box to that in which it had been placed before, ſo that the end to which the copper-plate was affixed, and which had lain, in the former experiment, towards the right hand, now lay towards the left; and the rays of the ſun being again thrown upon it, it began to move with a ſlow motion, and ſtruck againſt the back of the box as before; and this was repeated once or twice with the ſame ſucceſs. But by this time the copperplate began to be ſo much altered in its form, by the extreme heat which it underwent in each experiment, and which brought it nearly into a ſtate of fuſion, that it became very much bent, and the more ſo as it had been unwarily ſupported by the middle, half of it lying above and half below the wire to which it was faſtened. By this means it now varied ſo much from the vertical poſition, that it began to act in the ſame manner as the ſail of a windmill, being impelled by the ſtream of heated air which moved upwards, with a force ſufficient to drive it in oppoſition to the impulſe of the rays of light.

10 Dr Prieſtley's concluſions.

"If we impute, (ſays Dr Prieſtley), the motion produced in the above experiment to the impulſe of the rays of light, and ſuppoſe that the inſtrument weighed ten grains, and acquired a velocity of one inch in a ſecond, we ſhall find that the quantity of matter contained in the rays falling upon the inſtrument in that time amounted to no more than one twelve hundred millionth part of a grain, the velocity of light exceeding the velocity of one inch in a ſecond in the proportion of about 12,000,000,000 to 1. Now the light in the above experiment was collected from a ſurface of about three ſquare feet, which reflecting only about half what falls upon it, the quantity of matter contained in the rays of the ſun incident upon a ſquare foot and an half of ſurface in one ſecond of time, ought to be no more than the twelve hundred millionth part of a grain, or, upon one ſquare foot only, the eighteen hundred millionth part of a grain. But the denſity of the rays of light at the ſurface of the ſun is greater than at the earth in the proportion of 45,000 to 1: there ought, therefore, to iſſue from one ſquare foot of the ſun's ſurface in one ſecond of time, in order to ſupply the waſte by light, one forty thouſandth part of a grain of matter; that is, a little more than two grains in a day, or about 4,752,000 grains, or 670 pounds avoirdupois nearly, in 6000 years; a quantity which would have ſhortened the ſun's ſemidiameter no more than about ten feet, if it was formed of the denſity of water only."

11 Objectio against Cartesia opinion, Sir Isaa Newton

The Newtonians, beſides the anſwer juſt now given to the moſt formidable objections of their opponents, have endeavoured to prove the impoſſibility of light being a vibration in any fluid. Sir Iſaac, in his Principia, demonſtrates, that no rectilinear motion can be propagated among the particles of any fluid unleſs theſe particles lie in right lines; and he hath alſo ſhewn, that all motion propagated through a fluid diverges from a rectilinear progreſs into the unmoved ſpaces. Hence he concludes, "a preſſure on a fluid medium (i. e. a motion propagated by ſuch a medium beyond any obſtacle, which impedes any part of its motion,) cannot be propagated in right lines, but will be always inflecting and diffuſing itſelf every way, to the quieſcent medium beyond that obſtacle. The power of gravity tends downwards; but the preſſure of water riſing from it, tends every way with an equable force, and is propagated with equal eaſe, and equal ſtrength, in curves, as in ſtraight lines. Waves, on the ſurface of the water, gliding by the extremes of any very large obſtacle, inflect and dilate themſelves, ſtill diffuſing, gradually, into the quieſcent water beyond that obſtacle. The waves, pulſes, or vibrations of the air, wherein ſound conſiſts, are manifeſtly inflected, though not ſo conſiderably as the waves of water; and ſounds are propagated with equal eaſe, thro' crooked tubes, and through ſtraight lines; but light was never known to move in any curve, nor to inflect itſelf *ad umbram*."

12 By M Rown

To this Mr Rowning adds another proof. "The Carteſian notion of light, (ſays he), was not that it is propagated from luminous bodies by the emiſſion of ſmall particles, but that it was communicated to the organ of ſight by their preſſure upon the materia ſubtilis, with which they ſuppoſed the univerſe to be full. But, according to this hypotheſis, it could never be dark; becauſe, when a fluid ſuſtains any preſſure, if that fluid fills all the ſpace it takes up, abſolutely, without leaving any pores, which is the caſe of the ſuppoſed materia ſubtilis, then that preſſure muſt neceſſarily be communicated *equally* and *inſtantaneouſly* to every part. And therefore, whether the ſun were above or below the horizon, the preſſure communicated, and conſequently the light, would be the ſame. And farther, as the preſſure would be inſtantaneous, ſo would the light, which is contrary to what is collected from the eclipſes of Jupiter's ſatellites."

It is obvious, however, that, whatever ſide we take concerning the nature of light, many, indeed almoſt all the circumſtances concerning it, are incomprehenſible, and beyond the reach of human underſtanding.

1 Unac able pertie light.

Moſt of the diſcous flowers, by ſome power unknown to us, follow the ſun in his courſe. They attend him to his evening retreat, and meet his riſing luſtre in the morning with the ſame unerring law. If a plant alſo is ſhut up in a dark room, and a ſmall hole is afterwards opened by which the light of the ſun may enter, the plant will turn towards that hole, and even alter its own ſhape in order to get near it; ſo that though it was ſtraight before, it will in time become crooked, that it may get near the light. It is not the *heat*, but the *light* of the ſun, which it thus covets; for, though a fire be kept in the room, capable of giving a much ſtronger heat than the ſun, the plant will turn away from the fire in order to enjoy the ſun's light.—The green colour of plants alſo depends on the ſun's light being allowed to ſhine upon them; for without this they are always white.—From this laſt circumſtance, and likewiſe the property which the ſolar light has of blackening precipitates of ſilver from the nitrous acid *, it hath been thought that light either contains the *phlogiſton* in very conſiderable quantity, or is itſelf a modification of that unknown ſubſtance. But that this cannot be the caſe, we have now a proof little ſhort of demonſtration, from the laſt experiments of Dr Prieſtley concerning the production of pure dephlogiſticated air from pump-water, by means of the ſolar light. If light either were the phlogiſton itſelf, or contained it in very conſiderable quantity, it is impoſſible the air produced by its means could be pure and dephlogiſticated. See the articles Gas and Air, in the APPENDIX.—For the properties of light acting as the medium of our perceptions by the ſenſe of ſight, ſee the article Optics.

Light *independent of Heat*. In general, a very conſiderable degree of heat is requiſite to the emiſſion of light from any body; but there are ſeveral exceptions to this, eſpecially in light proceeding from putreſcent ſubſtances and phoſphorus, together with that of luminous animals, and other ſimilar appearances. Light proceeding from putreſcent animal and vegetable ſubſtances, as well as from glow-worms, is mentioned by Ariſtotle. Thomas Bartholin mentions four kinds of luminous inſects, two with wings, and two without; but in hot climates travellers ſay they are found in much greater numbers, and of different ſpecies. Columna, an induſtrious naturaliſt, obſerves, that their light is not extinguiſhed immediately upon the death of the animal.

The firſt diſtinct account that we meet with of light proceeding from putreſcent animal-fleſh is that which is given by Fabricius ab Aquapendente, who ſays, that when three Roman youths, reſiding at Padua, had bought a lamb, and had eaten part of it on Eaſter-day 1592, ſeveral pieces of the remainder, which they kept till the day following, ſhone like ſo many candles, when they were caſually viewed in the dark. Part of this luminous fleſh was immediately ſent to Aquapendente, who was profeſſor of anatomy in that city. He obſerved, that both the lean and the fat of this meat ſhone with a whitiſh kind of light, and alſo took notice, that ſome pieces of kid's fleſh, which had happened to have lain in contact with it, was luminous, as well as the fingers and other parts of the bodies of thoſe perſons who touched it. Thoſe parts, he obſerved, ſhone the moſt which were ſoft to the touch, and ſeemed to be tranſparent in candlelight; but where the fleſh was thick and ſolid, or where a bone was near the outſide, it did not ſhine.

After this appearance, we find no account of any other ſimilar to it, before that which was obſerved by Bartholin, and of which he gives a very pompous deſcription in his ingenious treatiſe already quoted. This happened at Montpelier in 1641, when a poor old woman had bought a piece of fleſh in the market, intending to make uſe of it the day following. But happening not to be able to ſleep well that night, and her bed and pantry being in the ſame room, ſhe obſerved ſo much light come from the fleſh, as to illuminate all the place where it hung. A part of this luminous fleſh was carried as a curioſity to Henry Bourbon, duke of Condé, the governor of the place, who viewed it for ſeveral hours with the greateſt aſtoniſhment.

This light was obſerved to be whitiſh; and not to cover the whole ſurface of the fleſh, but certain parts only, as if gems of unequal ſplendor had been ſcattered over it. This fleſh was kept till it began to putrify, when the light vaniſhed, which, as ſome religious people fancied, it did in the form of a croſs.

It is natural to expect, that the almoſt univerſal experimental philoſopher Mr Boyle ſhould try the effect of his air-pump upon theſe luminous ſubſtances. Accordingly we find that he did not fail to do it; when he preſently found that the light of rotten wood was extinguiſhed *in vacuo*, and revived again on the admiſſion of the air, even after a long continuance *in vacuo*; but the extinguiſhing of this light was not ſo complete immediately upon exhauſting the receiver, as ſome little time afterwards. He could not perceive, however, that the light of rotten wood was increaſed in condenſed air; but this, he imagined, might ariſe from his not being able to judge very well of the degree of light, through ſo thick and cloudy a glaſs-veſſel as he then made uſe of; but we find that the light of a ſhining fiſh, which was put into a condenſing engine before the Royal Society, in 1668, was rendered more vivid by that means. The principal of Mr Boyle's experiments were made in October 1667.

Works, vol. iii. p. 156.

Birch's Hiſt. ii. 254.

This philoſopher attended to a great variety of circumſtances relating to this curious phenomenon. Among other things, he obſerved, that change of air was not neceſſary to the maintenance of this light; for it continued a long time when a piece of the wood was put into a very ſmall glaſs hermetically ſealed, and it made no difference when this tube which contained the wood was put into an exhauſted receiver. This he alſo obſerved with reſpect to a luminous fiſh, which he put into water, and placed in the ſame circumſtances. He alſo found, that the light of ſhining fiſhes had other properties in common with that of ſhining wood; but the latter, he ſays, was preſently quenched with water, ſpirit of wine, a great variety of ſaline mixtures, and other fluids. Water, however, did not quench all the light of ſome ſhining veal, on which he tried it, tho' ſpirit of wine deſtroyed its virtue preſently.

Mr Boyle's obſervation of light proceeding from fleſh-meat was quite caſual. On the 15th of February 1662, one of his ſervants was greatly alarmed with the ſhining of ſome veal, which had been kept a few days, but had no bad ſmell, and was in a ſtate very proper for uſe. The ſervant immediately made his maſter acquainted with this extraordinary appearance; and though he was then in bed, he ordered it to be immediately brought to him, and he examined it with the greateſt attention. Suſpecting that the ſtate of the atmoſphere had ſome ſhare in the production of this phænomenon, he takes notice, after deſcribing the appearance, that the wind was ſouth-weſt

Birch, ii. 70.

and bluſtering, the air hot for the ſeaſon, the moon was paſt its laſt quarter, and the mercury in the barometer was at $29\frac{3}{16}$ inches.

16 Light from fiſhes.

Mr Boyle was often diſappointed in his experiments on ſhining-fiſhes; finding, that they did not always ſhine in the very ſame circumſtances, as far as he could judge, with others which had ſhined before. At one time that they failed to ſhine, according to his expectations, he obſerved that the weather was variable, and not without ſome days of froſt and ſnow. In general, he made uſe of whitings, finding them the fitteſt for his purpoſe. In a diſcourſe, however, upon this ſubject at the Royal Society in 1681, it was aſſerted, that, of all fiſhy ſubſtances, the eggs of lobſters, after they had been boiled, ſhone the brighteſt. Olig. Jacobœus, obſerves, that, upon opening a ſea-polypus, it was ſo luminous, as to ſtartle ſeveral perſons who ſaw it; and he ſays, that the more putrid the fiſh was, the more luminous it grew. The nails alſo and the fingers of the perſons who touched it became luminous; and the black liquor which iſſued from the animal, and which is its bile, ſhone alſo, but with a very faint light.

Act. Haſn. vol. v. p. 282.

Mr Boyle draws a minute compariſon between the light of burning coals and that of ſhining wood or fiſh, ſhowing in what particulars they agree, and in what they differ. Among other things, he obſerves, that extreme cold extinguiſhes the light of ſhining wood, as appeared when a piece of it was put into a glaſs tube, and held in a frigorific mixture. He alſo found that rotten wood did not waſte itſelf by ſhining, and that the application of a thermometer to it did not diſcover the leaſt degree of heat.

17 Of the pholas, a remarkably luminous fiſh.

There is a remarkable ſhell-fiſh called **PHOLAS**, which forms for itſelf holes in various kinds of ſtone, &c. That this fiſh is luminous, was noticed by Pliny; who obſerves, that it ſhines in the mouth of the perſon who eats it, and, if it touch his hands or cloaths, makes them luminous. He alſo ſays that the light depends upon its moiſture. The light of this fiſh has furniſhed matter for various obſervations and experiments to M. Reaumur, and the Bolognian academicians, eſpecially Beccarius, who took ſo much pains with the ſubject of phoſphoreal light.

M. Reaumur obſerves, that, whereas other fiſhes give light when they tend to putreſcence, this is more luminous in proportion to its being freſh; that when they are dried, their light will revive if they be moiſtened either with freſh or ſalt water, but that brandy immediately extinguiſhes it. He endeavoured to make this light permanent, but none of his ſchemes ſucceeded.

The attention of the Bolognian academicians was engaged to this ſubject by M. F. Marſilius, in 1724, who brought a number of theſe fiſhes, and the ſtones in which they were incloſed, to Bologna, on purpoſe for their examination.

Com. Bonon. vol. ii. 232.

Beccarius obſerved, that though this fiſh ceaſed to ſhine when it became putrid; yet that, in its moſt putrid ſtate, it would ſhine, and make the water in which it was immerſed luminous, when they were agitated. Galeatius and Montius found, that wine or vinegar extinguiſhed this light: that in common oil it continued ſome days; but in rectified ſpirit of wine, or urine, hardly a minute.

In order to obſerve in what manner this light was affected by different degrees of heat, they made uſe of a Reaumur's thermometer, and found that water rendered luminous by theſe fiſhes increaſed in light till the heat arrived to 45 degrees; but that it then became ſuddenly extinct, and could not be revived.

In the experiments of Beccarius, a ſolution of ſea-ſalt increaſed the light of the luminous water, a ſolution of nitre did not increaſe it quite ſo much. Sal ammoniac diminiſhed it a little, oil of tartar *per deliquium* nearly extinguiſhed it, and the acids entirely. This water poured upon freſh calcined gypſum, rock cryſtal, ceruſs, or ſugar, became more luminous. He alſo tried the effects of it when poured upon various other ſubſtances, but there was nothing very remarkable in them. Afterwards, uſing luminous milk, he found that oil of vitriol extinguiſhed the light, but that oil of tartar increaſed it.

This gentleman had the curioſity to try how differently coloured ſubſtances were affected by this kind of light; and having, for this purpoſe, dipped ſeveral ribbons in it, the white came out the brighteſt, next to this was the yellow, and then the green; the other colours could hardly be perceived. It was not, however, any particular colour, but only light that was perceived in this caſe. He then dipped boards painted with the different colours, and alſo glaſs tubes, filled with ſubſtances of different colours, in water rendered luminous by the fiſhes. In both theſe caſes the red was hardly viſible, the yellow was the brighteſt, and the violet the dulleſt. But on the boards the blue was nearly equal to the yellow, and the green more languid; whereas in the glaſſes, the blue was inferior to the green.

Of all the liquors to which he put the pholades, milk was rendered the moſt luminous. A ſingle pholas made ſeven ounces of milk ſo luminous, that the faces of perſons might be diſtinguiſhed by it, and it looked as if it was tranſparent.

Air appeared to be neceſſary to this light; for when Beccarius put the luminous milk into glaſs tubes, no agitation would make it ſhine, unleſs bubbles of air were mixed with it. Alſo Montius and Galeatius found, that, in an exhauſted receiver, the pholas loſt its light, but the water was ſometimes made more luminous; which they aſcribed to the riſing of bubbles of air through it.

Beccarius, as well as Reaumur, had many ſchemes to render the light of theſe pholades permanent. For this purpoſe he kneaded the juice into a kind of paſte, with flour, and found that it would give light when it was immerſed in warm water; but it anſwered beſt to preſerve the fiſh in honey. In any other method of preſervation, the property of becoming luminous would not continue longer than ſix months, but in honey it had laſted above a year; and then it would, when plunged in warm water, give as much light as ever it had done.

Similar, in ſome reſpects, to thoſe obſervations on the light of the pholas, was that which was obſerved to proceed from wood which was moiſt, but not in a putrid ſtate, which was very conſpicuous in the dark.

That the ſea is ſometimes luminous, eſpecially when it is put in motion by the daſhing of oars or the beating of it againſt a ſhip, has been obſerved with admiration by a great number of perſons. Mr Boyle, after reciting all the circumſtances of this appearance, as far as he could collect them from the accounts of navigators; as its being extended as far as the eye could reach, and at other times being viſible only when the water was daſhed againſt ſome other body; that, in ſome ſeas, this phænomenon is accompanied by ſome particular winds, but not in others; and that ſometimes one part of the ſea will be luminous, when another part, not far from it, will not be ſo; concludes with ſaying, that he could not help ſuſpecting that theſe odd phænomena, belonging to great maſſes of water, were in ſome meaſure owing to ſome coſmical law, or cuſtom of the terreſtrial globe, or at leaſt of the planetary vortex.

Some curious obſervations on the ſhining of ſome fiſhes, and the pickle in which they were immerſed, were made by Dr Beal, in May 1665; and had they been properly attended to and purſued, might have led to the diſcovery of the cauſe of this appearance. Having put ſome boiled mackerel into water, together with ſalt and ſweet herbs; when the cook was, ſome time after, ſtirring it, in order to take out ſome of the fiſhes, ſhe obſerved, that, at the firſt motion, the water was very luminous; and that the fiſh ſhining through the water, added much to the light which the water yielded. The water was of itſelf thick and blackiſh, rather than of any other colour; and yet it ſhined on being ſtirred, and at the ſame time the fiſhes appeared more luminous than the water. Wherever the drops of this water, after it had been ſtirred, fell to the ground, they ſhined; and the children in the family diverted themſelves with taking the drops, which were as broad as a penny, and running with them about the houſe. The cook obſerved, that, when ſhe turned up that ſide of the fiſh that was loweſt, no light came from it; and that, when the water had ſettled for ſome time, it did not ſhine at all. The day following, the water gave but little light, and only after a briſk agitation, though the fiſhes continued to ſhine as well from the inſide as the outſide, and eſpecially about the throat, and ſuch places as ſeemed to have been a little broken in the boiling.

When, in the light of the ſun, he examined, with a microſcope, a ſmall piece of a fiſh which had ſhined very much the night before, he found nothing remarkable on its ſurface, except that he thought he perceived what he calls a *ſteam*, rather dark than luminous, ariſing like a very ſmall duſt from the fiſh, and here and there a very ſmall and almoſt imperceptible ſparkle. Of the ſparkles he had no doubt; but he thought it poſſible that the ſteam might be a deception of the ſight, or ſome duſt in the air.

Finding the fiſh to be quite dry, he moiſtened it with his ſpittle; and then obſerved that it gave a little light, though but for a ſhort time. The fiſh at that time was not fetid, nor yet inſipid to the beſt diſcerning palate. Two of the fiſhes he kept two or three days longer for farther trial: but, the weather being very hot, they became fetid; and, contrary to his expectations, there was no more light produced either by the agitation of the water, or in the fiſh.

20
Father Bourzes's account of luminous ſea-water.

Father Bourzes, in his voyage to the Indies, in 1704, took particular notice of the luminous appearance of the ſea. The light was ſometimes ſo great, that he could eaſily read the title of a book by it, though he was nine or ten feet from the ſurface of the water. Sometimes he could eaſily diſtinguiſh, in the wake of the ſhip, the particles that were luminous from thoſe that were not; and they appeared not to be all of the ſame figure. Some of them were like points of light, and others ſuch as ſtars appear to the naked eye. Some of them were like globes, of a line or two in diameter; and others as big as one's head. Sometimes they formed themſelves into ſquares of three or four inches long, and one or two broad. Sometimes all theſe different figures were viſible at the ſame time; and ſometimes there were what he calls *vortices* of light, which at one particular time appeared and diſappeared immediately, like flaſhes of lightning.

Nor did only the wake of the ſhip produce this light, but fiſhes alſo, in ſwimming, left ſo luminous a track behind them, that both their ſize and ſpecies might be diſtinguiſhed by it. When he took ſome of the water out of the ſea, and ſtirred it ever ſo little with his hand, in the dark, he always ſaw in it an infinite number of bright particles; and he had the ſame appearance whenever he dipped a piece of linen in the ſea, and wrung it in a dark place, even though it was half dry; and he obſerved, that when the ſparkles fell upon any thing that was ſolid, it would continue ſhining for ſome hours together.

21
His conjectures concerning the cauſe.

After mentioning ſeveral circumſtances which did not contribute to this appearance, this Father obſerves, that it depends very much upon the *quality of the water;* and he was pretty ſure that this light is the greateſt when the water is fatteſt, and fulleſt of foam. For in the main ſea, he ſays, the water is not everywhere equally pure; and that ſometimes, if linen be dipped in the ſea, it is clammy when it is drawn up again: and he often obſerved, that when the wake of the ſhip was the brighteſt, the water was the moſt fat and glutinous, and that linen moiſtened with it produced a great deal of light, if it was ſtirred or moved briſkly. Beſides, in ſome parts of the ſea, he ſaw a ſubſtance like ſaw-duſt, ſometimes red, and ſometimes yellow; and when he drew up the water in thoſe places, it was always viſcous and glutinous. The ſailors told him, that it was the ſpawn of whales; that there are great quantities of it in the North; and that ſometimes, in the night, they appeared all over of a bright light, without being put in motion by any veſſel or fiſh paſſing by them.

As a confirmation of this conjecture, that the more glutinous the ſea-water is, the more it is diſpoſed to become luminous, he obſerves, that one day they took a fiſh which was called a *bonite*, the inſide of the mouth of which was ſo luminous, that, without any other light, he could read the ſame characters which he had before read by the light in the wake of the ſhip; and the mouth of this fiſh was full of a viſcous matter, which, when it was rubbed upon a piece of wood, made it immediately all over luminous; though, when the moiſture was dried up, the light was extinguiſhed.

22
Abbe Nollet's theory.

The abbé Nollet was much ſtruck with the luminouſneſs of the ſea when he was at Venice in 1749; and, after taking a great deal of pains to aſcertain the circumſtances of it, concluded that it was occaſioned by a ſhining inſect; and having examined the water very often, he at length did find a ſmall inſect, which he particularly deſcribes, and to which he attributes the light. The ſame hypotheſis had alſo occurred to M. Vianelli, profeſſor of medicine in Chioggia near Venice; and both he and M. Grizellini, a phyſician in Venice, have given drawings of the inſects from which they imagined this light to proceed.

The abbé was the more confirmed in his hypotheſis, by obſerving, ſome time after, the motion of ſome luminous particles in the ſea. For, going into the water, and keeping his head juſt above the ſurface, he ſaw them dart from the bottom, which was covered with weeds, to the top, in a manner which he thought very much reſembled the motions of inſects; though, when he endeavoured to catch them, he only found ſome luminous ſpots upon his handkerchief, which were enlarged when he preſſed them with his finger.

23
Obſervations of M. le Roi.

Memoires Preſentes, vol. iii. 144.

M. le Roi, making a voyage on the Mediterranean, preſently after the abbé Nollet made his obſervations at Venice, took notice, that, in the day-time, the prow of the ſhip in motion threw up many ſmall particles, which, falling upon the water, rolled upon the ſurface of the ſea for a few ſeconds, before they mixed with it; and in the night the ſame particles, as he concluded, had the appearance of fire. Taking a quantity of the water, the ſame ſmall ſparks appeared whenever it was agitated; but, as was obſerved with reſpect to Dr Beal's experiments, every ſucceſſive agitation produced a leſs effect than the preceding, except after being ſuffered to reſt a while; for then a freſh agitation would make it almoſt as luminous as the firſt. This water, he obſerved, would retain its property of ſhining by agitation a day or two; but it diſappeared immediately on being ſet on the fire, tho' it was not made to boil.

This gentleman, after giving much attention to this phænomenon, concludes, that it is not occaſioned by any ſhining inſects, as the abbé Nollet imagined; eſpecially as, after carefully examining ſome of the luminous points, which he caught upon an handkerchief, he found them to be round like large pins heads, but with nothing of the appearance of any animal, though he viewed them with a microſcope. He alſo found, that the mixture of a little ſpirit of wine with water juſt drawn from the ſea, would give the appearance of a great number of little ſparks, which would continue viſible longer than thoſe in the ocean. All the acids, and various other liquors, produced the ſame effect, though not quite ſo conſpicuouſly; but no freſh agitation would make them luminous again. M. le Roi is far from aſſerting that there are no luminous inſects in the ſea. He even ſuppoſes that the abbé Nollet and M. Vianelli had found them. But he was ſatisfied that the ſea is luminous chiefly on ſome other account, though he does not ſo much as advance a conjecture about what it is.

24
Experiments by M. Ant. Martin.

Swed. Abhand. vol. xxiii. p. 225.

M. Ant. Martin made many experiments on the light of fiſhes, with a view to diſcover the cauſe of the light of the ſea. He thought that he had reaſon to conclude, from a great variety of experiments, that all ſea-fiſhes have this property; but that it is not to be found in any that are produced in freſh water. Nothing depended upon the *colour* of the fiſhes, except that he thought that the white ones, and eſpecially thoſe that had white ſcales, were a little more luminous than others. This light, he found, was increaſed by a ſmall quantity of ſalt; and alſo by a ſmall degree of warmth, though a greater degree extinguiſhed it. This agrees with another obſervation of his, that it depends entirely upon a kind of moiſture which they had about them, and which a ſmall degree of heat would expel, when an oilineſs remained which did not give this light, but would burn in the fire. Light from the fleſh of birds or beaſts is not ſo bright, he ſays, as that which proceeds from fiſh. Human bodies, he ſays, have ſometimes emitted light about the time that they began to putrefy, and the walls and roof of a place in which dead bodies had often been expoſed, had a kind of dew or clammineſs upon it, which was ſometimes luminous; and he imagined that the lights which are ſaid to be ſeen in burying-grounds may be owing to this cauſe.

2
By M
Canto

From ſome experiments made by Mr Canton, he concludes, that the luminouſneſs of ſea-water is owing to the ſlimy and other putreſcent ſubſtances it contains. On the evening of the 14th of June 1768, he put a ſmall freſh whiting into a gallon of ſea-water, in a pan which was about 14 inches in diameter, and took notice that neither the whiting nor the water, when agitated, gave any light. A Fahrenheit's thermometer, in the cellar where the pan was placed, ſtood at 54°. The 15th, at night, that part of the fiſh which was even with the ſurface of the water was luminous, but the water itſelf was dark. He drew the end of a ſtick through it, from one ſide of the pan to the other; and the water appeared luminous behind the ſtick all the way, but gave light only where it was diſturbed. When all the water was ſtirred, the whole became luminous, and appeared like milk, giving a conſiderable degree of light to the ſides of the pan; and it continued to do ſo for ſome time after it was at reſt. The water was moſt luminous when the fiſh had been in it about 28 hours; but would not give any light by being ſtirred, after it had been in it three days.

He then put a gallon of freſh water into one pan, and an equal quantity of ſea-water into another, and into each pan he put a freſh herring of about three ounces. The next night the whole ſurface of the ſea-water was luminous, without being ſtirred; but it was much more ſo when it was put in motion; and the upper part of the herring, which was conſiderably below the ſurface of the water, was alſo very bright; while at the ſame time, the freſh water, and the fiſh that was in it, were quite dark. There were ſeveral very bright luminous ſpots on different parts of the ſurface of the ſea-water; and the whole, when viewed by the light of a candle, ſeemed covered with a greaſy ſcum. The third night, the light of the ſea-water, while at reſt, was very little, if at all, leſs than before; but when ſtirred, its light was ſo great as to diſcover the time by a watch, and the fiſh in it appeared as a dark ſubſtance. After this, its light was evidently decreaſing, but was not quite gone before the 7th night. The freſh water and the fiſh in it were perfectly dark during the whole time. The thermometer was generally above 60°.

The preceding experiments were made with ſea-water: but he now made uſe of other water, into which he put common or ſea ſalt, till he found, by an hydrometer, that it was of the ſame ſpecific gravity with the ſea-water; and, at the ſame time, in another gallon of water, he diſſolved two pounds of ſalt; and into each of theſe waters he put a ſmall freſh herring. The next evening the whole ſurface of the artificial ſea-water was luminous without being ſtirred; but gave much more light when it was diſturbed. It appeared exactly like the real ſea-water in the preceding experiment; its light laſted about the ſame time, and went off in the ſame manner: while the other water, which was almoſt as ſalt as it could be made, never gave any light. The herring which was taken out of it the 7th night, and waſhed from its ſalt, was found firm and ſweet; but the other herring was very ſoft and putrid, much more ſo than that which had been kept as long in freſh water. If a herring, in warm weather, be put into 10 gallons of artificial ſea-water, inſtead of one, the water, he ſays, will ſtill become luminous, but its light will not be ſo ſtrong.

It appeared by ſome of the firſt obſervations on this ſubject, that *heat* extinguiſhes the light of putreſcent ſubſtances. Mr Canton alſo attended to this circumſtance; and obſerves, that though the greateſt ſummer heat is well known to promote putrefaction, yet 20 degrees more than that of the human blood ſeems to hinder it. For putting a ſmall piece of a luminous fiſh into a thin glaſs ball, he found, that water of the heat of 118 degrees would extinguiſh its light in leſs than half a minute; but that, on taking it out of the water, it would begin to recover its light in about 10 ſeconds; but it was never afterwards ſo bright as before.

Mr Canton made the ſame obſervation that Mr Ant. Martin had done, viz. that ſeveral kinds of river fiſh could not be made to give light, in the ſame circumſtances in which any ſea-fiſh became luminous. He ſays, however, that a piece of carp made the water very luminous, though the outſide, or ſcaly part of it, did not ſhine at all.

For the ſake of thoſe perſons who may chooſe to repeat his experiments, he obſerves, that artificial ſea-water may be made without the uſe of an hydrometer, by the proportion of four ounces avoirdupois of ſalt, to ſeven pints of water, wine-meaſure.

From undoubted obſervations, however, it appears, that in many places of the ocean it is covered with luminous inſects to a very conſiderable extent. Mr Dagelet, a French aſtronomer, who returned from the Terra Auſtralis in the year 1774, brought with him ſeveral kinds of worms which ſhine in water when it is ſet in motion; and M. Rigaud, in a paper inſerted (if we are not miſtaken), in the Journal des Sçavans for the month of March 1770, affirms, that the luminous ſurface of the ſea, from the port of Breſt to the Antilles, contains an immenſe quantity of little, round, ſhining polypuſes of about a quarter of a line in diameter. Other learned men, who acknowledge the exiſtence of theſe luminous animals, cannot, however, be perſuaded to conſider them as the cauſe of all that light and ſcintillation that appear on the ſurface of the ocean: they think that ſome ſubſtance of the phoſphorus kind, ariſing from putrefaction, muſt be admitted as one of the cauſes of this phænomenon. M. Godehoue has publiſhed curious obſervations on a kind of fiſh, called in French *bonite*, already mentioned; and though he has obſerved, and accurately deſcribed, ſeveral of the luminous inſects that are found in ſea-water, he is, nevertheleſs, of opinion, that the ſcintillation and flaming light of the ſea proceed from the oily and greaſy ſubſtances with which it is impregnated.

The abbe Nollet was long of opinion, that the light of the ſea proceeded from electricity (A); though he afterwards ſeemed inclined to think, that this phenomenon was cauſed by ſmall animals, either by their luminous aſpect, or at leaſt by ſome liquor or effluvia which they emitted. He did not, however, exclude other cauſes; among theſe, the ſpawn or fry of fiſh deſerves to be noticed. M. Dagelet, ſailing into the bay of Antongil, in the iſland of Madagaſcar, obſerved a prodigious quantity of fry, which covered the ſurface of the ſea above a mile in length, and which he at firſt took for banks of ſand on account of their colour; they exhaled a diſagreeable odour, and the ſea had appeared with uncommon ſplendour ſome days before. The ſame accurate obſerver, perceiving the ſea remarkably luminous in the road of the Cape of Good Hope during a perfect calm, remarked that the oars of the canoes produced a whitiſh and pearly kind of luſtre: when he took in his hand the water which contained phoſphorus, he diſcerned in it, for ſome minutes, globules of light as large as the heads of pins. When he preſſed theſe globules, they appeared to his touch like a ſoft and thin pulp; and ſome days after the ſea was covered, near the coaſts, with whole banks of theſe little fiſh in innumerable multitudes.

27
Ignis fatuus.

To putrefaction, alſo, ſome are willing to attribute that luminous appearance which goes by the name of *ignis fatuus*, or in common Engliſh *Will with a wiſp*, to which the credulous vulgar aſcribe very extraordinary and eſpecially miſchievous powers. This phenomenon is chiefly viſible in damp places; and is alſo ſaid to be very often ſeen in burying-grounds, and near dunghills. Travellers ſay, that it is very frequent near Bologna in Italy, and in ſeveral parts of Spain and Ethiopia. The form and ſize of it are very various, and often variable.

It was the opinion of many philoſophers, and eſpecially Willoughby and Ray, that the ignis fatuus is made by ſhining inſects; but this opinion was never well ſupported. Sir Iſaac Newton calls it *a vapour ſhining without heat;* and ſuppoſes that there is the ſame difference between this vapour and flame, that there is between wood ſhining without heat, and burning coals of fire. That this opinion is juſt, and, moreover, that the light of this vapour ſhining without heat is of the ſame nature with light from putreſcent ſubſtances, according to the ſupporters of the putrefactive hypotheſis, may be concluded from the following circumſtances relating to them, as deſcribed by Dr Derham and G. B. Beccari.

The former of theſe gentlemen, having obſerved an ignis fatuus in ſome boggy ground, between two rocky hills, in a dark and calm night, got by degrees within two or three yards of it, and thereby had an opportunity

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(A) This hypotheſis was alſo maintained in a treatiſe publiſhed at Venice in 1746, by an officer in the Auſtrian ſervice, under the following title, *Dell' Eletreciſmo*.

Light. tunity of viewing it to the greateſt advantage. It kept ſkipping about a dead thiſtle, till a ſlight motion of the air, occaſioned, as he ſuppoſed, by his near approach to it, made it jump to another place; and as he advanced, it kept flying before him. He was ſo near to it, that, had it been the ſhining of glow-worms, he was ſatisfied that he could not but have diſtinguiſhed the ſeparate lights of which it muſt have conſiſted; whereas it was one uniform body of light. He therefore thought that it muſt be an ignited vapour (B).

M. Beccari made it his buſineſs to inquire concerning this phenomenon of all his acquaintance who had opportunities of obſerving it, either on the mountains, or on the plain. He found, that two which appeared on the plains, one to the north and the other to the eaſt of Bologna, were to be ſeen almoſt every dark night, eſpecially the latter; and the light they gave was equal to that of an ordinary faggot. That to the eaſt of Bologna once appeared to a gentleman of his acquaintance as he was travelling, and kept him company above a mile, conſtantly moving before him, and caſting a ſtronger light upon the road than the torch which was carried along with him. All theſe luminous appearances, he ſays, gave light enough to make all neighbouring objects viſible; and they are always obſerved to be in motion, but this motion was various and uncertain. Sometimes they would riſe up, and at other times ſink; but they commonly kept hovering about ſix feet from the ground. They would alſo diſappear of a ſudden, and inſtantly appear again in ſome other place. They differed both in ſize and figure; ſometimes ſpreading pretty wide, and then again contracting themſelves; ſometimes breaking into two, and then joining again; ſometimes floating like waves, and dropping, as it were, ſparks of fire. He was aſſured that there was not a dark night all the year round in which they did not appear, and that they were obſerved more frequently when the ground was covered with ſnow, than in the hotteſt ſummer: nor did rain or ſnow in the leaſt hinder their appearance; but, on the contrary, they were obſerved more frequently, and caſt a ſtronger light, in rainy and wet weather; nor were they much affected by the wind.

The grounds to the eaſt of Bologna, where the largeſt of theſe appearances was ſeen, is, he ſays, a hard chalky and clayey ſoil, which will retain the water a long time, and afterwards, in hot weather, would break into large cracks; but on the mountains, where the *ignes fatui* were ſmaller, the ſoil was of a looſe ſandy texture, which would not keep the water very long. According to the beſt information he could procure, theſe lights very much frequent brooks and rivers, being often obſerved on the banks of them; particularly, ſays he, becauſe the current of air carries them thither more readily than to any other place.

This gentleman concludes his account of theſe appearances with the following curious narrative. An intelligent gentleman travelling in March, between eight and nine in the evening, in a mountainous road about ten miles ſouth of Bologna, perceived a light which ſhone very ſtrongly upon ſome ſtones that lay on the banks of the river Rioverde. It ſeemed to be about two feet above the ſtones, and not far from the water. In ſize and figure it had the appearance of a parallelopiped, ſomewhat more than a foot in length, and half a foot high, the longeſt ſide being parallel to the horizon. Its light was ſo ſtrong, that he could plainly diſtinguiſh by it part of a neighbouring hedge and the water of the river; only in the eaſt corner of it the light was rather faint, and the ſquare figure leſs perfect, as if it was cut off or darkened by the ſegment of a circle.

His curioſity tempting him to examine this appearance a little nearer, he advanced gently towards the place; but was ſurpriſed to find that it changed gradually from a bright red, firſt to a yellowiſh, and then to a pale colour, in proportion as he drew nearer; and when he came to the place itſelf, it quite vaniſhed. Upon this he ſtepped back, and not only ſaw it again, but found that the farther he went from it, the ſtronger and brighter it grew. When he examined the place of this luminous appearance, he could not perceive the leaſt ſmell, or any other mark of fire.

This extraordinary account was confirmed to M. Beccari by another gentleman who frequently travelled the ſame road, and who aſſured him that he had ſeen the very ſame light five or ſix different times, in ſpring and autumn, and that he had always obſerved it to be of the very ſame ſhape, and in the ſame place; and he once took particular notice of its coming out of a neighbouring place, and ſettling itſelf in the figure above deſcribed.

M. Beccari owns himſelf to be greatly at a loſs to account not only for this very remarkable appearance, but alſo for the ignes fatui in general. He only ſays, that all perſons who ever ſaw any of theſe appearances, agree, that they caſt a light quite different from that of ſhining flies.

Dr Shaw deſcribes an ignis fatuus which he ſaw in the Holy Land; the circumſtances of which are ſo remarkable, that they well deſerve to be recited, eſpecially as ſome of them ſeem to point at the cauſe of the phenomenon. As he and his company were travelling by night through the valleys of Mount Ephraim, they were attended more than an hour by an ignis fatuus, which was ſometimes globular, or in the form of the flame of a candle; and which would immediately afterwards ſpread itſelf ſo much as to involve the whole company in a pale inoffenſive light, and then contract itſelf again, and ſuddenly diſappear. But in leſs than a minute it would become viſible as before; or, running along from one place to another, with a ſwift progreſſive motion, would expand itſelf at certain intervals, over more than two or three acres of the adjacent mountains. The atmoſphere from the beginning of the evening had been remarkably thick and hazy, and the dew, as they felt it upon their bridles, was unuſually clammy and unctuous. In the ſame kind of weather, he ſays, he has obſerved thoſe luminous appearances, which at ſea ſkip about the maſts and yards of ſhips, and which the ſailors call *corpuſanſe*, which is a corruption of the Spaniſh *Cuerpo ſanto*.

A light in ſome reſpects ſimilar to thoſe abovementioned has been found to proceed from that celebrated chemical

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(B) Similar in ſome reſpects to this light, was one that ſurrounded the body and the bed of a woman at Milan, which fled from the hand that approached it, but was at length diſperſed by the agitation of the air. *Acta Cæſarienſia*, Vol. III. p. 11.

chemical production called *phoſphorus*, which always tends to decompoſe itſelf, ſo as to take fire by the acceſs of *air* only. Phoſphorus, therefore, when it emits light, is properly a body ignited; though when a very ſmall quantity of it is uſed, as what is left after drawing it over paper, or what may be diſſolved in eſſential oil, the heat is not ſenſible. But perhaps the matter which emits the light in what we call *putreſcent ſubſtances* may be ſimilar to it, though it be generated by a different proceſs, and burn with a leſs degree of heat. Putreſcence does not ſeem to be neceſſary to the light of glow-worms, or of the pholades; and yet their light is ſufficiently ſimilar to that of ſhining wood or fleſh. Electric light is unqueſtionably ſimilar to that of phoſphorus, though the ſource of it is apparently very different.

Kunckel formed his phoſphorus into a kind of pills about the ſize of peas, which being moiſtened a little, and ſcraped in the dark, yielded a very conſiderable light, but not without ſmoke. The light was much more pleaſing when eight or ten of theſe pills were put into a glaſs of water; for being ſhaken in the dark, the whole glaſs ſeemed to be filled with light. Kunckel alſo reduced his phoſphorus into the form of larger ſtones, which being warmed by a perſon's hand, and rubbed upon paper, would deſcribe letters that were very legible in the dark.

The greateſt variety of experiments with the light of phoſphorus was made by Dr Slare; who ſays, that the liquid phoſphorus (which is nothing more than the ſolid phoſphorus diſſolved in any of the eſſential oils) would not hurt even a lady's hand; or that, when the hands or face were waſhed with it, it would not only make them viſible to other perſons in the dark, but that the light was ſo conſiderable as to make other neighbouring objects viſible.

When the ſolid phoſphorus is quite immerſed in water, he obſerves that it ceaſes to ſhine; but that if any part of it chance to emerge, or get into the air, it will ſhine though the glaſs be hermetically ſealed. In a large glaſs he kept it without water for ſeveral days; and yet it continued ſhining, with very little diminution of its light or weight. If the letters that were written with this phoſphorus were warmed by the fire, they preſently became dark lines, which continued upon the paper, like ink. To try how much light was given by a ſmall quantity of this phoſphorus, he obſerved that it continued to flame in the open air for ſeven or eight days; the light being viſible whenever he ſhut his window.

As air was generally thought to contain the *pabulum* of flame, Dr Slare was determined to try this with reſpect to phoſphorus; and for this purpoſe he placed a large piece of it in a receiver; but upon exhauſting it, he perceived that it became more luminous, and that, upon admitting the air, it returned to its former ſtate. This property of the light of phoſphorus, which is the very reverſe of that of ſhining wood and fiſhes, was alſo aſcertained by ſeveral very accurate experiments of Mr Haukſbee's.

Endeavouring to blow the phoſphorus into a flame with a pair of bellows, Dr Slare found that it was preſently blown out, and that it was a conſiderable time before the light revived again. All liquors would extinguiſh this light when the phoſphorus was put into them; nor would it ſhine or burn, though it was even boiled in the moſt inflammable liquors, as oil of olives, ſpirit of turpentine, or even ſpirit of wine.

In order to keep his phoſphorus from conſuming, he uſed to put it in a glaſs of water; and ſometimes he has ſeen it, when thus immerſed in water, make ſuch bright and vigorous coruſcations in the air, as, he ſays, would ſurpriſe and frighten thoſe who are not uſed to the phænomenon. This fiery meteor, he ſays, is contracted in its paſſage through the water, but expands as ſoon as it gets above it. If any perſon would make this experiment to advantage, he informs them that the glaſs muſt be deep and cylindrical, and not above three quarters filled with water. This effect he perceived in warm weather only, and never in cold.

The phoſphorus of which we have been treating is prepared from urine; but in ſome caſes the ſweat, which is ſimilar to urine, has been obſerved to be phoſphoraceous, without any preparation. This once happened to a perſon who uſed to eat great quantities of ſalt, and who was a little ſubject to the gout, after ſweating with violent exerciſe. Stripping himſelf in the dark, his ſhirt ſeemed to be all on fire, which ſurpriſed him very much. Upon examination, red ſpots were found upon his ſhirt; and the phyſician who was preſent perceived an urinous ſmell, though it had nothing in it of volatile alkali, but of the muriatic acid; the ſame, he ſays, that iſſues from cabbage much ſalted, and ſtrongly fermenting.

Acta Cæſarienſa, vol. v. p. 334.

29 All theſe lights accounted for from electricity.

The eaſieſt method of accounting for all theſe kinds of lights, perhaps, is from electricity. If light conſiſts in a certain vibration of the electric fluid, * then it follows, that in whatever ſubſtance ſuch a vibration takes place, there light muſt appear, whether in putreſcent animal-ſubſtances, ſea-water, phoſphorus, or any thing elſe. We know that the electric matter pervades all terreſtrial ſubſtances, and is very liable to be ſet in motion from cauſes of which we are ignorant. The action of the air by which putrefaction is produced may be one of theſe cauſes; and it can by no means appear ſurpriſing that the electric matter ſhould act in the bodies of living animals in ſuch a manner as to produce a permanent light, when we certainly know it acts in ſome of them ſo powerfully as to produce a ſhock ſimilar to that of a charged vial.—On this ſubject we ſhall only obſerve farther, that when this vibration becomes ſo powerful as to penetrate the ſolid ſubſtance of the body itſelf, the luminous body then becomes tranſparent, as in the milk abovementioned; but, when it is only ſuperficial, the body, though it emits light, is itſelf opaque.

* See *Electricity*, nº 82, 83.

Light-*Houſe*, in maritime affairs, a building on the ſea-ſhore, a promontory, a rock, &c. wherein is kept a light during the night in order to direct veſſels ſailing near the place.

Light-*Room*, a ſmall apartment, incloſed with glaſs-windows, near the magazine of a ſhip of war. It is uſed to contain the lights by which the gunner and his aſſiſtants are enabled to fill cartridges with powder to be ready for action.

LIGHTER, a large, open, flat-bottomed veſſel, generally managed with oars, and employed to carry goods to or from a ſhip when ſhe is to be laden or delivered.—There are alſo ſome lighters furniſhed with a deck throughout their whole length, in order to contain

tain thoſe merchandizes which would be damaged by rainy weather: theſe are uſually called *cloſe lighters*.

LIGHTNING, a bright and vivid flaſh of fire, ſuddenly appearing in the atmoſphere, and commonly diſappearing in an inſtant, ſometimes attended with clouds and thunder, and ſometimes not.

1 Different appearances of lightning.

The phænomena of lightning are always ſurpriſing, and ſometimes very terrible; neither is there any kind of natural appearance in which there is more diverſity, not two flaſhes being ever obſerved exactly ſimilar to one another. In a ſerene ſky, the lightning, in this country at leaſt, almoſt always hath a kind of indiſtinct appearance without any determinate form, like the ſudden illumination of the atmoſphere occaſioned by firing a quantity of looſe gunpowder; but when accompanied with thunder, it is well defined, and hath very often a zig-zag form. Sometimes it makes only one angle, like the letter V, ſometimes it hath ſeveral branches, and ſometimes it appears like the arch of a circle. But the moſt formidable and deſtructive form which lightning is ever known to aſſume is that of balls of fire. The motion of theſe is very often eaſily perceptible to the eye; but wherever they fall, much miſchief is occaſioned by their burſting, which they always do with a ſudden exploſion, like that of fire-arms. Sometimes they will quietly run along, or reſt for a little upon any thing, and then break into ſeveral pieces, each of which will explode; or the whole ball will burſt at once, and produce its miſchievous effects only in one place. The next to this in its deſtructive effects is the zig-zag kind; for that which appears like indiſtinct flaſhes, whoſe form cannot be readily obſerved, is ſeldom or never known to do hurt.—The colour of the lightning alſo indicates in ſome meaſure its power to do miſchief; the paleſt and brighteſt flaſhes being moſt deſtructive; ſuch as are red or of a darker colour, commonly doing leſs damage.

2 Its ſeeming omnipreſence.

A very ſurpriſing property of lightning, the zig-zag kind eſpecially, when near, is its ſeeming omnipreſence. If two perſons are ſtanding in a room looking different ways, and a loud clap of thunder accompanied with zig-zag lightning happens, they will both diſtinctly ſee the flaſh, not only by that indiſtinct illumination of the atmoſphere which is occaſioned by fire of any kind; but the very form of the lightning itſelf, and every angle it makes in its courſe, will be as diſtinctly perceptible, as though they had looked directly at the cloud from whence it proceeded. If a perſon happened at that time to be looking on a book, or other object which he held in his hand, he would diſtinctly ſee the form of the lightning between him and the object at which he looked. This property ſeems peculiar to lightning, and to belong to no other kind of fire whatever.

3 Remarkable effects of lightning.

The effects of lightning are generally confined within a ſmall ſpace; and are ſeldom ſimilar to thoſe which accompany exploſions of gun-powder, or of inflammable air in mines. Inſtances of this kind, however, have occurred; the following is one of the moſt remarkable of which we have any diſtinct account. "Auguſt 2d 1763, about ſix in the evening, there aroſe at Anderlicht, about a league from Bruſſels, a conflict of ſeveral winds borne upon a thick fog. This conflict laſted four or five minutes, and was attended with a frightful hiſſing noiſe, which could be compared to nothing but the yellings of an infinite number of wild beaſts. The cloud then opening, diſcovered a kind of very bright lightning, and in an inſtant the roofs of one ſide of the houſes were carried off and diſperſed at a diſtance; above 1000 large trees were broke off, ſome near the ground, others near the top, ſome torn up by the roots; and many both of the branches and tops carried to the diſtance of 60, 100, or 120 paces; whole coppices were laid on one ſide, as corn is by ordinary winds. The glaſs of the windows which was moſt expoſed was ſhivered to pieces. A tent in a gentleman's garden was carried to the diſtance of 4000 paces; and a branch torn from a large tree, ſtruck a girl in the forehead as ſhe was coming into town, at the diſtance of 40 paces from the trunk of the tree, and killed her on the ſpot."

Theſe terrible effects ſeem to have been owing to the prodigious agitation in the air, occaſioned by the emiſſion of ſuch a vaſt quantity of lightning at once; or perhaps to the agitation of the electric fluid itſelf, which is ſtill more dangerous than any concuſſion of the atmoſphere; for thunder-ſtorms will ſometimes produce moſt violent whirlwinds, ſuch as are by the beſt philoſophers attributed to electricity, nay, even occaſion an agitation of the waters of the ocean itſelf, and all this too after the thunder and lightning have ceaſed.—Of this we have the following inſtances. "Great Malvern, October 16th 1761. On Wedneſday laſt, we had the moſt violent thunder ever known in the memory of man. At a quarter paſt four in the afternoon, I was ſurpriſed with a moſt ſhocking and diſmal noiſe; 100 forges (the neareſt reſemblance I can think of,) were they all at work at once, could ſcarce equal it. I ran to the fore-door, and caſting my eye upon the ſide of the hill about 400 yards to the ſouth-weſt of my houſe, there appeared a prodigious ſmoak, attended with the ſame violent noiſe. I ran back into the houſe, and cried out, a volcano (for ſo I thought) had burſt out of the hill; but I had no ſooner got back again, than I found it had deſcended, and was paſſing on within about 100 yards of the ſouth end of my houſe. It ſeemed to riſe again in the meadow juſt below it; and continued its progreſs to the eaſt, riſing in the ſame manner for four different times, attended with the ſame diſmal noiſe as at firſt; the air being filled with a nauſeous and ſulphureous ſmell. I ſaw it gradually decreaſe till quite extinguiſhed in a turnep-field about a quarter of a mile below my houſe. The turnip-leaves, with leaves of trees, dirt, ſticks, &c. filled the air, and flew higher than any of theſe hills. The thunder ceaſed before this happened, and the air ſoon afterwards became calm and ſerene."—The vaſt column of ſmoke mentioned in the above letter was ſo large, that a phyſician of eminence at Worceſter ſaw it in its progreſs down the hill, about a mile from Feckenham, which is above 20 miles from Malvern.—In Auguſt 1763, a moſt violent ſtorm of thunder, rain, and hail, happened at London, which did damage in the adjacent country, to the amount of 50,000 l. Hailſtones fell of an immenſe ſize, from two to ten inches circumference; but the moſt ſurpriſing circumſtance was the ſudden flux and reflux of the tide in Plymouth pool, exactly correſponding with the like agitation in the ſame place, at the time of the great earthquake at Liſbon.

Inſtances are alſo to be found, where lightning, by its own proper force, without any aſſiſtance from thoſe leſs common agitations of the atmoſphere or electric fluid, hath thrown ſtones of immenſe weight to conſiderable diſtances; torn up trees by the root, and broke them in pieces; ſhattered rocks; beat down houſes, and ſet them on fire, &c. All theſe, however, are to be conſidered as the more unſual phænomena of lightning; its common mode of action being entirely ſimilar to that of a charged Leyden vial, where the electric matter diſcharges itſelf from a ſubſtance poſitively electrified to one that is negatively ſo. The indentity of electric matter and lightning ſeems now, indeed, ſo well eſtabliſhed, that there is not the leaſt foundation for ſeeking any other ſolution of the phænomena of lightning, than what may be obtained by comparing them with thoſe of our electrical experiments. The different forms of the flaſhes are all exemplified in thoſe of electrical ſparks. Where the quantity of electricity is ſmall, and conſequently incapable of ſtriking at any conſiderable diſtance, the ſpark appears ſtraight, without any curvature or angular appearance: but where the electricity is very ſtrong, and of conſequence capable of ſtriking an object at a pretty conſiderable diſtance, it aſſumes a crooked or zig-zag form. This is always the caſe with Mr Nairn's very powerful machines, the conductors of which are ſix feet in length and one foot in diameter. Sparks may be taken from them at the diſtance of 16, 17, or even 20 inches; and all of theſe put on the angular zig-zag form of lightning. The reaſon of this appearance, both in theſe ſparks and in the lightning, is, that the more fluid electric matter hath to paſs through the denſer and leſs fluid atmoſphere with great rapidity; and in fact, this is the way in which all the more fluid ſubſtances paſs through thoſe that are leſs ſo, at leaſt when their velocity becomes conſiderable.—If bubbles of air or ſteam paſs very gently up through water, their courſe from the bottom to the top of the veſſel will differ very little, if at all, from a ſtraight line; but when they are impelled by a conſiderable force, as in air blown from a bellows, or the bubbles of ſteam which ariſe in boiling water, their courſe is then marked by waved and crooked lines, and the deflection of the bubbles to the right or left, will be preciſely in proportion to their aſcending velocity, and to the weight of the water by which they are reſiſted.

In the caſe of air blown through water, however, or ſteam aſcending from the bottom of a veſſel of boiling water, though the courſe of the bubbles is waved and crooked, we never obſerve it to be angular as in lightning. The reaſon of this is, that there is no proportion between the capacity of the air for yielding to the impetus of lightning, and the velocity with which the latter is moved. From Mr Robins's experiments in gunnery, it appears, that the air cannot yield with a velocity much greater than 1200 feet in a ſecond, and that all projectiles moving with a greater degree of velocity meet with a violent reſiſtance. But if we ſuppoſe lightning to move only with one half the velocity of light, that is, near 100,000 miles in a ſecond, its motion in the fluid atmoſphere will meet with a reſiſtance very little inferior to what air would meet with in paſſing through the moſt ſolid bodies. The ſmalleſt difference of the reſiſtance of the atmoſphere on either ſide, muſt determine the lightning to that ſide; and in its paſſage to that new place where the reſiſtance is leaſt, it muſt paſs on in a ſtraight line, making an angle with its former courſe, becauſe the atmoſphere is altogether incapable of yielding with ſuch rapidity as the electric matter requires, and therefore reſiſts like a ſolid rock. The caſe is otherwiſe in the former examples: for tho' a ſmall difference in the reſiſtance forces the bubbles of air or ſteam to deviate from ſide to ſide, yet there is always a conſiderable proportion between the capacity of water for yielding, and that force by which the bubbles urge it to yield; ſo that though it does make a reſiſtance ſufficient to prevent the bubbles from moving in a ſtraight line, yet it alſo perceptibly yields at all times, and therefore the tract of the bubbles is formed by a number of curves and not angles.

6
Why ſuch kind of lightning is very dangerous.

Hence we may underſtand the reaſon why the zig-zag kind of lightning is ſo dangerous, namely, becauſe it muſt overcome a very violent reſiſtance of the atmoſphere; and wherever that reſiſtance is in the ſmalleſt degree leſſened, there it will undoubtedly ſtrike, and at a very conſiderable diſtance too. It is otherwiſe with that kind which appears in flaſhes of no determinate form. The electric matter of which theſe are compoſed, is evidently diſſipated in the air by ſome conducting ſubſtances which are preſent there; and of conſequence, though a man, or other conducting body, happened to be very near ſuch a flaſh, he would not be ſtruck or materially injured by it, tho' a zig-zag flaſh, in ſuch circumſtances, would have probably diſcharged its whole force upon him.

7
Why lightning aſſumes the form of balls.

The moſt deſtructive kind of lightning, however, as we have already obſerved, is that which aſſumes the form of balls. Theſe are produced by an exceeding great power of electricity gradually accumulated till the reſiſtance of the atmoſphere is no longer able to confine it. In general, the lightning breaks out from the electrified cloud by means of the approach of ſome conducting ſubſtance; either a cloud, or ſome terreſtrial ſubſtance: but the fire-balls ſeem to be formed, not becauſe there is any ſubſtance at hand to attract the electric matter from the cloud, but becauſe the electricity is accumulated in ſuch quantity that the cloud itſelf can no longer contain it. Hence ſuch balls fly off ſlowly, and have no particular deſtination. Their appearance indicates a prodigious commotion and accumulation of electricity in the atmoſphere, without a proportionable diſpoſition in the earth to receive it. This diſpoſition, however, we know is perpetually altered by a thouſand circumſtances, and the place which firſt becomes moſt capable of admitting electricity will certainly receive a fire-ball. Hence this kind of lightning has been known to move ſlowly backwards and forwards in the air for a conſiderable ſpace of time, and then ſuddenly to fall on one or more houſes, according to their being more or leſs affected with an electricity oppoſite to that of the ball at the time. It will alſo run along the ground, break into ſeveral parts, and produce ſeveral exploſions at the ſame time.

It is very difficult to imitate lightning of this kind in our electrical experiments. The only caſes in which it hath been done in any degree are thoſe in which Dr Prieſtley made the exploſion of a battery paſs for a conſiderable way over the ſurface of raw fleſh, water, &c *. In theſe caſes, if, while the electric flaſh paſſed over the ſurface of the fleſh, it had been poſſible to interrupt the metallic circuit by taking away the chain, the electric matter diſcharged from the battery would have been preciſely in the ſituation of one of the fire-balls above-mentioned; i. e. it would have been at a loſs for a conductor. The negative ſide of the battery was the place of its deſtination; but to that it would not have eaſily got, becauſe of the great quantity of atmoſphere which lay in its way, and the incapacity of the neighbouring bodies to receive it. But if, while the electric matter was thus ſtationary for want of a conductor, if any perſon ſtanding near, or touching the negative ſide of the battery, preſented a finger to that ſeemingly inoffenſive luminous body, he would inſtantly be ſtruck very violently; becauſe a free communication being now made by means of his body, the powers by which the electric fluid is impelled from one place to another would inſtantly urge it upon him. But if we ſuppoſe a perſon, who hath no communication with the battery, to preſent his finger to the ſame body, he may perhaps receive a ſlight ſpark from it; but not a ſhock of any conſequence, becauſe there is not a perfect communication by means of his body with the place to which the electric fire is deſtined.

8
Phenomena of lightning in general accounted for.

Hence we may account for the ſeemingly capricious nature of lightning of all kinds, but eſpecially of that kind which appears in the form of balls. Sometimes it will ſtrike trees, high houſes, ſteeples, and towers, without touching cottages, men, or other animals, who are in the neighbourhood. In ſuch caſes, people would be apt to ſay that the neighbourhood of theſe higher objects *preſerved* the others from the ſtroke; but with little reaſon, ſince low houſes, men walking in the fields, cattle, nay, the ſurface of the earth itſelf, have all been ſtruck, while high trees and ſteeples in the neighbourhood have not been touched. In like manner, fire-balls have paſſed very near certain perſons without hurting them, while they have, as it were, gone conſiderably out of their way to kill others. The reaſon of all this is, that in thunder-ſtorms there is conſtantly a certain zone of earth conſiderably under the ſurface, which the lightning deſires (if we may uſe the expreſſion) to ſtrike, becauſe it hath an electricity oppoſite to that of the lightning itſelf. Thoſe objects, therefore, which form the moſt perfect conductors between the electrified clouds and that zone of earth, will be ſtruck by the lightning, whether they are high or low; and becauſe we know not the conducting quality of the different terreſtrial ſubſtances, the ſuperſtitious are apt to aſcribe ſtrokes of lightning to the Divine vengeance againſt particular perſons, whereas it is certain that this fluid, as well as others, acts according to invariable rules from which it is never known to depart.

Lightning, in the time of ſevere thunder-ſtorms, is ſuppoſed to proceed from the earth, as well as from the clouds: but this fact hath never been well aſcertained, and indeed from the nature of the thing it ſeems very difficult to be aſcertained; for the motion of the electric fluid is ſo very quick, that it is altogether impoſſible to determine, by means of our ſenſes, whether it goes from the earth or comes to it. In fact, there are in this country many thunder-ſtorms in which it doth not appear that the lightning touches any part of the earth, and conſequently can neither go to it nor come out from it. In theſe caſes, it flaſhes either from an electrified cloud to one endowed with an oppoſite electricity, or merely into thoſe parts of the atmoſphere which are ready to receive it. But if not only the clouds, but the atmoſphere all the way betwixt them and the earth, and likewiſe for a conſiderable ſpace above the clouds, are electrified one way, the earth muſt then be ſtruck. The reaſon of this will appear from a conſideration of the principles laid down under the article ELECTRICITY, ſect. vi. It there appears, that the electric fluid is altogether incapable either of *accumulation* or *diminution* in quantity in any particular part of ſpace. What we call *electricity* is only the motion of this fluid made perceptible to our ſenſes. Poſitive electricity is when the current of electric matter is directed from the electrified body. Negative electricity is when the current is directed towards it. Let us now ſuppoſe, that a poſitively electrified cloud is formed over a certain part of the earth's ſurface. The electric matter flows out from it firſt into the atmoſphere all round; and while it is doing ſo, the atmoſphere is negatively electrified. In proportion, however, as the electric current pervades greater and greater portions of the atmoſpherical ſpace, the greater is the reſiſtance to its motion, till at laſt the air becomes poſitively electrified as well as the cloud, and then both act together as one body. The ſurface of the earth then begins to be affected, and it ſilently receives the electric matter by means of the trees, graſs, &c. which grow upon its ſurface, till at laſt it becomes poſitively electrified alſo, and begins to ſend off a current of electricity from the ſurface downwards. The cauſes which at firſt produced the electricity of the clouds, (and which are treated of under the article THUNDER), ſtill continuing to act, the power of the electric current becomes inconceivably great. The danger of the thunder-ſtorm now begins; for as the force of the lightning is directed to ſome place below the ſurface of the earth, it will certainly dart towards that place, and ſhatter every thing to pieces which reſiſts its paſſage. The benefit of conducting-rods will now alſo be evident: for we are ſure that the electric matter will in all caſes take the way where it meets with the leaſt reſiſtance; and this is through the ſubſtance, or rather over the ſurface, of metals. In ſuch a caſe, therefore, if there happen to be a houſe furniſhed with a conductor directly below the cloud, and at the ſame time a zone of negatively electrified earth not very far below the foundation of the houſe, the conductor will almoſt certainly be ſtruck, but the building will be unhurt. If the houſe wants a conductor, the lightning will nevertheleſs ſtrike in the ſame place, in order to get at the negatively electrified zone above-mentioned; but the building will now be damaged, becauſe the materials of it cannot readily conduct the electric fluid.

We will now be able to enter into the diſpute, Whether the preference is due to knobbed or pointed conductors for preſerving buildings from ſtrokes of lightning. Ever ſince the diſcovery of the identity of electricity and lightning, it hath been allowed by all parties, that conductors of ſome kind are in a manner eſſentially neceſſary for the ſafety of buildings in thoſe countries where thunder-ſtorms are very frequent. The principle on which they act hath been already explained; namely, that the electric fluid, when impelled by any power, always goes to that place where it meets with the leaſt reſiſtance, as all other fluids alſo do. As metals, therefore, are found to give the leaſt reſiſtance to its paſſage, it will always chooſe to run along a metalline rod, in preference to a paſſage of any other kind. We muſt, however, carefully conſider a circumſtance which ſeems to have been too much overlooked by electricians in their reaſonings concerning the effects of thunder-rods; namely, That lightning, or electricity, never ſtrikes a body, merely for the ſake of the body itſelf, but only becauſe by means of that body it can readily arrive at the place of its deſtination. When a quantity of electricity is collected from the earth, by means of an electric machine, a body communicating with the earth will receive a ſtrong ſpark from the prime conductor. The body receives this ſpark, not becauſe it is itſelf capable of containing all the electricity of the conductor and cylinder, but becauſe the natural ſituation of the fluid being diſturbed by the motion of the machine, a ſtream of it is ſent off from the earth. The natural powers, therefore, make an effort to ſupply what is thus drained off from the earth; and as the individual quantity which comes out is moſt proper for ſupplying the deficiency, as not being employed in any natural purpoſe, there is always an effort made for returning it to the earth. No ſooner, then, is a conducting body, communicating with the earth, preſented to the electrical machine, than the whole effort of the electricity is directed againſt that body, not merely becauſe it is a conductor, but becauſe it leads to the place where the fluid is directed by the natural powers by which it is governed, and at which it would find other means to arrive, though that body were not to be preſented. That this is the caſe, we may very eaſily ſatisfy ourſelves, by preſenting the very ſame conducting ſubſtance in an inſulated ſtate to the prime conductor of the machine; for then we ſhall find, that only a very ſmall ſpark will be produced. In like manner, when lightning ſtrikes a tree, a houſe, or a thunder-rod, it is not becauſe theſe objects are high, or in the neighbourhood of the cloud; but becauſe they communicate with ſome place below the ſurface of the ground, againſt which the impetus of the lightning is directed; and at that place the lightning would certainly arrive, though none of the abovementioned objects had been interpoſed.

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* See *Electricity*, n° 84, 85, 86.

The fallacy of that kind of reaſoning generally employed concerning the uſe of thunder-rods, will now be ſufficiently apparent. Becauſe a point preſented to an electrified body in our experiments, always draws off the electricity in a ſilent manner: therefore Dr Franklin and his followers have concluded, that a pointed conductor will do the ſame thing to a thunder-cloud, and thus effectually prevent any kind of danger from a ſtroke of lightning. Their reaſoning on this ſubject, they think, is confirmed by the following fact among many others. "Dr Franklin's houſe at Philadelphia was furniſhed with a rod extending nine feet above the top of the chimney. To this rod was connected a wire of the thickneſs of a gooſe-quill, which deſcended through the well of the ſtair-caſe; where an interruption was made, ſo that the ends of the wire, to each of which a little bell was fixed, were diſtant from each other about ſix inches; an inſulated braſs ball hanging between the two bells. The author was one night waked by loud cracks, proceeding from his apparatus in the ſtair-caſe. He perceived, that the braſs ball, inſtead of vibrating as uſual between the bells, was repelled and kept at a diſtance from both; while the fire ſometimes paſſed in very large quick cracks directly from bell to bell; and ſometimes in a continued denſe white ſtream, ſeemingly as large as his finger; by means of which the whole ſtair-caſe was enlightened, as with ſun-ſhine, ſo that he could ſee to pick up a pin.—From the apparent quantity of electric matter of which the cloud was thus evidently robbed, by means of the pointed rod (and of which a blunt conductor would not have deprived it), the author conceives, that a number of ſuch conductors muſt conſiderably leſſen the quantity of electric fluid contained in any approaching cloud, before it comes ſo near as to deliver its contents in a general ſtroke."

For this very reaſon, Mr Benjamin Wilſon and his followers, who conſtitute the oppoſite party, have determined that the uſe of pointed conductors is utterly unſafe. They ſay, that in violent thunder-ſtorms the whole atmoſphere is full of electricity; and that attempts to exhauſt the vaſt quantity there collected, are like attempting to clear away an inundation with a ſhovel, or to exhauſt the atmoſphere with a pair of bellows. They maintain, that though pointed bodies will effectually prevent the accumulation of electricity in any ſubſtance; yet if a non-electrified body is interpoſed between a point and the conductor of an electrical machine, the point will be ſtruck at the ſame moment with the non-electrified body, and at a much greater diſtance than that at which a knob would be ſtruck. They affirm alſo, that, by means of this ſilent ſolicitation of the lightning, inflammable bodies, ſuch as gun-powder, tinder, and Kunckel's phoſphorus, may be ſet on fire; and for theſe laſt facts they bring deciſive experiments. From all this, ſay they, it is evident that the uſe of pointed conductors is unſafe. They ſolicit a diſcharge to the place where they are; and as they are unable to conduct the whole electricity in the atmoſphere, it is impoſſible for us to know whether the diſcharge they ſolicit may not be too great for our conductor to bear; and conſequently all the miſchiefs ariſing from thunder-ſtorms may be expected, with this additional and mortifying circumſtance, that this very conductor hath probably ſolicited the fatal ſtroke, when without it the cloud might have paſſed harmleſs over our heads without ſtriking at all.

Here the reaſoning of both parties is equally wrong. They both proceed on this erroneous principle, that in thunder-ſtorms the conductor will always ſolicit a diſcharge, or that at ſuch times all the elevated objects on the ſurface of the earth are drawing off the electricity of the atmoſphere: but this cannot be the caſe, unleſs the electricity of the earth and of the atmoſphere is of a different kind. Now, it is demonſtrable, that until this difference between the electricity of the atmoſphere and of the ſurface of the earth ceaſes, there cannot be a thunder-ſtorm. When the atmoſphere begins to be electrified either poſitively or negatively, the earth, by means of the inequalities and moiſture of its ſurface, but eſpecially by the vegetables which grow upon it, abſorbs that electricity, and quickly becomes electrified in the ſame manner with the atmoſphere. This abſorption, however, ceaſes in a very ſhort time, becauſe it cannot be continued without ſetting in motion the whole of the electric matter contained in the earth itſelf. Alternate zones of poſitive and negative electricity will then begin to take place below the ſurface of the earth, for the reaſons mentioned under the article ELECTRICITY, ſect. vi. § 9. Between the atmoſphere and one of theſe zones, the ſtroke of the lightning always will be. Thus, ſuppoſing the atmoſphere is poſitively electrified, the ſurface of the earth will, by means of trees, &c. quickly become poſitively electrified alſo; we ſhall ſuppoſe to the depth of 10 feet. The electricity cannot penetrate farther on account of the reſiſtance of the electric matter in the bowels of the earth. At the depth of 10 feet from the ſurface, therefore, a zone of negatively-electrified earth begins, and to this zone the electricity of the atmoſphere is attracted; but to this it cannot get, without breaking through the poſitively-electrified zone which lies uppermoſt, and ſhattering to pieces every bad conductor which comes in its way. We are very ſure, therefore, that in whatever places the outer zone of poſitively-electrified earth is thinneſt, there the lightning will ſtrike whether a conductor happens to be preſent or not. If there is a conductor, either knobbed or ſharp-pointed, the lightning will indeed infallibly ſtrike it: but it would alſo have ſtruck a houſe ſituated on that ſpot without any conductor; and though the houſe had not been there, it would have ſtruck the ſurface of the ground itſelf.—Again, if we ſuppoſe the houſe with its conductor to ſtand on a part of the ground where the poſitively-electrified zone is very thick, the conductor will neither ſilently draw off the electricity, nor will the lightning ſtrike it, though perhaps it may ſtrike a much lower object, or even the ſurface of the ground itſelf, at no great diſtance; the reaſon of which undoubtedly is, that there the zone of poſitively-electrified earth is thinner, than where the conductor was.

We muſt alſo obſerve, that the Franklinians make their pointed conductors to be of too great conſequence. To the houſes on which they are fixed, no doubt, their importance is very great: but in exhauſting a thunder-cloud of its electricity, their uſe muſt appear trifling; and to inſiſt on it, ridiculous. Innumerable objects, as trees, graſs, &c. are all conſpiring to draw off the electricity, as well as the conductor, if it could be drawn off; but of effecting this there is an impoſſibility, becauſe they have the ſame kind of electricity with the clouds themſelves. The conductor hath not even the power of *attracting* the lightning a few feet out of the direction which it would chooſe of itſelf. Of this we have a moſt remarkable and deciſive inſtance, in what happened to the magazine at Purfleet in Eſſex, on May 15, 1777. That houſe was furniſhed with a pointed conductor, raiſed above the higheſt part of the building; nevertheleſs, about ſix in the evening of the abovementioned day, a flaſh of lightning ſtruck an iron cramp in the corner of the wall, conſiderably lower than the top of the conductor, and only 46 feet in a ſloping line diſtant from the point.—This produced a long diſpute with Mr Wilſon concerning the propriety of uſing pointed conductors; and, by the favour of his majeſty, he was enabled to conſtruct a more magnificent electrical apparatus than any private perſon could be ſuppoſed to erect at his own expence, and of which ſome account is given under the article ELECTRICITY, n° 78. The only new experiments, however, which this apparatus produced, were, the firing of gunpowder by the electric *aura*, as it is called; and a particularly violent ſhock which a perſon received when he held a ſmall pointed wire in his hand, upon which the conductor was diſcharged. We muſt obſerve, that the electrified ſurface of the conductor was 620 feet; and we can have but little idea of the ſtrength of ſparks from a conductor of this magnitude, ſuppoſing it properly electrified. Six turns of the wheel made the diſcharge felt through the whole body like the ſtrong ſhock of a Leyden vial; and nobody choſe to make the experiment when the conductor had received a higher charge. A very ſtrong ſhock was felt, as already obſerved, when this conductor was diſcharged upon a pointed wire held in a perſon's hand, even though the wire communicated with the earth; which was not felt, or but very little, when a knobbed wire was made uſe of.—To account for this difference may, perhaps, puzzle electricians; but with regard to the uſe of blunt or pointed thunder-rods, both experiments ſeem quite inconcluſive. Though a very great quantity of electric matter ſilently drawn off will fire gunpowder, this only proves that a pointed conductor ought not to paſs through a barrel of gunpowder; and if a perſon holding a pointed wire in his hand received a ſtrong ſhock from Mr Wilſon's great conductor, it can thence only be inferred, that in the time of thunder nobody ought to hold the conductor in their hands; both which precautions common-ſenſe would dictate without any experiment. From the accident at Purfleet, however, the diſputants on both ſides ought to have ſeen, that, with regard to lightning, neither points nor knobs can *attract*. Mr Wilſon ſurely had no reaſon to condemn the pointed conductor for *ſoliciting* the flaſh of lightning, ſeeing it did not ſtrike the point of the conductor, but a blunt cramp of iron; neither have the Franklinians any reaſon to boaſt of its effect in *ſilently drawing off* the electric matter, ſince all its powers were neither able to prevent the flaſh, nor to turn it 46 feet out of its way. The matter of fact is, the lightning was determined to enter the earth at the place where the board-houſe ſtands, or near it. The conductor fixed on the houſe offered the eaſieſt communication: but 46 feet of air intervening between the point of the conductor and the place of exploſion, the reſiſtance was leſs through the blunt cramp of iron, and a few bricks moiſtened with rain-water, to the ſide of the metalline conductor, than through the 46 feet of air to its point; for the former was the way in which the lightning actually paſſed.

Mr Wilſon and his followers ſeem alſo miſtaken in ſuppoſing that a pointed conductor can ſolicit a greater diſcharge than what would otherwiſe happen. Allowing the quantity of electricity in the atmoſphere during the time of a thunder-ſtorm to be as great as they pleaſe to ſuppoſe; nevertheleſs, it is impoſſible that the air can part with all its electricity at once, on account of the difficulty with which the fluid moves in it. A pointed conductor, therefore, if it does any thing at all, can only ſolicit the partial diſcharge which is to be made at any rate; and if none were to be made though the conductor was abſent, its preſence will not be able to effect any.

11
d Ma-
's theo-
f light-

In a late publication on the ſubject of electricity by lord Mahon, we find a new kind of lightning made mention of, which he is of opinion may give a fatal ſtroke, even though the main exploſion was at a conſiderable diſtance; a mile, for inſtance, or more. This he calls *the electrical returning ſtroke;* and exemplifies it in the following manner, from ſome experiments made with a very powerful electrical machine, the prime conductor of which (ſix feet long, by one foot diamemeter) would generally, when the weather was favourable, ſtrike into a braſs ball connected with the earth, to the diſtance of 18 inches, or more. In the following account this braſs ball, which we ſhall call *A*, is ſuppoſed to be conſtantly placed at the *ſtriking diſtance;* ſo that the prime conductor, the inſtant that it becomes fully charged, explodes into it.

Another large conductor, which we ſhall call the *ſecond conductor*, is ſuſpended, in a perfectly inſulated ſtate, farther from the prime conductor than the *ſtriking diſtance*, but within its *electrical atmoſphere;*—at the diſtance of *ſix feet*, for inſtance. A perſon ſtanding on an inſulating ſtool touches this *ſecond conductor* very lightly with a finger of his right hand; while, with a finger of his left hand, he communicates with the earth, by touching very lightly a ſecond braſs ball fixed at the top of a metallic ſtand, on the floor, and which we ſhall call *B*.

While the prime conductor is receiving its electricity, ſparks paſs (at leaſt if the diſtance between the two conductors is not too great) from the ſecond conductor *to* the inſulated perſon's right hand; while ſimilar and ſimultaneous ſparks paſs out *from* the finger of his left hand into the ſecond metallic ball *B*, communicating with the earth. Theſe ſparks are part of the *natural quantity* of electric matter belonging to the ſecond conductor, and to the inſulated perſon; driven from them into the earth, through the ball *B*, and its ſtand, by the elaſtic preſſure or action of the electrical atmoſphere of the prime conductor. The ſecond conductor and the inſulated perſon are hereby reduced to a *negative* ſtate.

At length, however, the prime conductor, having acquired its *full charge*, ſuddenly ſtrikes into the ball *A*, of the firſt metallic ſtand, placed for that purpoſe at the *ſtriking diſtance* of 17 or 18 inches. The exploſion being made, and the prime conductor ſuddenly robbed of its electric atmoſphere, its preſſure or action on the ſecond conductor, and on the inſulated perſon, as ſuddenly ceaſes; and the latter inſtantly feels a ſmart *returning ſtroke*, though he has no direct or viſible communication (except by the floor) either with the *ſtriking* or *ſtruck* body, and is placed at the diſtance of *five* or *ſix feet* from both of them. This returning ſtroke is evidently occaſioned by the ſudden *re-entrance* of the electric fire *naturally* belonging to his body and to the ſecond conductor, which had before been expelled from them by the action of the charged prime conductor upon them; and which returns to its former place, the inſtant that action or elaſtic preſſure ceaſes. The author ſhows, that there can be no reaſon to ſuppoſe that the electrical diſcharge from the prime conductor ſhould, in this experiment, *divide itſelf* at the inſtant of the exploſion, and go different ways, ſo as to ſtrike the ſecond conductor and inſulated perſon in this manner, and at ſuch a diſtance from it.

When the ſecond conductor and the inſulated perſon are placed in the *denſeſt* part of the electrical atmoſphere of the prime conductor, or *juſt beyond* the ſtriking diſtance, the effects are ſtill more conſiderable; the *returning ſtroke* being extremely ſevere and pungent, and appearing conſiderably ſharper than even the *main ſtroke* itſelf, received directly from the prime conductor. This circumſtance the author alleges as an unanſwerable proof that the effect which he calls the *returning ſtroke*, was not produced by the *main ſtroke* being any wiſe *divided* at the time of the exploſion, ſince no *effect* can ever be greater than the *cauſe* by by which it is *immediately* produced.—Having taken the *returning ſtroke* eight or ten times one morning, he felt a conſiderable degree of pain acroſs his cheſt during the whole evening, and a diſagreeable ſenſation in his arms and wriſts all the next day.

We come now to the application of this experiment, and of the doctrine deduced from it, to what paſſes in *natural electricity*, or during a thunder-ſtorm; in which there is reaſon to expect ſimilar effects, but on a larger ſcale:—a ſcale ſo large indeed, according to the author's repreſentation, that perſons and animals may be deſtroyed, and particular parts of buildings may be conſiderably damaged, by an electrical *returning ſtroke*, occaſioned even by ſome *very diſtant exploſion* from a thunder-cloud;—poſſibly at the diſtance of a mile or more.

It is certainly eaſy to conceive, that a charged extenſive thunder-cloud muſt be productive of effects ſimilar to thoſe produced by the author's prime conductor. Like it, while it continues charged, it will, by *the ſuperinduced elaſtic electrical preſſure* of its atmoſphere—to uſe the author's own expreſſion—drive into the earth a part of the electric fluid *naturally* belonging to the bodies which are within the reach of its *widely extended* atmoſphere; and which will therefore become *negatively* electrical. This portion too of their electric fire, as in the artificial experiments, will, on the exploſion of the cloud, *at a diſtance*, and the ceſſation of its action upon them, ſuddenly *return* to them; ſo as to produce an equilibrium, and reſtore them to their *natural* ſtate.

12
Anſwered by the Reviewers.

To this theory, the authors of the Monthly Review have given the following anſwer: "We cannot, however, agree with the ingenious author, with reſpect to the *greatneſs* of the effects, or of the danger to be apprehended from the *returning ſtroke* in this caſe; as we think his eſtimate is grounded on an erroneous foundation.—'Since (ſays he) the denſity of the electrical atmoſphere of a *thunder-cloud* is ſo *immenſe*, when compared to the electrical denſity of the electrical atmoſphere of any *prime conductor*, charged by means of any electrical apparatus whatſoever; and ſince a *returning ſtroke*, when produced by the *ſudden* removal of even the *weak* elaſtic electrical preſſure of the electrical atmoſphere of a charged *prime conductor*, may be extremely *ſtrong*, as we have ſeen above; it is *mathematically evident*, that, when a *returning ſtroke* comes to be produced by the *ſudden* removal of the very ſtrong elaſtic electrical preſſure of the electrical atmoſphere of a thunder-cloud powerfully charged; the ſtrength of ſuch a *returning ſtroke* muſt be *enormous*.'

"If indeed the quantity of electric fluid *naturally* contained in the body of a man, for inſtance, were immenſe, or indefinite, the author's eſtimate between the effects producible by a cloud, and thoſe cauſed by a prime conductor, might be admitted. But ſurely an electrified cloud,—how great ſoever may be its extent, and the height of its charge, when compared with the extent and charge of a prime conductor—cannot expel from a man's body (or any other body) *more* than the *natural* quantity of electricity which it contains. On the ſudden removal, therefore, of the preſſure by which this natural quantity had been expelled, in conſequence of the exploſion of the cloud into the earth; *no more* (at the utmoſt) than his *whole natural ſtock* of electricity can re-enter his body (c). But we have no reaſon to ſuppoſe that this quantity is ſo great, as that its ſudden re-entrance into his body ſhould deſtroy or even injure him.

"In the experiment above deſcribed, the inſulated perſon receives into his body, at the inſtant of the *returning ſtroke*, not only all that portion of his own natural electric-fire which had been expelled from it; but likewiſe tranſmits through it, at the ſame inſtant, *in conſequence of his peculiar ſituation*, all the electric fire of which the large ſecond conductor had been robbed; and which muſt neceſſarily *re*-paſs through his body, to arrive at that conductor. To render the caſe ſomewhat parallel, in *natural electricity*, the man's body muſt be ſo peculiarly circumſtanced, ſuppoſing him to be in a houſe, that the electric matter which has been expelled from the houſe into the earth, by the preſſure of an extenſive thunder-cloud, could not return back into the building, on the exploſion of the cloud at a diſtance, without paſſing through his body: a caſe not likely to happen, unleſs the houſe were inſulated (like the ſecond conductor in the preceding experiment), and his body became the channel through which alone the houſe could have its electric matter reſtored to it: it appears much more probable that the electric matter returns to the houſe through the *ſame channels* by which it before inſenſibly paſſed out, and with equal ſilence, tho' more ſuddenly.

"In the caſe of a man who is abroad, and in an open field, during the time of an exploſion;—as he is unconnected with other maſſes of matter *above him*, no more than the preciſe quantity of electric fire, which had been before expelled from his body, will *ſuddenly* return into it at the inſtant of a diſtant exploſion: and that this quantity is not uſually very large, may be inferred from many conſiderations.

"When a perſon ſtanding on the ground holds a pair of Mr Canton's balls in his hand, while a highly charged thunder-cloud is ſuſpended over his head; the angle made by the balls indicates the *electrical ſtate* of that perſon, or the quantity of *natural* electricity of which his body is at that time deprived, by the action of the *(poſitively)* charged cloud hanging over him. But we have never ſeen the repulſion of the balls ſo conſiderable, as to furniſh any juſt apprehenſions that the return of his natural electric matter, however ſudden, could be attended with injury to him: nor would he be ſenſible of any commotion on the balls ſuddenly coming together; tho' a ſpark might undoubtedly be perceived, at that inſtant, were he inſulated, and placed in the ſame manner with the author when he tried the above-related experiment.

"The author nevertheleſs obſerves, that 'there have been inſtances of perſons who have been killed by *natural* electricity, having been found with their *ſhoes torn*, and with their *feet* damaged by the electrical fire; but who have not had, over their whole body, any other apparent marks of having been ſtruck with lightning.' He adds, 'if a man walking out of doors were to be killed by a *returning ſtroke*, the electrical fire would ruſh into that man's body thro' his *feet*, and his feet only; which would *not* be the caſe, were he to be killed by any *main ſtroke* of exploſion, either poſitive or negative.'

"It would be no difficult taſk, we think, to account for theſe appearances in a different manner; were all the circumſtances attending the caſe minutely aſcertained: but without interrogating the *dead* on this ſubject, we may more ſatisfactorily appeal to the experience of the *living* (D), to ſhew, that though the *returning ſtroke* muſt take place, in all thunder-ſtorms, *in ſome degree or other*; yet it is not of that alarming magnitude which the author aſcribes to it. If, in any particular thunder-ſtorm, a man in the open fields could be killed, at the inſtant of a diſtant exploſion, merely by the *return* of his *own* electric fire, which had before been driven out of his body; ſurely numerous obſervations of perſons who had experienced the *returning ſtroke*, in *ſlighter* degrees, would be familiar; and ſcarce a great thunder-ſtorm muſt have occurred, in which one perſon or another muſt not, at the inſtant of an exploſion, have felt the effects of the *returning ſtroke*, in *ſome degree or other*—from that of a violent *concuſſion*, to that of a ſlight and almoſt imperceptible *pulſation*. But no obſervations of this kind are known to us; nor have we ever heard of any perſon's experiencing any kind of electrical commotion in a thunder-ſtorm, except ſuch as have either been directly ſtruck, or have happened to be in the *very near neighbourhood* of the ſpot where the exploſion took place.

"The author has been aware of this objection, which htning. which he propoſes, and endeavours to remove: but his anſwer to it amounts to little more than what has been already quoted from him; that is, to a ſimple eſtimate of the enormous difference between the electrical denſity, or the *elaſtic electrical preſſure*, of the atmoſphere of an extenſive *thunder-cloud*, and that of a charged *prime conductor*. We have already obſerved, that this is not the proper method of eſtimating their different effects, when theſe two cauſes, how unequal ſoever in power, are conſidered as exerting that power on bodies containing a *limited*, and comparatively *ſmall*, quantity of electric matter.

(c) "We ſuppoſe the perſon not to be ſo ſituated, that the *returning fire* of other bodies muſt neceſſarily paſs through his body."

(D) "The author does indeed produce a *living* evidence, in the caſe of a perſon at Vienna, who, he has been credibly informed, received an electrical ſhock, by having held one hand accidentally in contact with an *interrupted* metallic conducting rod, at the inſtant that a thunder-cloud exploded at the diſtance, as was conjectured, of above half an Engliſh mile. He likewiſe obſerves, that a 'very ſtrong, bright, and ſudden *ſtroke*' (or ſpark) of electrical fire has been ſeen, by ſeveral electricians, to paſs in the interval, or interruption, purpoſely left in the conducting rod of a houſe at the inſtant of a diſtant exploſion; and 'when it was fully proved, by the ſharp point of the conductor not being melted, or even tinged,' that the conductor itſelf had not been ſtruck.—Theſe obſervations, however, do not by any means prove the *magnitude*, or *danger*, of the returning ſtroke, but merely its *exiſtence*; which we do not conteſt."

"We have been induced to diſcuſs thus ſubject thus particularly, with a view to quiet the minds of the timorous; as the author's extenſion of his principles, reſpecting the returning ſtroke in *artificial* electricity, to what paſſes in *natural* electricity, holds out a new, and, in our opinion, groundleſs ſubject of terror to thoſe who, in the midſt of their apprehenſions, have hitherto only dreaded the effects of a thunder-ſtorm when it made near approaches to them; but who, if this doctrine were believed, would never think themſelves in ſecurity while a thunder-cloud appeared in ſight, unleſs ſheltered in a houſe furniſhed with proper conductors:—for we ſhould not omit to remark, that a ſubſequent obſervation tends to diminiſh their fears, by ſhewing that *high* and *pointed* conductors tend to ſecure both perſons and buildings, againſt the various effects of any *returning ſtroke* whatever, as well as of the *main ſtroke*.

13 ctions on- ng

"Indeed various parts of this work, beſides thoſe immediately appropriated to the ſubject, tend to prove the utility of *high* and *pointed* conductors, in preference to thoſe which terminate in a *ball*, or *rounded end*. Towards the end of the performance, the author diſcuſſes this matter very particularly; and enumerates the '*neceſſary requiſites*' in erecting them, in number 11; to every one of which, tho' we have taken the liberty to differ from him on another ſubject, we readily ſubſcribe. As this matter is of a popular nature, and on a ſubject generally intereſting, we ſhall tranſcribe this liſt; adding a ſhort explanation to particular articles.—Theſe requiſites (ſays the author) are 11 in number:

'1ſt, That the rod be made of ſuch ſubſtances, as are, in their nature, the *beſt conductors of electricity*.'

'2dly, That the rod be *uninterrupted*, and *perfectly continuous*.'—This is a very material circumſtance. One entire piece of metal cannot perhaps be had: but it is not ſufficient that the rods, of which the conductor conſiſts, be *ſenſibly* in contact; they ſhould be preſſed into *actual* contact by means of nuts and ſcrews, with a thin piece of ſheet-lead between the ſhoulders of the joints.

'3dly, That it be of a *ſufficient thickneſs*.'—A *copper* rod half an inch ſquare, or an *iron* rod one inch ſquare, or one of *lead* two inches ſquare, are thought fully ſufficient by the author.

'4thly, That it be perfectly connected with the common ſtock.'—That is, it ſhould be carried deep into the earth, which is frequently dry near the ſurface; and then continued in a horizontal direction, ſo as to have the farther extremity dipped, ſhould this be practicable, into water, at the diſtance of 10 yards or more from the foundation.

'5thly, That the upper extremity of the rod be as *acutely pointed* as poſſible.'—This termination ſhould be of copper; or rather a very fine and exceedingly acute needle of *gold* ſhould be employed, which will not materially add to the expence. Lightning.

'6thly, That it be very finely tapered:'—ſo that the upper extremity may be a cone, the diameter of the baſe of which may bear an extremely ſmall proportion to its height; for inſtance, that of *one* to *forty*.

'7thly, That it be extremely prominent;'—that is, 8, 10, or 15 feet at leaſt above the higheſt parts of the building. The author lays great ſtreſs on this circumſtance; in conſequence of the law above-mentioned, deduced by him from his experiments, relating to electric atmoſpheres. According to this law, the denſity of an electric atmoſphere (the *negative* atmoſphere, for inſtance, of the roof of a houſe, &c. while a *poſitively* charged cloud hangs over it) diminiſhes in the inverſe ratio of the *ſquare* of the diſtance from the ſurface of the body to which that atmoſphere belongs. Accordingly, if the rod project 12 feet into this atmoſphere, it will reach to a part of it *four* times leſs denſe than if the rod projected only to *half* that diſtance, or ſix feet;—and to a part *one hundred and forty four* times rarer, than if it projected only *one* foot.

'8thly, That each rod be carried, in the ſhorteſt convenient direction, from the point at its upper end, to the common ſtock.'

'9thly, That there be neither large nor prominent bodies of metal upon the top of the building propoſed to be ſecured, but ſuch as are connected with the conductor, by ſome proper metallic communication."

'10thly, That there be a *ſufficient number* of high and pointed rods.'—On edifices of great importance, eſpecially magazines of gun-powder, the author thinks theſe ought never to be above 40 or 50 feet aſunder.

'11thly, That every part of the rods be very ſubſtantially erected.'

"The author declares that he has never been able to hear of a *ſingle* inſtance, nor does he believe that any can be produced, of an *high*, *tapering*, and *acutely pointed* metallic conductor, having ever, in any country, been ſtruck by lightning; if it had *all* the neceſſary requiſites abovementioned, eſpecially the ſecond and fourth."

14 Uſe of conductors.

On the whole, it ſeems to be pretty certain, that both pointed and knobbed metalline conductors have the power of preſerving any body placed at a ſmall diſtance from them from being ſtruck by lightning. This they do, not becauſe they can *attract* the lightning far out of its way, but becauſe the reſiſtance to its paſſage is always leaſt on that ſide where they are; and as pointed conductors diminiſh the reſiſtance more conſiderably than blunt ones, they ſeem in all caſes to be preferable.—It appears, however, that a ſingle conductor, whether blunt or pointed, is not capable of ſecuring all the parts of a large building from ſtrokes of lightning; and therefore ſeveral of them will be required for this purpoſe: but to what diſtance their influence extends, hath not been determined, nor does it ſeem eaſily capable of being aſcertained.

15 Why lightning ſometimes kills alternately.

It now remains only to explain ſome of the more uncommon appearances and effects of lightning. One of theſe is, that it is frequently obſerved to kill alternately; that is, ſuppoſing a number of people ſtanding

ſtanding in a line; if the firſt perſon was killed, the ſecond perhaps would be ſafe; the third would be killed, and the fourth ſafe; the fifth killed, &c.—Effects of this kind are generally produced by the moſt violent kind of lightning; namely, that which appears in the form of balls, and which are frequently ſeen to divide themſelves into ſeveral parts before they ſtrike. If one of theſe parts of a fire-ball ſtrikes a man, another will not ſtrike the perſon who ſtands immediately cloſe to him; becauſe there is always a repulſion between bodies electrified the ſame way. Now, as all theſe parts into which the ball breaks have all the ſame kind of electricity, it is evident that they muſt for that reaſon repel one another; and this repulſion is ſo ſtrong, that a man may be interpoſed within the ſtroke of two of them, without being hurt by either.

16
Why it ſometimes marks bodies with the form of a croſs.

The other effect of lightning is mentioned under the article JERUSALEM, where thoſe who attempted to rebuild the temple had the marks of croſſes impreſſed upon their garments and bodies. This may reaſonably be thought to ariſe from the ſame cauſe to which the angular appearance of lightning in the air is owing, namely, its violent impetus and velocity, together with the oppoſition of the atmoſphere. A ſmall ſtroke of lightning, ſometimes indeed a very conſiderable one, cannot always enter the ſubſtance of terreſtrial bodies, even when it touches them, for reaſons already given. In this caſe it runs along their ſurface, and, as in its motion it is perpetually reſiſted by the atmoſphere, it undoubtedly has the ſame angular motion which we often perceive in the atmoſphere. If in this ſituation it happens to touch the human ſkin, or a garment, eſpecially of linen, as being a conductor, it will undoubtedly leave a mark upon it; and this mark being of a zig-zag form, might, in the above inſtance, have been either taken for the exact form of a croſs by the beholders, or have ſuggeſted that idea in relating the ſtory to make it appear more wonderful.

Theſe obſervations may ſerve to give ſome idea of the nature of lightning, and its operations after it appears in its proper form and burſts out from the cloud; but for an account of its original formation, and of the powers by which the clouds are at firſt electrified, and their electricity kept up notwithſtanding many ſucceſſive diſcharges of lightning, and the quantity of electric matter continually carried off by the rain, &c. ſee the article THUNDER.

Artificial LIGHTNING. Before the diſcoveries of Dr Franklin concerning the identity of electricity and lightning, many contrivances were invented in order to repreſent this terrifying phænomenon in miniature: the coruſcations of phoſphorus in warm weather, the accenſion of the vapour of ſpirit of wine evaporated in a cloſe place, &c. were uſed in order to ſupport the hypotheſis which at that time prevailed; namely, that lightning was formed of ſome ſulphureous, nitrous, or other combuſtible vapours, floating in long trains in the atmoſphere, which by ſome unaccountable means took fire, and produced all the deſtructive effects of that phenomenon. Theſe repreſentations, however, are now no more exhibited; and the only true artificial lightning is univerſally acknowledged to be the diſcharge of electric matter from bodies in which it is artificially ſet in motion by our machines.

LIGHTFOOT (John), a very learned Engliſh divine in the 17th century, was educated in Chriſt-church, Cambridge. Sir Rowland Cotton, knight, took him into his family as his chaplain, and engaged him in the ſtudy of the Hebrew language. He reſolved to travel; but changed his reſolution, being importuned by the people of Stone in Staffordſhire to be their miniſter. From hence he removed to Hornſey near London, for the ſake of Sion-college library, where he diſcharged the duties of his function, and proſecuted his rabbinical ſtudies, till June 1642, when he retired to London, was choſen miniſter of St Bartholomew's behind the Exchange, and appointed one of the aſſembly of divines in 1643. Auguſt 26, 1645, he preached, before the houſe of commons, a ſermon printed at London the ſame year, in which he recommends to the parliament a *Review* and *Survey* of the tranſlation of the bible, and to haſten the ſettling of the church. In 1655, he was choſen vice-chancellor of the univerſity of Cambridge. He was collated to a prebend in the cathedral of Ely by Sir Orlando Bridgeman, then keeper of the great ſeal. He publiſhed ſeveral valuable works, particularly "The Harmony of the Old, and the Harmony of the New Teſtament," &c. He died in 1675, aged 74.

LIGNICENSIS TERRA, in the materia medica, the name of a fine yellow bole dug in many parts of Germany, particularly about Emeric in the circle of Weſtphalia, and uſed in cordial and aſtringent compoſitions.

LIGNUM COLUBRINUM. See OPHIORHIZA.

LIGULATED, among botaniſts, an appellation given to ſuch floſcules as have a ſtraight end turned downwards, with three indentures, but not ſeparated into ſegments.

LIGURIA (anc. geog.), a country of Italy, bounded on the ſouth by the Mediterranean ſea, on the north by the Appennine mountains, on the weſt by part of Tranſalpine Gaul, and on the eaſt by Etruria. There is a great diſagreement among authors concerning the origin of the Ligurians, though moſt probably they were deſcended from the Gauls. Some carry up their origin as far as the fabulous heroes of antiquity; while others trace them from the Ligyes, a people mentioned by Herodotus as attending Xerxes in his expeditions againſt Greece. Theſe Ligyes are by ſome ancient geographers placed in Colchis; by others, in Albania.—According to Diodorus Siculus, the Ligurians led a very wretched life; their country being entirely overgrown with woods, which they were obliged to pull up by the root, in order to cultivate their land, which was alſo encumbered with great ſtones, and, being naturally barren, made but very poor returns for all their labour. They were much addicted to hunting; and, by a life of continual exerciſe and labour, became ſo ſtrong, that the weakeſt Ligurian was generally an overmatch for the ſtrongeſt and moſt robuſt among the Gauls. The women are ſaid to have been almoſt as ſtrong as the men, and to have borne an equal ſhare in all laborious enterpriſes. With all their bravery, however, they were not able to reſiſt the Roman power; but were ſubdued by that warlike nation, about 211 B. C.

LIGUSTICUM, LOVAGE; a genus of the digynia order, belonging to the pentandria claſs of plants. There are ſix ſpecies, of which the moſt remarkable are, the leviſticum or common, and the ſcoticum or Scots, lovage. The firſt is a native of the Apennine mountains in Italy. It hath a thick fleſhy, deeply-penetrating perennial root, crowned by very large, many-parted, radical leaves, with broad lobes, having inciſions at top, upright, ſtrong, channelled ſtalks, branching ſix or ſeven feet high, and all the branches terminated by yellow flowers in large umbels. The ſecond is a native of Scotland, and grows near the ſea in various parts of the country. It hath a thickiſh, fleſhy, penetrating, perennial root, crowned by large doubly-trifoliate leaves, with broad, ſhort, indented lobes, upright, round ſtalks, half a yard high; terminated by ſmall yellow umbels. Both ſpecies are hardy, and eaſily propagated by ſeeds ſown in ſpring or autumn.

Medicinal uſes, &c. The root of the firſt ſpecies agrees nearly in quality with that of angelica: the principal difference is, that the lovage root hath a ſtronger ſmell, and a ſomewhat leſs pungent taſte, accompanied with a more durable ſweetneſs, the ſeeds being rather warmer than the root; but though certainly capable of being applied to uſeful purpoſes, this root is not regarded in the preſent practice. The leaves of the ſecond are ſometimes eaten raw as a ſalad, or boiled as greens, by the inhabitants of the Hebrides. The root is reckoned a good carminative. They give an infuſion of the leaves in whey to their calves to purge them.

LIGUSTRUM, PRIVET; a genus of the monogynia order, belonging to the diandria claſs of plants. —There is but one ſpecies; of which there are two varieties, the deciduous and the evergreen. They are hardy plants, riſing from 10 to 15 feet high, adorned with oblong entire leaves, and ſpikes of infundibuliform oblong white flowers ſucceeded by black-berries. They are eaſily propagated by ſeed, layers, ſuckers, or cuttings. They are uſed for making hedges. The purple colour upon cards is prepared from the berries. With the addition of alum, theſe berries are ſaid to dye wool and ſilk of a good and durable green; for which purpoſe they muſt be gathered as ſoon as they are ripe. The leaves are bitter and ſlightly aſtringent. Oxen, goats, and ſheep, eat the plant; horſes refuſe it.

LILBURNE (John), an enthuſiaſtic demagogue, who was tyrannically puniſhed by the ſtar-chamber court, being put in the pillory, whipped, fined and impriſoned, for importing and publiſhing ſeditious pamphlets, which he had got printed in Holland; they chiefly reflected on the church of England and its biſhops: he ſuffered in 1637, and in priſon was doubly loaded with irons. In 1641, he was releaſed by the long parliament; and from this time, he had the addreſs to make himſelf formidable to all parties, by his bold, aſpiring genius. He ſignalized himſelf in the parliament army; and was at one time the ſecret friend and confident of Cromwell, and at another his avowed enemy and accuſer; ſo that, in 1650, Cromwell found it to be his intereſt to ſilence him, by a grant of ſome forfeited eſtates. But after this, he grew outrageous againſt the protector's government; became chief of the levellers; and was twice tried for high treaſon, but acquitted by the juries. The laſt was for returning from exile (having been baniſhed by the parliment) without a paſs. He died in 1657, aged 88.

LILIACEOUS, in botany, an appellation given to ſuch flowers as reſemble thoſe of the lily.

LILIUM, the LILY; a genus of the monogynia order, belonging to the hexandria claſs of plants. There are nine ſpecies, all of them bulbous-rooted, herbaceous, flowery perennials, riſing with erect annual ſtalks three or four feet high, garniſhed with long narrow leaves, and terminated by fine cluſters of large, bell-ſhaped, hexapetalous flowers of exceeding great beauty, of white, red, ſcarlet, orange, purple, and yellow colours.

Culture. All the ſpecies are propagated by ſowing the ſeeds; and if care is taken to preſerve theſe ſeeds from good flowers, very beautiful varieties are often produced. The manner of ſowing them is as follows. Some ſquare boxes ſhould be procured, about ſix inches deep, with holes bored in the bottoms to let out the wet: theſe muſt be filled with freſh, light, ſandy earth; and the ſeeds ſown upon them pretty thick in the beginning of Auguſt, and covered over about half an inch deep with light ſifted earth of the ſame kind. They ſhould then be placed where they may have the morning ſun; and if the weather proves dry, they muſt be watered at times, and the weeds carefully picked out. In the month of October the boxes are to be removed to a place where they may have as much ſun as poſſible, and be ſecured from the north and north-eaſt winds. In ſpring the young plants will appear, and the boxes are then to be removed into their former ſituation. In Auguſt the ſmalleſt roots are to be emptied out of theſe boxes, and ſtrewed over a bed of light earth, and covered with about half an inch depth of earth of the ſame kind ſifted over them. Here they muſt be watered, and ſhaded at times, and defended from the ſeverity of winter by a ſlight covering of ſtraw or peaſe-haulm in the hardeſt weather. In February, the ſurface of the bed ſhould be cleared, and a little light earth ſifted over it. When the leaves are decayed, the earth ſhould be a little ſtirred over the roots, and in the month of September following ſome more earth ſifted on. In the September of the following year, the roots muſt be tranſplanted to the places where they are to remain, and ſet at the diſtance of eight inches; the roots being placed four inches below the ſurface: this ſhould be done in moiſt weather. They will now require the ſame care as in the preceding winters; and, the ſecond year after they are tranſplanted, the ſtrongeſt roots will begin to flower. The fine ones ſhould then be removed at the proper ſeaſon into flower-beds, and planted at great diſtances from one another that they may flower ſtrong.

Medical uſes. The roots of the white lily are emollient, maturating, and greatly ſuppurative. They are uſed externally in cataplaſms for theſe purpoſes with ſucceſs. The common form of applying them is boiled and bruiſed; but ſome prefer the roaſting them till tender, and then beating them to a paſte with oil, in which form they are ſaid to be excellent againſt burns. Gerard recommends them internally againſt dropſies.

LILLO (George), an excellent dramatic writer, born at London in 1693. He was a jeweller by profeſſion, and followed his buſineſs for many years in that neighbourhood with the faireſt reputation. He wrote ſeveral dramatic pieces, which with his life were lately collected in two volumes 12mo. He died in 1739.

LILLY (John), a dramatic poet, was born in the wilds of Kent, about the year 1553, and educated in Magdalen-college, Oxford, where he took the degree of bachelor of arts in 1573, and that of maſter in 1575. From Oxford he removed to Cambridge; but how long he continued there, is uncertain. On his arrival in London, he became acquainted with ſome of queen Elizabeth's courtiers, by whom he was careſſed, and admired as a poet and a wit; and her majeſty, on particular feſtivals, honoured his dramatic pieces with her preſence. His plays are nine in number. His firſt publication, however, printed in 1580, was a romance called *Euphues*, which was univerſally read and admired. This romance, which Blount, the editor of ſix of his plays, ſays introduced a new language, eſpecially among the ladies, is, according to Berkenhout, in fact a moſt contemptible piece of affectation and nonſenſe: nevertheleſs it ſeems very certain, that it was in high eſtimation by the women of faſhion of thoſe times, who, we are told by Whalley the editor of Ben Jonſon's works, had all the phraſes by heart; and thoſe who did not ſpeak *Euphuiſm* were as little regarded at court as if they could not ſpeak French. "He was," ſays Oldys, "a man of great reading, good memory, ready faculty of application, and uncommon eloquence; but he ran into a vaſt exceſs of alluſion." When or where he died, is not known. Anthony Wood ſays he was living in 1597, when his laſt comedy was publiſhed. After attending the court of queen Elizabeth thirteen years, notwithſtanding his reputation as an author, he was under a neceſſity of petitioning the queen for ſome ſmall ſtipend to ſupport him in his old age. His two letters or petitions to her majeſty, on this ſubject, are preſerved in manuſcript.

Lilly (William), a noted Engliſh aſtrologer, born in Leiceſterſhire in 1602; where his father not being able to give him more learning than common writing and arithmetick, he reſolved to ſeek his fortune in London. He arrived in 1620, and lived four years as ſervant to a mantua-maker in the pariſh of St Clements Danes; but then moved a ſtep higher to the ſervice of Mr Wright, maſter of the Salter's company, in the Strand, who not being able to write, Lilly among other offices kept his books. In 1627, when his maſter died, he paid his addreſſes to the widow, whom he married with a fortune of 1000l. Being now his own maſter, he followed the puritanical preachers; and, turning his mind to judicial aſtrology, became pupil to one Evans, a profligate Welch parſon, in that pretended art. Getting a MS. of the *Ars notitia* of Corn. Agrippa, with alterations, he drank in the doctrine of the magic circle, and the invocation of ſpirits, with great eagerneſs. He was the author of the *Merlinus Anglicus junior; The Supernatural Sight;* and *The White King's Prophecy.* In him we have an inſtance of the general ſuperſtition and ignorance that prevailed in the time of the civil war between Char. I. and his parliament: for the king conſulted this aſtrologer, to know in what quarter he ſhould conceal himſelf, if he could eſcape from Hampton court; and general Fairfax, on the other ſide, ſent for him to his army, to aſk him if he could tell by his art, whether God was with them and their cauſe? Lilly, who made his fortune by favourable predictions to both parties, aſſured the general, that God would be with him and his army. In 1648, he publiſhed his *Treatiſe of the three Suns* ſeen the preceding winter; and alſo an aſtrological judgment upon a conjunction of Saturn and Mars. This year the council of ſtate gave him in money 50l. and a penſion of 100l. *per annum*, which he received for two years, and then reſigned on ſome diſguſt. In June 1660, he was taken into cuſtody by order of the parliament, by whom he was examined concerning the perſon who cut off the head of king Charles I. The ſame year he ſued out his pardon under the great ſeal of England. The plague raging in London, he removed with his family to his eſtate at Herſham; and in October 1666, was examined before a committee of the houſe of commons concerning the fire of London, which happened in September that year. After his retirement to Herſham, he applied himſelf to the ſtudy of phyſic, and, by means of his friend Mr Aſhmole, obtained from archbiſhop Sheldon a licence for the practice of it. A little before his death he adopted for his ſon, by the name of *Merlin junior*, one Henry Coley, a taylor by trade; and at the ſame time gave him the impreſſion of his almanac, after it had been printed for 36 years. He died in 1681, of a dead palſy. Mr Aſhmole ſet a monument over his grave in the church of Walton upon Thames. His "Obſervations on the Life and Death of Charles late king of England," if we overlook the aſtrological nonſenſe, may be read with as much ſatisfaction as more celebrated hiſtories, Lilly being not only very well informed, but ſtrictly impartial. This work, with the Lives of Lilly and Aſhmole, written by themſelves, were publiſhed in one vol 8vo, in 1774, by Mr Burman.

LILYBÆUM, (anc. geog.), a city of Sicily, ſituated on the moſt weſterly promontory of the iſland of Sicily, and ſaid to have been founded by the Carthaginians on their expulſion from Motya by Dionyſius tyrant of Syracuſe. It is remarkable for three ſieges it ſuſtained; one againſt Dionyſius the tyrant, another againſt Pyrrhus king of Epirus, and the third againſt the Romans. The two firſt failed in their attempts, but the Romans with great difficulty made themſelves maſters of it. No remains of this once ſtately city are now to be ſeen except ſome aqueducts and temples; though it was ſtanding in Strabo's time.

LILYE (William), the grammarian, was born in the year 1478, at Odiham in Hampſhire; and in 1486, was admitted a ſemi-commoner of Magdalen college, in Oxford. Having taken the degree of bachelor of arts, he left the univerſity, and travelled to Jeruſalem. Returning from thence, he continued five years in the iſland of Rhodes, where he ſtudied the Greek language, ſeveral learned men having retired thither after the taking of Conſtantinople. From Rhodes he travelled to Rome; where he improved himſelf in the Greek and Latin languages, under Sulpitius and P. Sabinus. He then returned to London, where for ſome time he taught a private grammar-ſchool, being the firſt perſon who taught Greek in the metropolis. In 1510, when Dr Colet founded St Paul's ſchool, Lilye was appointed

pointed the firſt maſter; at which time, it ſeems, he was married and had many children. In this employment he had laboured 12 years, when, being ſeized by the plague, which then raged in London, he died in February 1523, and was buried in the north yard of St Paul's. He had the character of an excellent grammarian, and a ſucceſsful teacher of the learned languages. His principal work is *Breviſſima inſtitutio, ſeu ratio grammatices cognoſcendæ;* Lond. 1513. Reprinted times without number, and commonly called *Lily's grammar.* The Engliſh rudiments were written by Dr Colet, dean of St Paul's; and the preface to the firſt edition, by cardinal Wolſey. The Engliſh ſyntax was written by Lilye; alſo the rules for the genders of nouns, beginning with *Propria que maribus;* and thoſe for the preterperfect tenſes and ſupines, beginning with *As in præſenti.* The Latin ſyntax was chiefly the work of Eraſmus. See Ward's preface to his edition of Lily's Grammar, 1732.

LIMA, a city of South America, in Peru, of which it is capital, with an archbiſhop's ſee, and an univerſity. It gives its name to the principal audience of Peru; and is ſurrounded with brick walls, fortified with ſeveral ramparts and baſtions, eight yards high. The ſtreets are handſome, and as ſtraight as a line; but the houſes are generally only one ſtory high, on account of the earthquakes. However, they are pretty enough, and well adorned, having long galleries on the front. One part of the roofs are covered with coarſe linen cloth, and the others only with reeds, which is not inconvenient, becauſe it never rains here; however, the richeſt inhabitants cover theirs with fine mats, or beautiful cotton-cloths. There are trees planted all round their houſes, to keep off the heat of the ſun. What the houſes want in height they have in length and depth; for ſome of them are 200 feet long, and proportionably broad, ſo that they have 10 or 12 large apartments on the ground-floor. The royal ſquare is very handſome, and in the middle there is a fountain of bronze, adorned with the image of fame, which ſpouts out water. On the eaſt and weſt ſides are the public ſtructures, which are well built. The river which croſſes Lima forms canals or ſtreams which run to moſt of the houſes, and ſerve to water their gardens, as well as for other uſes. All the churches and convents are extremely rich; and many images of the ſaints are of maſſy gold, adorned with jewels. This city is four miles in length, and two in breadth, and is divided into eight pariſhes; and yet it contains but 28,000 inhabitants, whereof 9000 are Spaniards. They make uſe of mules to draw their coaches with, and of theſe there are about 5000. It is the ſeat of the viceroy; and contains ſeveral courts, as that of the viceroy, of the archbiſhop, of the inquiſition, of the cruſado, and of the wills. Earthquakes are here very frequent; ſome of which have done this city a great deal of damage, particularly that in 1746, whereby it was almoſt deſtroyed: were it not for this, it would be a perfect paradiſe; there being plenty of corn, wine, oil, ſugar, fruits, and flax. The inhabitants are ſo rich, that when the viceroy, who was duke of Palata, and ſent from Spain to Peru in 1672, made his public entrance into this city, the inhabitants paved the ſtreets he was to paſs through with ingots of ſilver. The inhabitants of Lima are very debauched, but at the ſame time extremely ſuperſtitious, and they have a ſtrong belief in the power of charms. About a fourth part of the city are monks and nuns, who are not a jot more chaſte than the reſt; and if any one happens to rival a monk, he is in danger of his life, for they always carry a dagger under their frocks. The nuns are ſuch libertines, that it is hard to find any free from the French diſeaſe, of which they ſometimes die for want of good phyſicians. The greateſt ſinners think they atone for all their faults by hearing a maſs, and kiſſing the robe of St Francis or St Dominic, and then they return to their former practices. It is ſeated on a large, pleaſant, fertile plain, on a ſmall river, near the ſea. W. Long. 68. 45. S. Lat. 12. 15.

LIMAX, the Slug, or *Naked Snail;* a genus of inſects, belonging to the order of vermes molluſca; the characters of which are theſe: The body is oblong, fitted for crawling, with a kind of muſcular coat on the upper part; and the belly is plain: they have a roundiſh hole in the ſide, near the neck, which ſerves for the purpoſe of genitals, and for voiding their excrements. They have likewiſe four tentacula, or horns, ſituated above the mouth, which they extend or retract at pleaſure. There are eight ſpecies, diſtinguiſhed entirely by their colour; as the black ſlug, the white ſlug, the reddiſh ſlug, the aſh-coloured ſlug, &c. The laſt of theſe, the agreſtis or field-ſlug, is very common in gardens, and deſtructive to plants. They are ſometimes ſwallowed by conſumptive perſons, to whom they are thought to be of ſervice. Snails are ſaid to be hermaphrodites, and mutually to impregnate each other. See Reproduction.

LIMB, in general, denotes the border or edge of a thing; thus we ſay, the limb of a quadrant, of the ſun, of a leaf, &c.

Limb, in anatomy, an appellation given to the extremities of the body, as to the arms and legs.

Limb, *Limbus*, in the church of Rome, is uſed in two different ſenſes. 1. The limb of the patriarchs is ſaid to be the place where the patriarchs waited the redemption of mankind: in this place they ſuppoſe our Saviour's ſoul continued from the time of his death to his reſurrection. 2. The limb of infants dying without baptiſm, is a place ſuppoſed to be diſtinct both from heaven and hell; ſince, ſay they, children dying innocent of any actual ſin, do not deſerve hell; and, by reaſon of their original ſin, cannot be admitted into heaven.

LIMBORCH (Philip), a learned writer among the remonſtrants, born at Amſterdam in 1633. After having made great proficiency in his ſtudies, he was, in 1655, admitted to preach in public, which he did firſt at Harlem. His ſermons had in them no affected eloquence; but were ſolid, methodical, and edifying. He was choſen miniſter of Goudja; from whence he was called to Amſterdam, where he had the profeſſorſhip of divinity, in which he acquitted himſelf with great reputation till his death, which happened in the 1712. He had an admirable genius, and a tenacious memory. He had many friends of diſtinction in foreign parts as well as in his own country. Some of his letters to Mr Locke are printed with thoſe of that celebrated author. He had all the qualifications ſuitable to the character of a ſincere divine, lived an example of every virtue, and preſerved the vigour of his body and mind to a conſiderable age. He wrote many works, which are eſteemed; the principal of which are, 1. *Amica collatio de veritate religionis Chriſtianæ cum erudito Judæo*, in 12mo, 2. A complete body of Divinity, according to the opinions and doctrines of the remonſtrants. 3. A hiſtory of the Inquiſition; which has been tranſlated into Engliſh by Dr Samuel Chandler. Limborch alſo publiſhed the works of the famous Epiſcopius, who was his great-uncle by the mother's ſide.

LIMBURGH DUCHY, a province of the Auſtrian Netherlands, bounded by the duchy of Juliers on the north and eaſt, by Luxemburgh on the ſouth, and by the biſhopric of Liege on the weſt. It is about 30 miles in length, and 25 in breadth; and conſiſts of good arable and paſture land, with plenty of wood, and ſome iron mines.

LIMBURGH, the capital city of the duchy of Limburgh, in the Auſtrian Netherlands, is ſeated on a ſteep rock near the river Veſſe. This town is ſmall, but pleaſantly ſeated on a hill, with ſhady woods; and conſiſts chiefly of one broad ſtreet, not very well built. It is ſtrong by ſituation, and almoſt inacceſſible; however, it was taken by the French in 1675, and by the confederates under the the duke of Marlborough in 1603, for the houſe of Auſtria, to whom it remains by the treaties of Raſtadt and Baden, after having been diſmantled. It is famous for its cheeſe, which is exceeding good. E. Long. 6. 8. N. Lat. 50. 40.

LIME. See QUICKLIME.

LIMERICK, a county of Ireland in the province of Munſter, is bounded on the eaſt by Tipperary, on the weſt by Kerry, on the north by the river Shannon, and on the ſouth by Cork. It is 48 miles in length, and 27 in breadth; being a fertile country and well inhabited, but has few good towns: the weſt parts are mountainous, and the reſt plain; and it is divided into nine baronies.

LIMERICK, or *Lough-Meath*, a market-town, a boborough, and a biſhop's ſee, now the metropolis of the province of Munſter. It is an elegant, rich, populous city, and of ſingular ſtrength, ſeated partly on an iſland of the river Shannon, and is counted two towns; in the upper ſtands the caſtle and cathedral. It has two handſome bridges of ſtone, as alſo bulwarks and little drawbridges, the one leading to the weſt and the other to the eaſt; to this the lower town is joined, and is ſtrengthened with a wall, a caſtle, and a fore-gate, at the entrance into it. It was beſieged by king William III. in the year 1690; and though there was no army to aſſiſt it, the king was obliged to raiſe the ſiege In the year 1691, it was again beſieged by the Engliſh and Dutch on the 21ſt of September; and it was obliged to ſurrender on the 13th of October following, not without the loſs of abundance of men: however, the garriſon had very honourable and advantageous conditions, being permitted to retire where they thought fit, and the Roman-catholics by theſe articles were to be tolerated in the free exerciſe of their religion. W. Long. 8. 30. N. Lat. 52. 35.

LIMINGTON, a town of Hampſhire in England. See LYMINGTON.

LIMIT, in a reſtrained ſenſe, is uſed by mathematicians for a determined quantity to which a variable one continually approaches; in which ſenſe, the circle may be ſaid to be the limit of its circumſcribed and inſcribed polygons. In algebra, the term *limit* is applied to two quantities, one of which is greater and the other leſs than another quantity; and in this ſenſe it is uſed in ſpeaking of the limits of equations, whereby their ſolution is much facilitated.

LIMNING, the art of painting in water-colours, in contradiſtinction to painting which is done in oil-colours.

Limning is much the more ancient kind of painting. Till a Flemiſh painter, one John van Eyck, better known by the name of *John of Bruges*, found out the art of painting in oil, the painters all painted in water, and in freſco, both on their walls, on wooden boards, and elſewhere.—When they made uſe of boards, they uſually glued a fine linen cloth over them, to prevent their opening; then laid on a ground of white; laſtly, they mixed up their colours with water and ſize, or with water and yolks of eggs, well beaten with the branches of a fig-tree, the juice whereof thus mixed with the eggs; and with this mixture they painted their pieces.

In limning, all colours are proper enough, except the white made of lime, which is only uſed in freſco. The azure and ultramarine muſt always be mixed with ſize or gum; but there are always applied two layers of hot ſize before the ſize-colours are laid on: the colours are all ground in water each by itſelf; and, as they are required in working, are diluted with ſize-water. When the piece is finiſhed, they go over it with the white of an egg well beaten; and then with varniſh, if required.

To limn, or draw a face in colours: Having all the materials in readineſs, lay the prepared colour on the card even and thin, free from hairs and ſpots over the place where the picture is to be. The ground being laid, and the party placed in a due poſition, begin the work, which is to be done at three ſittings. At the firſt you are only to dead-colour the face, which will require about two hours. At the ſecond ſitting, go over the work more curiouſly, adding its particular graces or deformities. At the third ſitting, finiſh the whole; carefully remarking whatever may conduce to render the piece perfect, as the caſt of the eyes, moles, ſcars, geſtures, and the like.

LIMOGES, an ancient and conſiderable town of France, in the province of Guienne, and capital of Limoſin, with a biſhop's ſee. It is a trading place, and its horſes are in great eſteem. It is ſeated on the river Vienne, in E. Long. 1. 22. N. Lat. 42. 48.

LIMOSIN, a province of France, bounded on the north by La Marche, on the eaſt by Auvergne, on the ſouth by Quercy, and on the weſt by Perigord and Angoumois. It is divided into the Upper and Lower; the former of which is very cold, but the latter more temperate. It is covered with foreſts of cheſnut-trees; and contains mines of lead, copper, tin, and iron; but the principal trade conſiſts in cattle and horſes.

LIMPET. See PATELLA.

LIMPURG, a barony of Germany, in the circle of Franconia, included almoſt entirely within Suabia, and ſeated to the ſouth of Hall in Suabia. It is about 15 miles long, and eight broad. Gaildorf and Shonburg, near which is the caſtle of Limpurg, are the principal places.

LIMPURG, a town of Germany, in the electorate of Triers or Treves, and in Wetteravia, formerly free and imperial, but now ſubject to the electorate of Treves It is ſeated on the river Lhon. E. Long. 8. 13. N. Lat. 50. 18.

LINARIA, in ornithology. See **FRINGILLA.**

LINACRE (Thomas), phyſician, was born at Canterbury about the year 1460, and there educated under the learned William Selling: thence he removed to Oxford, and in 1484 was choſen fellow of All-Souls college. Tilly, alias Selling, his former inſtructor, being at this time appointed ambaſſador from king Henry VII. to the court of Rome, Mr Linacre accompanied him to Italy, where he attained the higheſt degree of perfection in the Greek and Latin languages. At Rome, he applied himſelf particularly to the ſtudy of Ariſtotle and Galen, in the original. On his return to Oxford, he was incorporated doctor of phyſic, and choſen public profeſſor in that faculty. But he had not been long in England, before he was commanded to court by king Henry VII. to attend the young prince Arthur as his tutor and phyſician. He was afterwards appointed phyſician to the king, and, after his death, to his ſucceſſor Henry VIII.

Dr Linacre founded two medical lectures at Oxford, and one at Cambridge; but that which moſt effectually immortalized his name among the faculty, is his being the firſt founder of the college of phyſicians in London. He beheld with vexation the wretched ſtate of phyſic in thoſe times; and, by an application to cardinal Wolſey, obtained a patent in 1518, by which the phyſicians of London were incorporated. The intention of this corporation was to prevent illiterate and ignorant medicaſters from practiſing the art of healing. Doctor Linacre was the firſt preſident, and held the office as long as he lived. Their meetings were in his own houſe in Knight-rider ſtreet, which houſe he bequeathed to the college. But our doctor, when he was about the age of 50, took it into his head to ſtudy divinity; entered into orders; and was collated, in 1509, to the rectory of Merſham. In the ſame year he was inſtalled prebendary of Wells, in 1518 prebendary of York, and in the following year was admitted precentor of that cathedral. This, we are told, he reſigned for other preferments. He died of the ſtone in the bladder in October 1524, aged 64; and was buried in St Paul's. Thirty-three years after his death, doctor John Caius cauſed a monument to be erected to his memory, with a Latin inſcription, which contains the outlines of his life and character. He was a man of great natural ſagacity, a ſkilful phyſician, a profound grammarian, and one of the beſt Greek and Latin ſcholars of his time. Eraſmus in his epiſtles ſpeaks highly of the doctor's tranſlations from Galen, preferring them even to the original Greek. His works are, 1. *De emendata ſtructura Latini ſermonis, libri ſex*; London, printed by Pynſon, 1524, 8vo. and by Stephens, 1527, 1532. 2. *The rudiments of grammar*, for the uſe of the princeſs Mary, printed by Pynſon. Buchanan tranſlated it into Latin; Paris, 1536. He likewiſe tranſlated into very elegant Latin, ſeveral of Galen's works, which were printed chiefly abroad at different times. Alſo *Procli Diadochi ſphæra*, tranſlated from the Greek; Venet. 1499, 1500.

Lincoln.

LINCOLN, a city of England, and capital of a county of the ſame name, ſtands on the ſide of a hill, at the bottom of which runs the river Withum. The old *Lindum* of the Britons, which ſtood on the top of the hill, as appears from the veſtiges of a rampart, and deep ditches ſtill remaining, was taken and demoliſhed by the Saxons; who built a town upon the ſouth ſide of the hill down to the river-ſide, which was ſeveral times taken by the Danes, and as often retaken by the Saxons. In Edward the Confeſſor's time, it appears, from Doomſday-book, to have been a very conſiderable place; and in the time of the Normans, Malmſbury ſays, it was one of the moſt populous cities in England. William I. built a caſtle upon the ſummit of the hill above the town. The dioceſe, tho' the biſhopric of Ely was taken out of it by Henry II. and thoſe of Peterborough and Oxford by Henry VIII. is ſtill vaſtly large, containing the counties of Leiceſter, Huntingdon, Bedford, and part of Bucks, making 1255 pariſhes. Though the other churches are mean, the cathedral, or minſter, is a moſt magnificent piece of Gothic architecture. Here is a prodigious large bell, called *Tom of Lincoln*, which is near five ton in weight, and 23 feet in compaſs. The hill on which the church ſtands is ſo high, and the church itſelf ſo lofty, that it may be ſeen 50 miles to the north, and 30 to the ſouth. Beſides other tombs, it contains one of braſs, in which are the entrails of queen Eleanor, wife to Edward I. It is ſaid there were anciently 52 churches, which are now reduced to 13. Such is the magnificence and elevation of the cathedral, that the monks thought the ſight of it muſt be very mortifying to the devil; whence it came to be ſaid of one who was diſpleaſed, *that he looked like the devil over Lincoln*. The declivity on which the city is built being ſteep, the communication betwixt the upper and lower town is very troubleſome, and coaches and horſes are obliged to make a compaſs. The little river Witham runs through the town; and on the weſt ſide forms a large pool, called, from the number of ſwans upon it, *ſwan-pool*, which has a communication with the Trent by a canal, called the *foſs-dyke*. In the upper town, many gentlemen, beſides the prebendaries and others of the clergy, have handſome houſes of modern architecture. There are four charity-ſchools, in each of which 30 poor children are taught by clergymens widows. It is governed by a mayor, 12 aldermen who are juſtices of the peace, two ſheriffs, a recorder, four chamberlains, a ſword-bearer, four coroners, and above 40 common-council; and has a viſcontial juriſdiction 20 miles round, a privilege which no other city in England can boaſt of. The country round is very fertile and pleaſant, and the tract called *Lincoln heath* extends above 50 miles. On the down, towards Boſton, are ſometimes ſeen thoſe rare birds called *buſtards*. Here are frequent horſe-races, markets on Tueſday and Friday, fairs firſt Tueſday in April, June 24, firſt Friday in September, and November 17. It has given the title of earl to the family of Clinton, ever ſince the reign of queen Elizabeth. W. Long. 27. 1. N. Lat. 53. 16.

LINCOLNSHIRE, a maritime county of England, having the German ocean on the eaſt, Northamptonſhire on the ſouth, from which it is ſeparated by the river Welland, as it is on the weſt from Yorkſhire by the

Lincoln, Lindſey.

the Humber: it has alſo on the weſt, part of Nottinghamſhire, Leiceſterſhire, and Rutlandſhire. Its greateſt length is above 60 miles, and its greateſt breadth about 40, making upwards of 180 miles in circumference, containing 2162 ſquare miles; or, according to others, 1,740,000 acres, 30 hundreds or wapentakes, 688 pariſhes, one city, five parliamentary boroughs, 34 other market-towns, and about 254,540 inhabitants. The names of the three grand diviſions are Holland, Keſtevan, and Lindſey; the laſt of which is by much the largeſt. The ſoil of Holland being marſhy, the air is moiſt and foggy, and therefore unwholeſome. Keſtevan has a drier and more fruitful ſoil, and conſequently a better air. Of the third diviſion, Lindſey, the air is reckoned good and wholeſome. There are many large rivers in the county, as the Nen, Welland, Gnaſh, Witham, Bane, Trent, Dun, and Ankam, all abounding with fiſh. In the Fens are very rich paſtures; ſo that their cattle are the largeſt in England, unleſs, perhaps, we ſhould except thoſe of Somerſetſhire: and at certain ſeaſons the numbers of fowl are amazing, eſpecially of ducks; ſo that Cambden ſays, they could, in his time, about Crowl "catch 1000 at once in Auguſt with a ſingle net; and they called the pools where they catched them, their corn-fields, no corn then growing within five miles of the place: that of theſe fowls there were ſome ſorts not only very rare, but extremely delicate, as the puittes, knotts, and goodwitts; ſo that the niceſt palates and richeſt purſes greatly coveted them." The knotts are ſaid to be ſo called, from their having been firſt brought from Denmark for the uſe of king Canute. The dotterel is ſo called becauſe it is a very ſimple bird, and mimicks all the motions of the fowler, till it is eaſily caught by candle-light. They have all the common fruits, and ſome of them in greater perfection than in other parts of England. Their hares and their hounds are ſaid to be exceeding ſwift. The fens ſeem to have been over-run with wood anciently, for trunks of trees are ſtill found in them. The churches in Lincolnſhire are ſaid to be very fine, but the houſes indifferent. There is a homely proverb, which ſays, that its hogs ſh—t ſoap, and its cows fire; becauſe the poor people waſh their clothes with hogs dung, and, from the ſcarcity of other fuel, burn dried cow-dung. It is entirely in the dioceſe of Lincoln; and ſends 12 members to parliament, viz. two knights for the ſhire, two citizens for Lincoln, two burgeſſes for Boſton, two for Great Grimſby, two for Stamford, and two for Grantham.

LINDSEY (Sir David), a celebrated Scots poet, was deſcended of an ancient family, and born in the reign of king James IV. at his father's ſeat called the *Mount*, near Coupar in Fifeſhire. He was educated at the univerſity of St Andrews; and, after making the tour of Europe, returned to Scotland in the year 1514. Soon after his arrival, he was appointed gentleman of the bed-chamber to the king, and tutor to the young prince, afterwards James V. From the verſes prefixed to his dream, we learn that he enjoyed ſeveral other honourable employments at court: but, in 1533, he was deprived of all his places, except that of *Lion king at arms*, which he held to the time of his death. His diſgrace was moſt probably owing to his invectives againſt the clergy, which are frequent in all his writings. After the deceaſe of king James V. Sir David became a favourite of the earl of Arran, regent of Scotland; but the abbot of Paiſley did not ſuffer him to continue long in favour with the earl. He then retired to his paternal eſtate, and ſpent the remainder of his days in rural tranquillity. He died in the year 1553. His poetical talents, conſidering the age in which he wrote, were not contemptible; but he treats the Romiſh clergy with great ſeverity, and writes with ſome humour: but, whatever merit might be formerly attributed to him, he takes ſuch licentious liberties with words, ſtretching, or carving them for meaſure or rhime, that the Scots have a proverb, when they hear an unuſual expreſſion, that, *There is nae ſic a word in a' Davie Lindſay.* Mackenzie tells us, that his comedies were ſo facetious, that they afforded abundance of mirth. Some fragments of theſe comedies are ſtill preſerved in manuſcript. He is ſaid to have alſo written ſeveral tragedies, and to have firſt introduced dramatic poetry into Scotland. One of his comedies was played in 1515. Mackenzie ſays, he underſtood nothing of the rules of the theatre. He was cotemporary with John Heywood, the firſt Engliſh dramatic poet. His poems are printed in one ſmall volume; and fragments of his plays, in manuſcript, are in Mr William Carmichael's collection.

LINDSEY, the third and largeſt diviſion of the county of Lincolnſhire in England. On the eaſt and north it is waſhed by the ſea, into which it runs out with a large front; on the weſt it has Yorkſhire, and Nottinghamſhire, from which it is parted by the rivers Trent and Dun; on the ſouth it has Keſtevan, from which it is ſeparated by the river Witham, and the Foſs-dyke, which is ſeven miles long, and was cut by Henry I. between the Witham and the Trent, for the convenience of carriage in thoſe parts. It had its name from Lincoln, the capital of the county, which ſtands in it, and by the Romans called *Lindum*, by the Britons *Lyndcoit*, by the Saxons *Lindo-collyne*, probably from its ſituation on a hill, and the lakes or woods that were anciently thereabouts; but the Normans called it *Nichol*. It gives title of earl and marquis to the duke of Ancaſter.

LINDUS, (anc. geog.), a town of Rhodes, ſituated on an eminence, on the ſouth-eaſt ſide of the iſland; with a temple of Minerva ſirnamed *Lindia*, built by Danaus, Herodotus, and Strabo; in which the ſeventh Olympionic ode of Pindar was written in letters of gold. The town was built by Tlepolemus the ſon of Hercules, according to Diodorus Siculus; by one of the Heliades, grandſons of the Sun, named *Lindus*, according to Strabo. It was the native place of Cleobulus, one of the wiſe men. It is ſtill extant, and called *Lindo*.

LINE, in geometry, a quantity extended in length only, without any breadth or thickneſs. It is formed by the flux or motion of a point. See FLUXIONS, and GEOMETRY.

LINE, in the art of war, is underſtood of the diſpoſition of an army ranged in order of battle with the front extended as far as may be, that it may not be flanked.

LINE *of Battle*, is alſo underſtood of a diſpoſition of the fleet in the day of engagement; on which occaſion the veſſels are uſually drawn up as much as poſſible in a ſtraight line, as well to gain and keep the advantage of the wind as to run the ſame board. See *Naval* Tactics.

Horizontal Line, in geography and aſtronomy, a line drawn parallel to the horizon of any part of the earth.

Equinoctial Line, in geography, is a great circle on the earth's ſurface, exactly at the diſtance of 90° from each of the poles, and of conſequence biſecting the earth in that part. From this imaginary line, the degrees of longitude and latitude are counted.—In aſtronomy, the equinoctial line is that circle which the ſun ſeems to deſcribe round the earth on the days of the equinox in March and September. See Astronomy; and Geography, n° 28.

Meridian Line, is an imaginary circle drawn thro' the two poles of the earth and any part of its ſurface. See Geography, n° 29.

Ship of the Line, a veſſel large enough to be drawn up in the line, and to have a place in a ſea-fight.

Line, in genealogy, a ſeries or ſucceſſion of relations in various degrees, all deſcending from the ſame common father. See Descent.

Line, alſo denotes a French meaſure containing the 12th part of an inch or the 144th part of a foot. Geometricians conceive the line ſubdivided into ſix points. The French line anſwers to the Engliſh barley-corn.

Fiſhing Line. See Fishing *Line*.

Lines, in heraldry, the figures uſed in armories to divide the ſhield into different parts, and to compoſe different figures. Theſe lines, according to their different forms and names, give denomination to the pieces or figures which they form, except the ſtraight or plain lines.

LINEA alba, in anatomy, the concourſe of the tendons of the oblique and tranſverſe muſcles of the abdomen; dividing the abdomen in two, in the middle. It is called *linea*, line, as being ſtraight; and *alba*, from its colour, which is white.—The *linea alba* receives a twig of a nerve from the intercoſtals in each of its digitations or indentings, which are viſible to the eye, in lean perſons eſpecially.

LINEAMENT, among painters, is uſed for the outlines of a face.

LINEAR numbers, in mathematics, ſuch as have relation to length only; ſuch is a number which repreſents one ſide of a plain figure. If the plain figure be a ſquare, the linear figure is called a *root*.

Linear *Problem;* that which may be ſolved geometrically by the interſection of two right lines. This is called a *ſimple problem*, and is capable but of one ſolution.

LINEN, in commerce, a well-known kind of cloth chiefly made of flax. The linen manufacture was probably introduced into Britain with the firſt ſettlements of the Romans. The flax was certainly firſt planted by that nation in the Britiſh ſoil. The plant itſelf indeed appears to have been originally a native of the eaſt. The woollen drapery would naturally be prior in its origin to the linen; and the fibrous plants from which the threads of the latter are produced, ſeems to have been firſt noticed and worked by the inhabitants of Egypt. In Egypt, indeed, the linen manufacture appears to have been very early: for even in Joſeph's time it had riſen to a conſiderable height. From the Egyptians the knowledge of it proceeded probably to the Greeks, and from them to the Romans. Even at this day the flax is imported among us from the Eaſtern nations; the weſtern kind being merely a degenerate ſpecies of it.

In order to ſucceed in the linen manufacture, one ſet of people ſhould be confined to the ploughing and preparing the ſoil, ſowing and covering the ſeed, to the weeding, pulling, rippling, and taking care of the new ſeed, and watering and dreſſing the flax till it is lodged at home: others ſhould be concerned in the drying, breaking, ſcutching, and heckling the flax, to fit it for the ſpinners; and others in ſpinning and reeling it, to fit it for the weaver: others ſhould be concerned in taking due care of the weaving, bleaching, beetling, and finiſhing the cloth for the market. It is reaſonable to believe, that if theſe ſeveral branches of the manufacture were carried on by diſtinct dealers in Scotland and Ireland, where our home-made linens are manufactured, the ſeveral parts would be better executed, and the whole would be afforded cheaper, and with greater profit.

Staining of Linen. Linen receives a black colour with much more difficulty than woollen or cotton. The black ſtruck on linen with common vitriol and galls, or logwood, is very periſhable, and ſoon waſhes out. Inſtead of the vitriol, a ſolution of iron in ſour ſtrong-beer is to be made uſe of. This is well known to all the calico-printers; and by the uſe of this, which they call their *iron liquor*, and madder-root, are the blacks and purples made which we ſee on the common printed linens. The method of making this iron-liquor is as follows: A quantity of iron is put into the ſour ſtrong-beer; and, to promote the diſſolution of the metal, the whole is occaſionally well ſtirred, the liquor occaſionally drawn off, and the ruſt beat from the iron, after which the liquor is poured on again. A length of time is required to make the impregnation perfect; the ſolution being reckoned unfit for uſe till it has ſtood at leaſt a twelvemonth. This ſolution ſtains the linen of a yellow, and different ſhades of buff-colour; and is the only known ſubſtance by which theſe colours can be fixed on linen. The cloth ſtained deep with the iron liquor, and afterwards boiled with madder, without any other addition, becomes of the dark colour which we ſee on printed linens and cottons; which, if not a perfect black, has a very near reſemblance to it. Others are ſtained paler with the ſame liquor diluted with water, and come out purple.

Linen may alſo be ſtained of a durable purple by means of ſolution of gold in aqua regia. The ſolution for this purpoſe ſhould be as fully ſaturated as poſſible; it ſhould be diluted with three times its quantity of water; and if the colour is required deep, the piece, when dry, muſt be repeatedly moiſtened with it. The colour does not take place till a conſiderable time, ſometimes ſeveral days, after the liquor has been applied: to haſten its appearance, the ſubject ſhould be expoſed to the ſun and free air, and occaſionally removed to a moiſt place, or moiſtened with water.—When ſolution of gold in aqua regia is ſoaked up in linen cloths, the metal may be recovered by drying and burning them.

Linen.

The anacardium nut, which comes from the Eaſt-Indies, is remarkable for its property of ſtaining linen of a deep black colour, which cannot be waſhed out either with ſoap or alkaline ley. The ſtain is at firſt of a reddiſh-brown, but afterwards turns to a deep black on expoſure to the air. The caſhew-nut, called the *anacardium of the Weſt-Indies*, differs from the oriental anacardium, in its colouring quality. The juice of this nut is much paler than the other, and ſtains linen or cotton only of a browniſh colour; which indeed is very durable, but does not at all change towards blackneſs.—There are, however, trees, natives of our own colonies, which appear to contain juices of the ſame nature with thoſe of India. Of this kind are ſeveral, and perhaps the greater number, of the ſpecies of the toxicodendron or poiſon-tree †. Mr Cateſby, in his hiſtory of Carolina, deſcribes one called there the *poiſon-aſh*, from whoſe trunk flows a liquid as black as ink, and ſuppoſed to be poiſonous; which reputed poiſonous quality has hitherto prevented the inhabitants from collecting or attempting to make any uſe of it. In the Philoſophical Tranſactions for the year 1755, the abbé Mazeas gives an account of three ſorts of the toxicodendron raiſed in a botanic garden in France, containing in their leaves a milky juice, which in drying became quite black, and communicated the ſame colour to the linen on which it was dropped. The linen thus ſtained was boiled with ſoap, and came out without the leaſt diminution of colour; nor did a ſtrong ley of wood-aſhes make any change in it. Several of theſe trees have been planted in the open ground in England, and ſome ſtill remain in the biſhop of London's garden at Fulham.

† See *Rhus*.

That ſpecies called by Mr Miller the *true lac tree*, was found by Dr Lewis to have properties of a ſimilar kind. It contains in its bark, and the pedicles and ribs of the leaves, a juice ſomewhat milky, which ſoon changed in the air to a reddiſh-brown, and in two or three hours to a deep blackiſh or browniſh-black colour: wherever the bark was cut or wounded, the inciſion became blackiſh; and on ſeveral parts of the leaves the juice had ſpontaneouſly exſuded, and ſtained them of the ſame colour. This juice, dropped on linen, gave at firſt little or no colour, looking only like a ſpot of oil; but, by degrees, the part moiſtened with it darkened in the ſame manner as the juice itſelf. On waſhing and boiling the linen with ſoap, the ſtain not only was not diſcharged, but ſeemed to have its blackneſs rather improved; as if a brown matter, with which the black was manifeſtly debaſed, had been in part waſhed out, and left the black more pure.

As the milky juices of ſome of our common plants turn dark-coloured or blackiſh in drying, the doctor was induced to try the effects of ſeveral of them on linen. The milks of wild-poppies, garden-poppies, dandelion, hawk-weed, and ſow-thiſtle, gave brown or browniſh-red ſtains, which were diſcharged by waſhing with ſoap; the milks of the fig-tree, of lettuces, and of different kinds of ſpurges, gave no colour at all. The colourleſs juice which iſſues from hop-ſtalks when cut, ſtains linen of a pale-reddiſh or browniſh-red, extremely durable; the colour was deepened by repeated applications of the juice, but it never made any approach to blackneſs. The juice of ſloes gave likewiſe a pale-browniſh ſtain, which, by repeated waſhings with ſoap, and being wetted with ſtrong ſolution of alkaline ſalt, was darkened to a deeper brown: on baking the ſloes, their juice turns red; and the red ſtain which it then imparts to linen is, on waſhing with ſoap, changed to a pale-blueiſh, which alſo proves durable. Theſe colours could not be deepened by repeated applications of the juice. The ſloes were tried in different ſtates of maturity, from the beginning of September to the middle of December, and the event was always nearly the ſame.

In the fifth volume of Linnæus's *Amœnitates Academicæ*, mention is made of a black colour obtained from two plants which grow ſpontaneouſly in Britain; the one is the *actæa ſpicata*, herb-chriſtopher, or bane-berries; the other the *enica baccifera nigra*, black-berried heath, crow-berries, or crake-berries. The juice of the bane-berries boiled with alum, is ſaid to yield a black ink; and the heath-berries, boiled alſo with alum, to dye linen of a purpliſh black.

LINEN *flowered with Gold-leaf.* Dr Lewis informs us of a new manufacture eſtabliſhed in London for embelliſhing linen with flowers and ornaments of gold-leaf. The linen, he ſays, looks whiter than moſt of the printed linens; the gold is extremely beautiful, and bears waſhing well. The doctor informs us, that he had ſeen a piece which he was credibly informed had been waſhed three or four times, with only the ſame precautions which are uſed for the finer printed linens; and on which the gold continued entire, and of great beauty.—Concerning the proceſs uſed in this manufacture, he gives us no particulars.

Foſſile **LINEN**, is a kind of amianthus, which conſiſts of flexible, parallel, ſoft fibres, and which has been celebrated for the uſes to which it has been applied, of being woven, and forming an *incombuſtible cloth*. Paper alſo, and wicks for lamps, have been made of it. See AMIANTHUS and ASBESTOS.

LING, in zoology. See GADUS.

LINGEN, a ſtrong town of Germany, in the circle of Weſtphalia, and capital of a county of the ſame name. It belongs to the king of Pruſſia; and is ſituated on the river Embs, in E. Long. 7. 30. N. Lat. 52. 32.

LINGELBACH (John), an excellent painter, born at Frankfort on the Maine in 1625. He firſt learned the art in Holland, but perfected himſelf at Rome; where he ſtudied till he was 25 years of age, when he ſettled at Amſterdam. His uſual ſubjects are fairs, mountebanks, ſea-pieces, and landſcapes, which he compoſed and executed exceeding well: his landſcapes are enriched with antiquities, animals, and elegant figures; his ſea-fights are full of expreſſion, exciting pity and terror, and all his objects are well deſigned. He had an uncommon readineſs in painting figures and animals, on which account he was employed by ſeveral eminent artiſts to adorn their landſcapes with ſuch objects; and whatever he inſerted in the works of other maſters, were always well adapted, and produced an agreeable effect. He died in 1687.

LINIMENT, in pharmacy, a compoſition of a conſiſtence ſomewhat thicker than an unguent, and thicker than an oil uſed for anointing different parts of the body in various intentions.——The materials proper for compoſing *liniments* are, fats, oils, balſams, and whatever enters the compoſition of unguents and plaſters.

LINLITHGOWSHIRE, or **West Lothian**, a ſmall county of Scotland, not exceeding 14 miles in length and 13 in breadth, is bounded on the north by part of Stirlingſhire and the river Forth, by part of Clydeſdale on the weſt, and on the ſouth and weſt by Mid-Lothian, from which it is divided by the rivers Breich and Almond. The country is pleaſant and fertile, abounding with corn and paſturage. Here is found plenty of coal, limeſtone, and lead ore; nay, in the reign of James VI. it produced a rich mine of ſilver. The chief town, Linlithgow, from which it borrows the name, is a royal borough and ſeat of a preſbytery, ſtanding on the ſide of a ſmall lake, about 18 miles from Edinburgh: it conſiſts of one open ſtreet, from whence lanes are detached on both ſides; the houſes are built of ſtone, tolerably neat and commodious; and the place is adorned with ſome ſtately public edifices. On the ſide of the lake ſtands a royal palace, magnificently built of hewn ſtone, begun by king James V. and perfected by his grandſon. Within the inner court, which is larger than that of Hamilton, there is an artificial fountain, adorned with ſtatues and water-works; and at each corner of the ſquare a tower, with a range of fine apartments. Hard by the palace is the church of St Michael, a noble ſtructure, with a very high ſteeple. The inhabitants carry on a great manufacture of linen, and bleach it with the water of this lake, which is noted for its whitening quality: they likewiſe enjoy a tolerable ſhare of trade, by means of a good harbour on the Forth, where they have built a cuſtom-houſe, and magazines or ware-houſes for the uſe of the merchants. Hard by this harbour ſtands the caſtle of Blackneſs, belonging to the crown, formerly uſed as a ſtate priſon, but now quite ruinous. The chiefs of the Livingſtone family were earls of Linlithgow and Calendar, hereditary keepers of the palace in this town, and hereditary conſtables of Blackneſs caſtle. The laſt of theſe noblemen forfeited his eſtate and honours, by engaging in the rebellion of the year 1715.

LINNÆUS (Sir Charles), a celebrated botaniſt and natural hiſtorian, was born on May 24. 1707, O. S. in a village called *Roeſhult*, in Smaland, where his father, Nicolas Linnæus, was then vicar, but afterwards preferred to the curacy of Stenbrohult. On the farm where Linnæus was born, there yet ſtands a large lime-tree, from which his anceſtors took the ſurnames of *Tiliander*, *Lindelius*, and *Linnæus*. Of ſuch ſurnames, derived from ſome natural object, there are many other inſtances in Sweden, which ſeem to evince, at leaſt, that the taſte for natural knowledge is of a very ancient ſtanding in that country. Charles's father, who was a great floriſt, regaled his wife, during her pregnancy with this her firſt ſon, with the choiceſt flowers; with which he alſo often beſtrewed the child's cradle, and preſented him with flowers inſtead of the uſual toys. As ſoon as little Linné was able to run after his father, he made gardening his chief amuſement. He ſoon knew garden-plants, and then began to gather ſuch as grew wild in his neighbourhood; for which he found yet better opportunity at Wexioe, whither he was, in 1717, ſent to ſchool. In 1727, Linnæus went to the academy at Lund, where the celebrated Kilian Stobæus favoured his genius for natural knowledge with his patronage. Even at his native farm he had already hunted after inſects; neither did he loſe that taſte, though he was at Lund once ſtung by the *furia infernalis*, and had very narowly eſcaped with life. From Lund he, in 1728, proceeded to the univerſity at Upſal, always purſuing his favourite ſtudies; but found himſelf, within leſs than a year, involved in debts for board and cloathing, without proſpect of being extricated by any remittances from his indigent parents. Olof Celſius, the excellent author of the Hiero-botanicum, happening once to find him in the botanical garden, buſied with deſcribing plants, and being ſurprized to hear him name them all, took a liking to him, and received him to his houſe, his table, and his library. By this and ſome other unexpected and fortunate incidents, our Linnæus was enabled to purſue his ſtudies, notwithſtanding the original lowneſs of his finances. So early as the 25th year of his age, he planned a conſiderable part of his ſyſtem of botany. He was afterwards patronized by Rudbeck junior; who being then old, entruſted Linnæus with reading the botanical lectures in his place, which he did with great zeal and ſucceſs. In 1732, Linnæus at the expence of the Society of Sciences at Upſal, made a ſcientific tour to Lapland, where he encountered hunger and cold, with a variety of dangers and hardſhips. The plants which he found in this tour, he, in the ſame year, exhibited in the memoirs of the ſociety, claſſed according to his own ſyſtem. During this tour, he had opportunities for cultivating the art of aſſaying minerals; on which art, and on mineralogy, he, after his return, read lectures at Upſal. For the ſame ſcientific purpoſes he alſo made journeys to the principal Swediſh mines, during which he was greatly aſſiſted by the liberality of Mr de Reuterholm; and, after having thus enlarged his acquaintance with the ſtate of his own native country, he, in 1735, with a very ſlender ſupport, began his travels into foreign countries.

He viſited Hamburgh, Amſterdam, and the univerſity of Harderwyck, where he was created a doctor in phyſic; and then haſtened to Boerhaave at Leyden, who valued and recommended him to Mr Clifford, whoſe natural collections at Hatecamp Linnæus was to deſcribe. At Gronovius's perſuaſion, he, in 1736, publiſhed the original edition of his Syſtem of Nature in Holland; and, after this, many other of his works in the ſame country. In the mean time Linnæus came over to England. His Syſtem of Botany was firſt adopted by Gronovius, in his Virginian Flora; and his names of plants by Van Royen, in his Prodromus: yet, though he lived very happy in Holland, and had the moſt advantageous offers made him there, he left that country and went to France, where he entered into the moſt intimate friendſhip with M. Bernard Juſſieu. In 1738 he returned to Stockholm, where he began with practiſing phyſic, and was appointed profeſſor of mineralogy, and phyſician to the admiralty. In 1739, he married the provincial phyſician Moræus's daughter, to whom he had been betrothed before his departure from Sweden. His ſpirit and zeal were now encouraged by a variety of rewards. The Royal Academy of Sciences, eſtabliſhed in the ſame year at Stock-

Linnæus. Stockholm, choſe him their firſt ſpeaker. At the public expence he made tours into ſeveral provinces of the kingdom, in order to explore their reſpective productions. In 1741, after profeſſor Roberg's death, he ſucceeded to the chair of phyſic at Upſal; and as he had the celebrated M. de Roſenſtein for his colleague in that profeſſion, the faculty of phyſic became uncommonly flouriſhing in that univerſity. The botanical garden of Upſal, which had been long ago founded by Rudbeck the elder, but deſtroyed by a fire in 1702, and afterwards neglected, was now ſoon reſtored by Linnæus, and in three years brought to a degree of perfection equal at leaſt to that of any other botanical garden whatever.

In the new green-houſe, a particular room was deſigned for a collection of natural curioſities, which was partly furniſhed by the court and wealthy individuals. Nor were the other branches of phyſic left unimproved by Linnæus. His delivery in his lectures was exceedingly ſprightly, and animated by a native eloquence peculiar to him; as he held them not merely for the ſake of money, but inſpired with a lively affection for their ſubjects. While his health and ſpirits remained, his ſchool was always more crowded than that of any other profeſſor; and on his botanical excurſions, he was ſurrounded by ſtill greater numbers of pupils. There is hardly a profeſſor who can produce ſo many diſciples, who, chiefly at his perſuaſion, have, for the enlargement of his favourite ſtudy, undertaken voyages and travels to the remoteſt parts of the globe. The celebrated names of Kalm, Haſſelquiſt, Ternſtroem, Toren, Oſbeck, Rolander, Loeffling, Berlin, Forſkal, Solander, Thunberg, Sparrman, Rothman, with many others, ſuch as Clas Alſtroemer, Kæhler, &c. who, in the purſuit of natural ſcience, travelled through many countries of Europe, will ever do credit to Linnæus's memory. He kept up a moſt extenſive correſpondence; every one ſtrove to give him an early account of any new diſcovery made, and increaſe his collections, to which even many ſovereign princes contributed. He was highly diſtinguiſhed and favoured by the late king, the queen dowager, and the preſent king of Sweden, who often honoured him with their viſits. No ſyſtem or method of botany has ever yet been more generally adopted than his. Some noblemen of the firſt diſtinction cauſed a medal to be ſtruck to his honour; and the late excellent count Teſſin, who had ever been his chief patron, honoured him with another. In 1747, he had the title of *phyſician to the king* conferred on him: in 1753, he received the honour of knighthood of the polar ſtar; and, in 1757, he was ennobled. In 1776, the preſent king of Sweden accepted his reſignation of his place, and conferred on him a double penſion, with a noble donation of two farms for himſelf and his children.—He did not live long after this period; dying in January 1778, aged 70 years and 8 months.

As to the private and perſonal character of this illuſtrious philoſopher: His ſtature was diminutive and puny; his head large, and its hinder part very high; his look was ardent, piercing, and apt to daunt the beholder; his ear not ſenſible to muſic; his temper quick, but eaſily appeaſed; his memory good, though, in the latter period of his life, ſometimes liable to fail him; his knowledge of languages confined, yet no intereſting diſcovery remained unknown to him. In ſummer, he uſed to ſleep from ten to three o'clock; in winter, from nine to ſix; and inſtantly to ceaſe his labours when he found himſelf not well diſpoſed for them.——Both in his younger years, and in the decline of life, he was afflicted with various corporeal infirmities; and the diſorder of which he died, an ulceration of the urinary bladder, was long and painful. The ſeverity, however, even of his laſt illneſs did not interrupt the ardour of his ſcientifical purſuits. And, to the fruits of his labours which the world already enjoy, future additions ſtill remain to be made. Before his death he had finiſhed the greateſt part of the Mantiſſa Tertia. And, we are told, that his ſon, who has already given ſeveral ſpecimens of his taſte for botany, and other branches of natural hiſtory, labours hard in compleating this work. After this, we are informed, that he intends to publiſh a large collection of plants which his father had lately received from the Cape of Good Hope, from Mutis in Mexico, from Koenig in India, and ſeveral other places. Theſe, added to the ineſtimable works which he has already publiſhed, will be the moſt laſting monuments of a man, who, in the eyes of poſterity, muſt be conſidered not only as a glory to his country, but as an ornament to the age in which he lived.

His cotemporaries, however, and ſurviving friends, have not been neglectful in paying due marks of reſpect to his memory. At Upſal, a general mourning took place on the death of the man whoſe induſtry and genius had promoted the intereſt, and exalted the reputation, of that ſeminary of literature to the higeſt pitch. His funeral proceſſion was attended by the whole univerſity, as well profeſſors as ſtudents; and the pall was ſupported by 16 doctors of medicine, all of whom were his own pupils. The Swediſh monarch alſo ordered a medal to be ſtruck to his honour; of which one ſide exhibits Linnæus's buſt and name; and the other, Cybele in a dejected attitude, holding in her left hand a key, and ſurrounded with animals and growing plants, with the legend, *Deam luctus augit amiſſi*; and beneath, *Poſt obitum, Upſalia, d, x. Jan.* MDCCLXXVIII. *Rege jubente*. But an honour never yet conferred on any other learned man in ſo high a degree, was ſtill reſerved to Linnæus's memory by his king, who, in his ſpeech from the throne, to the late aſſembly of the ſtates of the kingdom, lamented Sweden's loſs by the death of Linnæus. Nor muſt we omit mentioning, that, at Edinburgh, Dr Hope, profeſſor of botany, on opening his courſe of lectures for the enſuing ſummer, delivered a diſcourſe in honour of this great maſter of the ſcience which he has there cultivated with ſo much aſſiduity and ſucceſs: and, at the ſame time, in preſence of the ſtudents, he laid the foundation-ſtone of a monument (which has ſince been erected) to his memory, in the botanical garden at that place. While this monument cannot fail to ſuggeſt the merits of Linnæus to the ſtudents, it will alſo be a mark of reſpect to his memory from one of his greateſt and moſt ſincere admirers.

LINNET, in ornithology. See Fringilla.—It is remarkable of this bird, that when it builds in hedges, and when in furze-buſhes on heaths, in both which places the neſts are very common, they are made of very different materials. When they build in hedges, they uſe the ſlender filaments of the roots of trees, and the down of feathers and thiſtles; but when they build on heaths they uſe moſs, principally for the outer part, finiſhing it within with ſuch things as the place will afford. Theſe birds will have young ones three or four times a-year, eſpecially if they are taken away before they are able to leave the neſts.

When linnets are to be taught to whiſtle tunes, or to imitate the notes of any other bird, they muſt be taken from the old one when they are not above four days old; for at this time they have no idea of the note of the old ones, and will be readily taught to modulate their voice like any thing that is moſt familiar to their ears, and within the compaſs of their throats. More care is required in feeding them when taken thus young, than when they are left in the neſt till nearly fledged; but they will be reared very well upon a food half bread and half rapeſeed boiled and bruiſed: this muſt be given them ſeveral times a-day. It muſt be made freſh every day, and given them ſufficiently moiſt, but not in the extreme. If it be in the leaſt ſour, it gripes and kills them; and if too ſtiff, it is as miſchievous by binding them up.—They muſt be hung up as ſoon as taken from the neſt, under the bird whoſe note they are intended to learn; or, if they are to be taught to whiſtle tunes, it muſt be done by giving them leſſons at the time of feeding; for they will profit more, while young, in a few days, than in a long time afterwards, and will take in the whole method of their notes before they are able to crack hard ſeeds. Some have attempted to learn them to ſpeak in the manner of the parrot or other birds; and they will arrive at ſome ſort of perfection in it, with great pains.

LINSEED, the ſeed of the plant linum—Lintſeed bruiſed and ſteeped in water gives it very ſoon a thick mucilaginous nature, and communicates much of its emollient virtue to it. See LINUM.

LINT. See FLAX, LINEN, and LINUM.

LINT, in ſurgery, is the ſcrapings of fine linen, uſed by ſurgeons in dreſſing wounds. It is made into various forms, which acquire different names according to the difference of their figures.—Lint made up in an oval or orbicular form is called a *pledgit*; if in a cylindrical form, or in ſhape of a date, or olive-ſtone, it is called a *doſſil*.

Theſe different forms of lint are required for many purpoſes; as, 1. To ſtop blood in freſh wounds, by filling them up with dry lint before the application of a bandage: though, if ſcraped lint be not at hand, a piece of fine linen may be torn into ſmall rags, and applied in the ſame manner. In every large hæmorrhages the lint or rags ſhould be firſt dipped in ſome ſtyptic liquor, as alcohol, or oil of turpentine; or ſprinkled with ſome ſtyptic powder. 2. To agglutinate or heal wounds; to which end lint is very ſerviceable, if ſpread with ſome digeſtive ointment, balſam, or vulnerary liquor. 3. In drying up wounds and ulcers, and forwarding the formation of a cicatrix. 4. In keeping the lips of wounds at a proper diſtance, that they may not haſtily unite before the bottom is well digeſted and healed. 5. They are highly neceſſary to preſerve wounds from the injuries of the air. —Surgeons of former ages formed compreſſes of ſponge, wool, feathers, or cotton; linen being ſcarce: but lint is far preferable to all theſe, and is at preſent univerſally uſed.

LINTSTOCK, in military affairs, a wooden ſtaff about three feet long, having a ſharp point in one end, and a ſort of fork or crotch on the other; the latter of which ſerves to contain a lighted match, and by the former the lintſtock is occaſionally ſtuck in the ground, or in the deck of a ſhip during an engagement. It is very frequently uſed in ſmall veſſels, where there is commonly one fixed between every two guns, by which the match is always kept dry, and ready for firing.

LINTZ, a very handſome town of Germany, and capital of Upper Auſtria, with two fortified caſtles; the one upon a hill, the other below it. Here is a hall in which the ſtates aſſemble, a bridge over the Danube, a manufacture of gunpowder, and ſeveral other articles. It was taken by the French in 1741, but the Auſtrians retook it in the following year. E. Long. 14. 33. N. Lat. 48. 16.

LINTZ, a town of Germany, in the circle of the Lower Rhine, and electorate of Cologne, ſubject to that elector. It is ſeated on the river Rhine, in E. Long. 7. 1. N. Lat. 50. 31.

LINUM, FLAX; a genus of the pentagynia order, belonging to the pentandria claſs of plants.

Species. 1. The uſitatiſſimum, or common annual flax, hath a taper fibrous root; upright, ſlender, unbranched ſtalks, two feet and a half high; garniſhed with narrow, ſpear-ſhaped, alternate grey-coloured leaves; and the ſtalks divided into footſtalks at top, terminated by ſmall blue crenated flowers in June and July; ſucceeded by large round capſules of ten cells, containing each one ſeed. 2. The perenne, or perennial Siberian flax, hath a fibrous perennial root, ſending up ſeveral upright, ſtrong, annual ſtalks, branching four or five feet high; garniſhed with ſmall, narrow, ſpear-ſhaped, alternate leaves of a dark-green colour; and terminated by umbellate cluſters of large blue flowers in June, ſucceeded by ſeeds in autumn. There are 20 other ſpecies of linum, but theſe are the moſt remarkable.

Culture. The firſt ſpecies is cultivated in the fields according to the directions given under the article FLAX. The ſecond ſort is raiſed from ſeed in a bed or border of common garden-earth, in ſhallow drills ſix inches aſunder; and when the plants are two or three inches high, thin them to the ſame diſtance; and in autumn plant them out where they are wanted.

Uſes. The firſt ſpecies may juſtly be looked upon as one of the moſt valuable of the whole vegetable kingdom; as from the bark of its ſtalks is manufactured the lint or flax for making all ſorts of linen-cloth; from the rags of the linen is made paper; and from the ſeeds is expreſſed the lintſeed oil ſo uſeful in painting and other trades. The ſeeds themſelves are eſteemed an excellent emollient and anodyne: they are uſed externally in cataplaſms, to aſſwage the pain of inflamed tumours: internally, a ſlight infuſion of linſeed, by way of tea, is recommended in coughs as an excellent pectoral, and of great ſervice in pleuriſies, nephritic complaints, and ſuppreſſions of urine.

LINUS, in claſſic hiſtory, a native of Colchis, cotemporary with Orpheus, and one of the moſt ancient poets and muſicians of Greece. It is impoſſible, at this diſtance of time, to diſcover whether Linus was the diſciple of Orpheus, or Orpheus of Linus. The majority, however, ſeem to decide this queſtion in favour of Linus. According to archbiſhop Uſher, he flouriſhed about 1280 B. C. and he is mentioned by Euſebius among the poets who wrote before the time of Moſes. Diodorus Siculus tells us, from Dionyſius of Mitylene, the hiſtorian, who was cotemporary with Cicero, that Linus was the firſt among the Greeks who invented verſes and muſic, as Cadmus firſt taught them the uſe of letters. The ſame writer likewiſe attributes to him an account of the exploits of the firſt Bacchus, and a treatiſe upon Greek mythology, written in Pelaſgian characters, which were alſo thoſe uſed by Orpheus, and by Pronapides the preceptor of Homer. Diodorus ſays that he added the ſtring *lichanos* to the Mercurian lyre; and aſcribes to him the invention of rythm and melody; which Suidas, who regards him as the moſt ancient of lyric poets, confirms. Mr Marpurg tells us, that Linus invented cat-gut ſtrings for the uſe of the lyre, which, before his time, was only ſtrung with thongs of leather, or with different threads of flax ſtrung together. He is ſaid by many writers to have had ſeveral diſciples of great renown; among whom were Hercules, Thamyris, and, according to ſome, Orpheus—Hercules, ſays Diodorus, in learning from Linus to play upon the lyre, being extremely dull and obſtinate, provoked his maſter to ſtrike him; which ſo enraged the young hero, that, inſtantly ſeizing the lyre of the muſician, he beat out his brains with his own inſtrument.

LION, in zoology. See FELIS.

LIONCELLES, in heraldry, a term uſed for ſeveral lions borne in the ſame coat of arms.

LIP, in anatomy. See there, n° 366. c.

Hare-LIP, a diſorder in which the upper lip is in a manner ſlit or divided, ſo as to reſemble the uppper lip of a hare, whence the name. See SURGERY.

LIPARA (anc. geogr.), the principal of the iſlands called *Æolia*, ſituated between Sicily and Italy, with a cognominal town, ſo powerful as to have a fleet, and the other iſlands in ſubjection to it. According to Diodorus Siculus, it was famous for excellent harbours and medicinal waters. He informs us alſo, that it ſuddenly emerged from the ſea about the time of Hannibal's death. The name is Punic, according to Bochart; and given it, becauſe, being a volcano, it ſhone in the night. It is now called *Lipari*, and gives name to nine others in its neighbourhood; viz. Stromboli, Pare, Rotto, Panaria, Saline, Volcano, Fenicuſa, Alicor, and Uſtica. Theſe are called, in general, the *Lipari Iſlands*. Some of theſe are active volcanoes at preſent, though Lipari is not. It is about 15 miles in circumference; and abounds in corn, figs, and grapes; bitumen, ſulphur, alum, and mineral waters.

LIPARI, an ancient and very ſtrong town, and capital of an iſland of the ſame name in the Mediterranean, with a biſhop's ſee. It was ruined by Barbaroſſa in 1544, who carried away all the inhabitants into ſlavery, and demoliſhed the place; but it was rebuilt by Charles V. E. Lon. 15. 30. N. Lat. 38. 35.

LIPOTHYMIA, FAINTING, may ariſe from ſeveral cauſes; as too violent exerciſe, ſuppreſſion of the menſes or other accuſtomed evacuations, &c. See (the *Index* ſubjoined to) MEDICINE.

LIPPA, a town of Hungary, with a caſtle. It was taken by the Turks in 1552; by the imperialiſts in 1688; and by the Turks again in 1691; who abandoned it in 1665, after having demoliſhed the fortifications. It is ſeated on a mountain, in E. Lon. 21. 55. N. Lat. 36. 5.

LIPPE, the capital of a country of the ſame name in Germany, and the circle of Weſtphalia. It is ſeated on a river of the ſame name, and was formerly the reſidence of the principal branch of the houſe of Lippe. It is now in the poſſeſſion of the king of Pruſſia, and carries on a good trade in preparing timber for building veſſels on the Rhine, with which it has a communication by the river Lippe. The country round it is unwholeſome and marſhy. E. Long. 8. 12. N. Lat. 51. 43.

LIPSIUS (Juſtus), a learned critic, was born at Iſch, a ſmall village near Bruſſels, in 1547. After having diſtinguiſhed himſelf in polite literature, he became ſecretary to cardinal de Granvellan at Rome, where the beſt libraries were open to him; and he ſpent much labour in collating the MSS. of ancient authors. He lived 13 years at Leyden; during which he compoſed and publiſhed what he eſteems his beſt works; but ſettled at Louvain, where he taught polite literature with great reputation. He was remarkable for unſteadineſs in religion, fluctuating often between the Proteſtants and Papiſts; but he became finally a bigotted catholic. He died at Louvain in 1606; and his works are collected in ſix vols folio.

LIQUIDAMBER, SWEET-GUM-TREE; a genus of the polyandria order, belonging to the monœcia claſs of plants. There are two ſpecies, both of them beautiful deciduous trees, growing 30 or 40 feet high, forming fine pyramidal heads; adorned with large angular and oblong leaves, and monœcious, apetalous, ſaffron-coloured flowers; and producing a liquid, tranſparent, gummy ſubſtance, of great fragrance. They may be propagated either by ſeed or layers in the full ground. The ſeeds muſt be procured from America, where theſe trees are natives.

LIQUOR, a name for any fluid ſubſtance of the aqueous or ſpirituous kind.

LIQUOR *of Flints*. See CHEMISTRY, n° 338.

Smoking LIQUOR *of Libavius*. See CHEMISTRY, n° 247.

Mineral Anodyne LIQUOR *of Hoffman*. This is a compoſition of highly rectified ſpirit of wine, vitriolic ether, and a little of the dulcified oil of vitriol. It is made by mixing an ounce of the ſpirit of wine, which riſes firſt in the diſtillation of ether, with as much of the liquor which is to be diſtilled, and afterwards by diſſolving in the mixture which riſes next, and which contains the ether, 12 drops of the oil which riſes after the ether has paſſed. This has the ſame virtues with the ether, and is now generally diſuſed, the pure ether being ſubſtituted in its place.

LIQUORICE. See GLYCYRRHIZA.

LIRIODENDRON, the TULIP-TREE; a genus of the polygynia order, belonging to the polyandria claſs of plants.—There is but one ſpecies, viz. the *tulipiſera*, a native of America. This riſes with a large upright trunk, branching 40 or 50 feet high, having large lobated alternate leaves, of three lobes, the middle one truncated, thoſe of the ſides rounded; and from the ends of the branches bell-ſhaped flowers, compoſed of ſix petals in a double ſeries, ſpotted with green, red, white, and yellow, appearing in July, and ſucceeded by large conic fruit, not ripening in this country. In the countries of North America where they are natives, theſe trees are known by the name of *poplar*, and grow to a great ſize. Mr Cateſby tells us, that in Carolina ſome are met with of 30 feet in circumference, with irregular and unequal boughs, which diſtinguiſh them at a diſtance, even when they are ſtripped of their leaves. Their timber is of great uſe, particularly for making the boats called *periaugues*.

LISBON, the capital of the kingdom of Portugal, ſituated in the province of Eſtremadura, on the banks of the river Tagus, in W. Long. 9. 25. N. Lat. 38. 25. It was anciently called *Oliſipo*, *Oliſippo*, and *Ulyſſipo*, which are ſuppoſed to be derived from the Phenician *Ulisubbo*, or *Oliſippo*, ſignifying, in that tongue, a *pleaſant bay*, ſuch as that on which this city ſtands. It firſt became conſiderable in the reign of king Emanuel; from that time it hath been the capital of the kingdom, the reſidence of its monarchs, the ſeat of the chief tribunals, and offices of the metropolitan, a noble univerſity, and the receptacle of the richeſt merchandize of the Eaſt and Weſt Indies. Its air is excellent; being refreſhed by the delightful ſea-breezes, and thoſe of the Tagus. The city extends for about two miles along the Tagus; but its breadth is inconſiderable. Like old Rome, it ſtands on ſeven hills: but the ſtreets in general are narrow and dirty, and ſome of them are very ſteep; neither are they lighted at night. The churches, in general, are very fine; but the magnificence of the chapel-royal is amazing. Here is one of the fineſt harbours in the world; and there were a great number not only of fine churches and convents here, but alſo of other public buildings, and particularly of royal palaces, and others belonging to the grandees; but the greateſt part of them, and of the city, were deſtroyed by a moſt dreadful earthquake, on Nov. 1, 1755, from which it will require a long time to recover. The inhabitants, before the earthquake, did not at moſt exceed 150,000. The government of it is lodged in a council, conſiſting of a preſident, ſix counſellors, and other inferior officers. The harbour has water enough for the largeſt ſhips, and room enough for 10,000 ſail without being crowded. For its ſecurity, there is a fort at the mouth of the river, on each ſide, and a bar that runs acroſs it, and is very dangerous to paſs without pilots. Higher up, at a place where the river is conſiderably contracted, there is a fort called *Torre de Belem*, or the *Tower of Belem*, under whoſe guns all ſhips muſt paſs in their way to the city; and on the other ſide are ſeveral more forts. Before the earthquake, moſt of the private houſes were old and unſightly, with lattice-windows; and the number of convents and colleges amounted to 50, namely, 32 for monks, and 18 for nuns. The king's principal palace ſtands on the river, and is large and commodious. Of the hoſpitals, that called the *Great* is obliged to receive all perſons, of what degree, nation, or religion ſoever, without exception. At the village of *Belem*, near Liſbon, is a noble hoſpital for decayed gentlemen who have ſerved the king, and have not wherewithal to maintain themſelves. That called the *houſe of mercy* is alſo a noble charity. In the centre of the city, upon one of the higheſt hills, is the caſtle, which commands the whole, being large and ancient, and having always a garriſon of four regiments of foot. The cathedral is a vaſt edifice of the Gothic kind, but heavy and clumſy: it contains, however, great riches, and is finely adorned within. The ſquare called *Roſio* is large, and ſurrounded with magnificent buildings. The whole city is under the eccleſiaſtical juriſdiction of the patriarch, who was appointed in the year 1717. Here is alſo an archbiſhop, who has, or at leaſt had before the erection of the patriarchate, a revenue of 40,000 cruſadoes, or 6000 l. The univerſity, which was removed for ſome time to Coimbra, but afterwards reſtored to its ancient ſeat, makes a conſiderable figure, though much inferior to that of Coimbra.

LISBURN, a town of Ireland, in the county of Antrim and province of Ulſter. It was burnt down about 40 years ago; but is now rebuilt in a neat and handſome manner, and has a large linen manufactory. It is ſeated on the river Laggan, in W. Long. 6. 20. N. Lat. 54. 31.

LISIEUX, a conſiderable town of France, in Upper Normandy, with a biſhop's ſee. The churches and religious houſes, and the biſhop's palace, are all very handſome ſtructures. It is a trading place; and is ſeated at the confluence of the rivers Arbeck and Gaſſi, in E. Long. 0. 20. N. Lat. 49. 11.

LISLE, a large, rich, handſome, and ſtrong town of French Flanders, of which it is the capital, with a ſtrong caſtle, and a citadel built by Vauban, and ſaid to be the fineſt in Europe, as well as the beſt fortified. The large ſquare, and the public buildings, are very handſome; and they have manufactures of ſilks, cambrics, and camblets, as well as other ſtuffs, which have been brought to great perfection. It was taken by the duke of Marlborough, after three months ſiege and the loſs of many thouſands of men, in 1708; but reſtored to the French by the treaty of Utrecht, in conſideration of their demoliſhing the fortifications of Dunkirk. It is ſeated on the river Duele, 14 miles weſt of Tournay, 32 ſouth-weſt of Ghent, 37 north-weſt of Mons, and 130 north of Paris. E. Long. 3. 9. N. Lat. 50. 38.

LISLE (Claudius de), a learned hiſtoriographer, born at Vancouleurs, in 1644. He ſtudied among the Jeſuits at Pontamouſſon; took his degrees in law, and afterwards applied himſelf intirely to the ſtudy of hiſtory and geography; and to perfect himſelf in thoſe ſciences went to Paris, where the principal lords of the court became his ſcholars, and among the reſt the duke of Orleans, afterwards regent of the kingdom. He wrote, 1. An hiſtorical account of the kingdom of Siam. 2. A genealogical and hiſtorical Atlas. 3. An abridgment of univerſal hiſtory. He died at Paris, in 1720.

Lisle (William de), ſon of the former, and the moſt learned geographer France has produced, was born at Paris in 1675. He became firſt geographer to the king, royal cenſor, and member of the academy of ſciences. He died in 1726. He publiſhed a great number of excellent maps, and wrote many pieces in the memoirs of the academy of ſciences.

Lisle (Sir John), a brave loyaliſt in the time of the civil wars, was the ſon of a bookſeller in London, and received his education in the Netherlands. He ſignalized himſelf upon many occaſions in the civil war, particularly in the laſt battle of Newbury; where, in the duſk of the evening, he led his men to the charge in his ſhirt, that his perſon might be more conſpicuous. The king, who was an eye-witneſs of his bravery, knighted him in the field of battle. In 1648, he roſe for his majeſty in Eſſex; and was one of the royaliſts who ſo obſtinately defended Colcheſter, and who died for their defence of it. This brave man having tenderly embraced the corps of Sir Charles Lucas, his departed friend, immediately preſented himſelf to the ſoldiers who ſtood ready for his execution. Thinking that they ſtood at too great a diſtance, he deſired them to come nearer: one of them ſaid, "I warrant you, Sir, we ſhall hit you." He replied, with a ſmile, "Friends, I have been nearer you when you have miſſed me." He was executed Auguſt 28th 1648.

LISMORE, one of the Weſtern iſlands of Scotland, ſeated at the mouth of the bay of Lochyol in Argyleſhire. It is eight miles long, and two broad; and the ſoil is pretty fertile. It was formerly the reſidence of the biſhops of Argyle.

LISSA, an iſland in the Gulph of Venice, on the coaſt of Dalmatia, belonging to the Venetians, where they have a fiſhery of ſardines and anchovies. It produces excellent wine, and is 70 miles weſt of Raguſa. E. Long. 17. 0. N. Lat. 43. 22.

Lissa, a town of Poland, in the palatinate of Poſna, of which it is the capital. E. Long. 16. 0. N. Lat. 32. 15.

Lissa, a village of Sileſia, 16 miles from Breſlau, remarkable for a battle fought between the Pruſſians and the Auſtrians on the 15th of December 1757, when the latter were entirely defeated.

LIST, in commerce, the border of cloth or ſtuff; ſerving not only to ſhew their quality, but to preſerve them from being torn in the operations of fulling, dyeing, &c.—Liſt is uſed on various occaſions; but chiefly by gardeners for ſecuring their wall-trees.

List, in architecture, a little ſquare moulding, otherwiſe called a *fillet*, *liſtel*, &c. See Plate XXIX. fig. 1.

List, is alſo uſed, to ſignify the incloſed field or ground wherein the ancient knights held their juſts and combats. It was ſo called, as being hemmed round with pales, barriers, or ſtakes, as with a liſt. Some of theſe were double, one for each cavalier; which kept them apart, ſo that they could not come nearer each other than a ſpear's length. See Just, Tournament, Duel, &c.

Civil List, in the Britiſh polity. The expences defrayed by the civil liſt are thoſe that in any ſhape relate to civil government; as, the expences of the houſehold; all ſalaries to officers of ſtate, to the judges, and every one of the king's ſervants; the appointments to foreign ambaſſadors; the maintenance of the queen and royal family; the king's private expences, or privy-purſe; and other very numerous outgoings, as ſecret-ſervice money, penſions, and other bounties: which ſometimes have ſo far exceeded the revenues appointed for that purpoſe, that application has been made to parliament to diſcharge the debts contracted on the civil liſt; as particularly in 1724, when one million was granted for that purpoſe by the ſtatue 11 Geo. I. c. 17. and in 1769, when half a million was appropriated to the like uſes by the ſtatute 9 Geo. III. c. 34.

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The civil liſt is indeed properly the whole of the king's revenue in his own diſtinct capacity; the reſt being rather the revenue of the public, or its creditors, though collected and diſtributed again in the name and by the officers of the crown: it now ſtanding in the ſame place, as the hereditary income did formerly; and as that has gradually diminiſhed, the parliamentary appointments have increaſed. The whole revenue of queen Elizabeth did not amount to more than 600,000l. a-year: that of king Char. I. was 800,000l. and the revenue voted for king Charles II. was 1,200,000l. though complaints were made (in the firſt years at leaſt), that it did not amount to ſo much. But it muſt be obſerved, that under theſe ſums were included all manner of public expences; among which Lord Clarendon, in his ſpeech to the parliament, computed, that the charge of the navy and land-forces amounted annually to 800,000l. which was ten times more than before the former troubles. The ſame revenue, ſubject to the ſame charges, was ſettled on king James II.: but by the increaſe of trade, and more frugal management, it amounted on an average to 1,500,000l. *per annum*, (beſides other additional cuſtoms, granted by parliament, which produced an annual revenue of 400,000l.) out of which his fleet and army were maintained at the yearly expence of 1,100,000l. After the revolution, when the parliament took into its own hands the annual ſupport of the forces both maritime and military, a civil-liſt revenue was ſettled on the new king and queen, amounting, with the hereditary duties, to 700,000l. *per annum;* and the ſame was continued to queen Anne and king George I. That of king Geo. II. was nominally augmented to 800,000*l. and in fact was conſiderably more: but that of his preſent majeſty is expreſsly limited to that ſum; tho' 100,000l. has been ſince added. And upon the whole, it is doubtleſs much better for the crown, and alſo for the people, to have the revenue ſettled upon the modern footing rather than the ancient. For the crown; becauſe it is more certain, and collected with greater eaſe: for the people; becauſe they are now delivered from the feodal hardſhips, and other odious branches of the prerogative. And though complaints have ſometimes been made of the increaſe of the civil liſt, yet if we conſider the ſums that have been formerly granted, the limited extent under which it is now eſtabliſhed, the revenues and prerogatives given up in lieu of it by the crown, the numerous branches of the preſent royal family, and (above all) the diminution of the value of money compared with what it was worth in the laſt century, we muſt acknowledge theſe complaints to be void of any rational foundation; and that it is impoſſible to ſupport that dignity, which a king of Great Britain ſhould maintain, with an income in any degree leſs than what is now eſtabliſhed by parliament. See Revenue.

To List, or *Enliſt*, *Soldiers*, to retain and enroll men as ſoldiers, either as volunteers, or by a kind of compulſion. Perſons liſted muſt be carried within four days, but not ſooner than 24 hours after, before the next juſtice

* See *nue.*

of peace of any county, riding, city, or place, or chief magiſtrate of any city or town-corporate (not being an officer in the army); and if before ſuch juſtice or magiſtrate they diſſent from ſuch enliſting, and return the enliſting-money, and alſo 20 ſhillings in lieu of all charges expended on them, they are to be diſcharged. But perſons refuſing or neglecting to return and pay ſuch money within 24 hours, ſhall be deemed as duly liſted, as if they had aſſented thereto before the proper magiſtrate; and they ſhall, in that caſe, be obliged to take the oath, or, upon refuſal, they ſhall be confined by the officer who liſted them till they do take it.

LISTER (Dr Martin), an eminent Engliſh phyſician and naturaliſt, was born in 1638, and educated at Cambridge. He afterwards travelled into France; and at his return practiſed phyſic at York, and afterwards at London. In 1683, he was created doctor of phyſic, and became fellow of the college of phyſicians in London. In 1698, he attended the earl of Portland in his embaſſy from king William III. to the court of France; of which journey he publiſhed an account at his return, and was afterwards phyſician to queen Anne. He alſo publiſhed, 1. *Hiſtoria animalium Angliæ*, quarto. 2. *Conchyliorum ſynopſis*, folio. 3. *Cochlearum & limachum exercitatio anatomica*, 4 vols 8vo. 4. Many pieces in the Philoſophical Tranſactions; and other works.

LITANY, a ſolemn form of ſupplication to God, in which the prieſt utters ſome things fit to be prayed for, and the people join in their interceſſion, ſaying, *we beſeech thee to hear us, good Lord*, &c. The word comes from the Greek λιτανεια, "ſupplication;" of λιτανευω, "I beſeech."

At firſt the uſe of litanies was not fixed to any ſtated time, but were only employed as exigencies required. They were obſerved, in imitation of the Ninevites, with ardent ſupplications and faſtings, to avert the threatening judgments of fire, earthquakes, inundations, or hoſtile invaſions. About the year 400, litanies began to be uſed in proceſſions, the people walking barefoot, and repeating them with great devotion; and it is pretended, that by this means, ſeveral countries were delivered from great calamities. The days on which theſe were uſed, were called *rogation days:* theſe were appointed by the canons of different councils, till it was decreed by the council of Toledo, that they ſhould be uſed every month throughout the year; and thus by degrees they came to be uſed weekly on Wedneſdays and Fridays, the ancient ſtationary days for faſting. To theſe days the rubric of our church has added Sundays, as being the greateſt days for aſſembling at divine ſervice. Before the laſt review of the common prayer, the litany was a diſtinct ſervice by itſelf, and uſed ſome time after the morning prayer was over; at preſent it is made one office with the morning-ſervice, being ordered to be read after the third collect for grace, inſtead of the interceſſional prayers in the daily ſervice.

LITCHFIELD, a city of Staffordſhire, in England, ſituated in W. Long. 1. 40. N. Lat. 52. 43. It ſtands low, about three miles from the Trent. Its ancient name is ſaid to have been *Licidfield*, ſignifying a field of carcaſſes, from a great number of Chriſtians having, as it is pretended, ſuffered martyrdom here in the perſecution under Diocleſian. Though the biſhop has his ſee here, yet he is denominated of Litchfield and Coventry. It is divided into two parts by a rivulet and a kind of ſhallow lake, over which are two cauſeways, with ſluices. It is a long ſtraggling place; but has ſome very handſome houſes, and well-paved clean ſtreets. That part on the ſouth ſide of the rivulet is called the *city*, and the other the *cloſe*, becauſe it is encloſed with a wall and a deep dry ditch. The city is much the largeſt, and contains ſeveral public ſtructures. The cathedral is a very magnificent ſtructure. Its front, or portico, is hardly to be parallelled in England; and it has three ſpires exceeding lofty. The town is a great thoroughfare to the north-weſt counties; and is governed by two bailiffs, 24 burgeſſes, a recorder, a ſheriff, a ſteward and other officers.

LITERARY, any thing belonging to LITERATURE.

LITERARY *Property*, or *Copy-Right*. See COPY-*Right*.

LITERATURE, LEARNING, or *Skill in Letters*.

LITHANTHRAX, or PIT-*Coal*, is a black or brown, laminated, bituminous ſubſtance; not very eaſily inflammable, but, when once inflamed, burns longer and more intenſely than any other ſubſtance. Of this ſubſtance three kinds are diſtinguiſhed by authors. The reſiduum of the firſt after combuſtion is black; the reſiduum of the ſecond is ſpongy, and like pounce ſtone; and the reſiduum of the third is whitiſh aſhes. Some foſſil coal, by long expoſure to air, falls into a greyiſh powder, from which alum may be extracted. Foſſil coal by diſtillation yields, 1. a phlegm or water; 2. a very acid liquor; 3. a thin oil like naphtha; 4. a thicker oil, reſembling petroleum, which falls to the bottom of the former, and which riſes with a violent fire; 5. an acid concrete ſalt; 6. an uninflammable earth remains in the retort. Theſe conſtituent parts of foſſil-coal are very ſimilar to thoſe of amber and other bitumens. For the exciting of intenſe heats, as of furnaces for ſmelting iron-ore, and for operations where the acid and oily vapours would be detrimental, as the drying of malt, foſſil-coals are previouſly charred, or reduced to *coaks;* that is, they are made to undergo an operation ſimilar to that by which charcoal is made. By this operation coals are deprived of their phlegm, their acid liquor, and of greateſt part of their fluid oil. Coaks therefore conſiſt of the two moſt fixed conſtituent parts, the heavy oil and the earth, together with the acid concrete ſalt, which though volatile is detained by the oil and earth.

LITHARGE, is a kind of refuſe of lead, and is no other than that metal in an incipient ſtate of vitrification either alone, or with a mixture of copper. See CHEMISTRY, nº 403.

LITHGOW (William), a Scotſman, whoſe ſufferings by impriſonment and torture at Malaga, and whoſe travels, on foot, over Europe, Aſia, and Africa, ſeem to raiſe him almoſt to the rank of a martyr and a hero, publiſhed an account of his peregrinations and adventures. Though the author deals much in the marvellous, the horrid account of the ſtrange cruelties of which, he tells us, he was the ſubject, have, however, an air of truth. Soon after his arrival in England, from Malaga, he was carried to Theobald's on a feather-bed, that king James might be an eye-witneſs of his *martyred anatomy*, by which he means his wretched body, mangled and reduced to a ſkeleton. The whole court crowded to ſee him; and his majeſty ordered him to be taken care of, and he was twice ſent to Bath at his expence. By the king's command, he applied to Gondamor, the Spaniſh ambaſſador, for the recovery of the money and other things of value which the governor of Malaga had taken from him, and for 1000 pounds for his ſupport. He was promiſed a full reparation for the damage he had ſuſtained; but the perfidious miniſter never performed his promiſe. When he was upon the point of leaving England, Lithgow upbraided him with the breach of his word in the preſence-chamber, before ſeveral gentlemen of the court. This occaſioned their fighting upon the ſpot; and the ambaſſador, as the traveller oddly expreſſes it, had his fiſtula (with which diſorder he was afflicted) contrabanded with his fiſt. The unfortunate Lithgow, who was generally condemned for his ſpirited behaviour, was ſent to the Marſhalſea, wnere he continued a priſoner nine months. At the concluſion of the octavo edition of his *Travels* he informs us, that, in his three voyages, "his painful feet have traced over (beſides paſſages of ſeas and rivers) 36,000 and odd miles, which draweth near to twice the circumference of the whole earth." Here the marvellous ſeems to riſe to the incredible; and to ſet him, in point of veracity, below Coryat, whom it is neverthele ſs certain that he far outwalked. His deſcription of Ireland is whimſical and curious. This, together witn the narrative of his ſufferings, is reprinted in Morgan's *Phœnix Britannicus*.

LITHIASIS, or STONE. See (the *Index* ſubjoined to) MEDICINE.

LITHONTRIPTICUS, from λιθος, "a ſtone," and θρυπτειν, "to break;" an epithet for medicines that are ſaid to break the ſtone in the bladder. Tho' the different ſtones that are generated in the human bladder require different ſolvents when out of the body; and though art hath not yet afforded a medicine which, when injected into the bladder, will, without injury thereto, diſſolve the ſtone therein lodged; it cannot thence be concluded, that there are no lithontriptic medicines. It may be here obſerved, that one ſolvent affects one ſubject, but hath no effect one another; ſo a ſolvent may yet be met with that will deſtroy the ſtone, and not hurt the human body. The water into which the boiled white of egg diſſolves will liquefy myrrh, but may be put into the human eye without cauſing any uneaſineſs.

Soap ley taken at firſt in ſmall doſes in broth that is freed from all its fat, ſucceeds in moſt caſes which require an alkaline ſolvent. The patient may being with 20 drops, and gradually increaſe the doſe as he is able; and by repeating it three times a-day for ſix, eight, or twelve months, the wiſhed for effects often follow.

LITHOPHYTA, the name of Linnæus's third order of vermes. See ZOOLOGY.

LITHOSPERMUM, GROMWELL; a genus of the monogynia order, belonging to the pentandria claſs of plants. There are ſeveral ſpecies; but the only remarkable ones are the officinale or common gromwell, and the arvenſe or baſtard alkanet. Both theſe are natives of Britain; the former growing in dry gravelly ſoil, the latter in corn-fields.—The ſeeds of the firſt are reputed to be of ſervice in calculous caſes. Dr Grew ſays, that they have ſo much earth in their compoſition, that they efferveſce with acids; but if this is the caſe, it muſt be attributed rather to an alkaline than an earthy quality.

LITHOTOMY, in ſurgery, the operation of cutting for the ſtone. See SURGERY.

LITHUANIA, an extenſive province of Poland. By the natives it is called *Letwa*, and has Great Poland and Ruſſia on the weſt; part of Muſcovy on the eaſt; Livonia, the Baltic ſea, and part of Muſcovy, on the north; Red Ruſſia, Volhinia, and Padolia, on the ſouth; and the Ukraine on the ſouth-eaſt. Its length is ſaid to be about 360, and its breadth 340 miles; but it is much indented both ways. Lithuania was anciently over-run with wood; and there are ſtill many foreſts in it, which yield a great deal of honey, wax, pitch, tar, and timber; and abound with wild boars, buffalos, elks, wild horſes, wild aſſes, uri, and woodcocks. The lakes are alſo numerous, and well-ſtored with fiſh: but the air, by reaſon of theſe foreſts and lakes, is ſaid to be thick and foggy. The country produces a great deal of buck-wheat and other corn, the paſtures are luxuriant, and the flocks and herds numerous: ſo that, notwithſtanding agriculture is much neglected, proviſions are exceeding cheap, but money ſo ſcarce, that ten per cent is the common intereſt. The principal nobility have large eſtates, and live in great pomp and ſplendor, generally retaining ſome hundreds of thoſe that are poor, in quality of domeſtics. The eſtabliſhed religion is Popery; but Lutherans, Calviniſts, Jews, Turks, Greeks, and Socinians, are very numerous. Lithuania was governed by its own dukes till it was united to Poland, towards the end of the 14th century, when the great duke Jagello married Hedwig, the dowager of Lewis king of Poland and Hungary. It had even dukes after that, but they were ſubordinate to the king; and at this day, tho' one diet ſerves for both countries, yet each has its peculiar laws, cuſtoms, dialect, and privileges. In a diet held at Lublin in 1569, it was more cloſely united to Poland than it had been before; and it was enacted, that both countries, for the future, ſhould form but one ſtate under the ſame prince. As to their courts of juſtice, the tenth part of what is adjudged in all real actions goes always to the judge's box, and is immediately paid in court; and in perſonal actions he claims half the damages given. A nobleman is only fined for murder, as in Poland. The common people here, excepting the burghers in the royal towns, and the Germans, are ſlaves; and, in many places, the ignorant vulgar ſtill retain ſome remains of idolatry. The poor people have only Mondays to themſelves; and if their lords have occaſion for them even on that day, the peaſant muſt work for himſelf on Sunday. If any of them is condemned to death by his lord, he muſt execute himſelf, or ſuffer greater cruelty. The dialect is a language of the Sclavonic; and they ſpeak here, as in Poland, a barbarous kind of Latin. Lithuania is divided into nine palatinates. Another diviſion is into Lithuania properly ſo called, ed, and Lithuanian Ruſſia. Some alſo comprehend under it Samogitia and Courland, which is a fief of Poland.

LITOTES. See ORATORY, n° 55.

LITTER, a parcel of dry old ſtraw put on the floor of a horſe's ſtall for him to lie down and reſt upon. When a horſe comes tired into a ſtable, freſh litter has the virtue of making him ſtale immediately. This is known to be a very great advantage to a horſe in a tired ſtate; and when the litter is old and dirty, it never has any ſuch effect upon him. If the owners knew how refreſhing it is for a horſe to diſcharge his urine on his return from labour, they would be more careful of giving them all means and occaſions of it than they do. This ſtaling after fatigue prevents thoſe obſtructions in the neck of the bladder or urinary paſſages which horſes are too ſubject to. The bladder being often inflamed by the long retention of the heated urine in it, the creature is thus in danger of periſhing.

LITTLE (William), an ancient Engliſh hiſtorian, known alſo by the name of *Gulielmus Neubrigenſis*, was born at Bridlington in the county of York, in the year 1136; and educated in the abbey of Newborough in the ſame county, where he became a monk. In his advanced years, he compoſed a hiſtory of England, in five books, from the Norman conqueſt to A. D. 1197; which for veracity, regularity of diſpoſition, and purity of language, is one of the moſt valuable productions of this period.

LITTLETON (Sir Thomas), judge of the Common-pleas, was the eldeſt ſon of Thomas Weſtcote, eſq. of the county of Devon, by Elizabeth, ſole heireſs of Thomas Littleton of Frankley in Worceſterſhire, at whoſe requeſt he took the name and arms of that family. He was educated at one of our univerſities, probably at Cambridge. Thence he removed to the Inner Temple, where he became one of the readers; and was afterwards, by Henry VI. made ſteward or judge of the court of the palace, or marſhalſea of the king's houſehold. In 1455, the thirty-third of that reign, he was appointed king's ſerjeant, and rode the northern circuit as judge of aſſize. In 1462, the ſecond of Edward IV. he obtained a pardon from the crown; and, in 1466, was appointed one of the judges of the common-plea, and rode the Northamptonſhire circuit. In the year 1475 he was, with many of the firſt nobility, created knight of the Bath. He died in 1481; and was buried in the cathedral church of Worceſter, where a marble tomb, with his ſtatue upon it, was erected to his memory. As to his character as a lawyer, it is ſufficient to inform the reader that he was the author of the Treatiſe upon Tenures, on which Sir Edward Coke wrote a comment, well known by the title of *Coke upon Littleton*.

LITTLETON (Adam), deſcended from an ancient family in Shropſhire, was born in 1627, educated at Weſtminſter-ſchool, and went to Oxford a ſtudent of Chriſt-church, whence he was ejected by the parliament viſitors in 1648. Soon after, he became uſher of Weſtminſter-ſchool, and in 1658 was made ſecond maſter of Weſtminſter-ſchool. After the reſtoration he taught a ſchool at Chelſea in Middleſex, of which church he was admitted rector in the year 1664. In 1670 he accumulated the degrees in divinity, being then chaplain in ordinary to his majeſty. In 1674 he became prebendary of Weſtminſter, of which church he was afterward ſub-dean. Beſide he well-known *Latin* and *Engliſh* dictionary, he publiſhed ſeveral other works. He died in 1694, and was interred at Chelſea. He was an univerſal ſcholar; and extremely charitable, humane, and eaſy of acceſs.

LITURGY, a name given to thoſe ſet forms of prayer which have been generally uſed in the Chriſtian church. Of theſe there are not a few aſcribed to the apoſtles and fathers, but they are almoſt univerſally believed to be ſpurious. The word comes from the Greek λειτουργια, *ſervice*, or public miniſtry.

The liturgy of the church of England was compoſed in the year 1547, ſince which time it has undergone ſeveral alterations; the laſt of which was in the year 1661, and of this liturgy Dr Comber gives the following character. "No church was ever bleſſed with ſo comprehenſive, ſo exact, and ſo inoffenſive a liturgy as ours: which is ſo judiciouſly contrived, that the whole may exerciſe at once their knowledge and devotion; and yet ſo plain, that the moſt ignorant may pray with underſtanding; ſo full, that nothing is omitted, which ought to be aſked in public; and ſo particular, that it compriſeth moſt things which we would aſk in private; and yet ſo ſhort, as not to tire any that have true devotion. Its doctrine is pure and primitive; its ceremonies ſo few and innocent, that moſt of the Chriſtian world agree in them: its method is exact and natural; its language ſignificant and perſpicuous, moſt of the words and phraſes being taken out of the holy ſcripture, and the reſt are the expreſſions of the firſt and pureſt ages."—And in the opinion of the moſt impartial and excellent Grotius, (who was no member of, nor had any obligation to, this church) "the Engliſh liturgy comes ſo near the primitive pattern, that none of the reformed churches can compare with it." Again, he ſays, "In the prayers, a ſcholar can diſcern cloſe logic, pleaſing rhetoric, pure divinity, and the very marrow of the ancient doctrine and diſcipline; and yet all made ſo familiar, that the unlearned may ſafely ſay Amen."

LITUUS, in Roman antiquity, a ſhort, ſtraight rod, only bending a little at one end, uſed by the augurs. See AUGUR.

LIVADIA, anciently *Achaia* and *Hellas*, or *Greece* properly ſo called; a province of Turky in Europe, bounded on the north by Epirus and Theſſaly, from which it is ſeparated by mount Oeta, now Banina, and by the Euripus, now the ſtrait of Negropont; on the eaſt, by the Archipelago; on the ſouth, by the gulf of Engia or Egina, the iſthmus of Corinth, and the gulf of Lepanto; and on the weſt, by the Ionian ſea and part of Epirus. Its extent is about 130 miles from north-weſt to ſouth-eaſt; but its greateſt breadth is not above 36 miles. It is in general a mountainous country; but neither unpleaſant nor unfruitful. The principal mountains are, mount Oeta in Bæotia, where is the famous paſs of Thermopylæ, not above 25 feet broad; and Parnaſſus, Helicon, and Cythæron in Phocis, which were ſacred to Apollo and the muſes, and conſequently much celebrated by the poets. The rivers of moſt note are, the Sionapro, anciently the Achelous, the Cephiſſus, the Iſmenus, and the Aſopus. The province is at preſent divided into Livadia proper, Stramulippa, and the duchy of Athens. The principal places are, Lepanto, anciently Naupactus; Livadia, anciently Libadia or Lebadia; the celebrated city of Athens, now Setines; Thebes, now Stibes; Lepſina, anciently Eleuſis; Caſtri, formely Delphi; and Megara.

Livadia, an ancient town of Turky in Europe, and capital of a province of the ſame name in Greece. It is a large and populous place, ſeated on the gulf of Lepanto, about 25 miles from the city of that name. It has now a conſiderable trade in woollen ſtuffs and rice. Anciently it was celebrated for the oracle of Trophonius, which was in a cavern in a hill above the town. E. Long. 23. 29. N. Lat. 38. 40.

LIVER, in anatomy. See there, nº 357.—Plato, and other of the ancients, fix the principle of love in the liver; whence the Latin proverb, *Cogit amare jecur:* and in this ſenſe Horace frequently uſes the word, as when he ſays, *Si torrere jecur quæris Idoneum.*—The Greeks, from its concave figure, called it ηπαρ, vaulted, ſuſpended; the Latins call it *jecur*, q. d. *juxta cor*, as being near the heart. The French call it *foye*, from *foyer*, *focus*, or fire place; agreeable to the doctrine of the ancients, who believed the blood to be boiled and prepared in it.—Eraſiſtratus, at firſt, called it *parenchyma*, i. e. *effuſion*, or *maſs of blood*: and Hippocrates, by way of eminence, frequently calls it the *hypochondrium*.

Liver *of Antimony*. See Chemistry, nº 459.

Liver *of Arſenic*, is a combination of white arſenic with liquid fixed vegetable alkali, or by the humid way. Arſenic has in general a ſtrong diſpoſition to unite with alkalis. Mr Macquer, in his *Memoirs upon Arſenic*, mentions a ſingular kind of neutral ſalt, which reſults from the union of arſenic with the alkaline baſis of nitre, when nitre is decompoſed, and its acid is diſengaged in cloſe veſſels, by means of arſenic. To this ſalt he has given the name of *neutral arſenical ſalt* *. The liver of arſenic mentioned alſo by that chemiſt, although compoſed, like the neutral arſenical ſalt, of arſenic and fixed alkali, is nevertheleſs very different from that ſalt.

The operation for making liver of arſenic is eaſy and ſimple. To ſtrong and concentrated liquid fixed alkali, previouſly heated, fine powder of white arſenic muſt be added. This arſenic eaſily diſappears and diſſolves, and as much of it is to be added till the alkali is ſaturated, or has loſt its alkaline properties, although it is ſtill capable of diſſolving more arſenic ſuperabundantly. While the alkali diſſolves the arſenic in this operation, it acquires a browniſh colour, and a ſingular and diſagreeable ſmell; which, however, is not the ſmell of pure arſenic heated and volatilized. Laſtly, this mixture becomes more and more thick, and at length of a gluey conſiſtence. This matter is not cryſtallizable as the neutral arſenical ſalt is. It is eaſily decompoſed by the action of fire, which ſeparates the arſenic. This does not happen to the arſenical ſalt. Any pure acid is capable of ſeparating arſenic from the liver of arſenic, in the ſame manner as they ſeparate ſulphur from liver of ſulphur: whereas the neutral arſenical ſalt cannot be decompoſed but by means of the united affinities of acids and metallic ſubſtances. Thus we ſee that arſenic may be combined with fixed alkali in two very different manners.

The author has given to this combination the name of *liver of arſenic*, to diſtinguiſh it from the neutral arſenical ſalt, and in imitation of the name of the *liver of ſulphur*, given to the combination of the fixed alkali with ſulphur.

Liver *of Sulphur*. See Chemistry, nº 321.

Liver-*Wort*, in botany. See Lichen.

LIVERPOOL, Litherpool, or *Lirpool*, a flouriſhing maritime town of Lancaſhire, in England, ſituated at the mouth of the river Merſee, which abounds with ſalmon, cod-fiſh, turbot, plaiſe, ſmelts, and flounders, and at high-water is above two miles over. The town was incorporated by king John; and is governed by a mayor, recorder, aldermen without limitation, 40 common council-men, and burgeſſes, the number of whom exceeds 1500. The freemen of Liverpool have the ſame privileges at Briſtol in England, and at Waterford and Wexford in Ireland. The town is well-built, and very populous; and in commerce rivals, if it does not exceed, that of Briſtol. It lies in a centrical ſituation between the coaſt of Wales, Ireland, Scotland, and the Iſle of Man; beſides its ſtanding very convenient for an inland trade with Cheſhire, Staffordſhire, and other parts of the north of England. Beſides the Merſee, there is the ſouth channel, or river Weaver, which is navigable, and chiefly uſed for the inland conveyance of Cheſhire cheeſe and rock-ſalt. This kind of ſalt is dug in Lancaſhire and Cheſhire, and from thence ſent all over England. When boiled in ſea-water and evaporated, a very ſtrong ſalt is produced, which may be uſed in curing herrings. W. Long. 2. 30. N. Lat. 53. 45.

LIVERY, in matters of dreſs and equipage, a certain colour and form of dreſs, by which noblemen and gentlemen chooſe to diſtinguiſh their ſervants.

Livery *of Seiſin*, in law, ſignifies delivering the poſſeſſion of lands, &c. to him who has a right to them.

LIVERYMEN of London, are a number of men choſen from among the freemen of each company. Out of this body the common-council, ſheriff, and other ſuperior officers for the government of the city, are elected; and they alone have the privilege of giving their votes for members of parliament, from which the reſt of the citizens are excluded.

LIVONIA, a large province of the Ruſſian empire, with the title of a duchy. It is bounded on the north by the gulph of Finland, on the weſt by that of Riga, on the ſouth by Courland, and on the eaſt, partly by Pleſcow, and partly by Novogorod. It is about 250 miles from north to ſouth, and 150 from from eaſt to weſt. The land is ſo fertile in corn, that it is called the *granary of the North*; and would produce a great deal more, if it was not ſo full of lakes. The fiſh that abound here are ſalmons, carps, pikes, flat fiſh, and many others. In the foreſts there are wolves, bears, elks, rein-deer, ſtags, and hares. The domeſtic animals are very numerous; but the ſheep bear very bad wool. Here are a great number of foreſts, which conſiſt of birch-trees, pines, and oaks; and all the houſes of the inhabitants are built with wood. The merchandizes which they ſend abroad are flax, hemp, honey, wax, leather, ſkins, and potaſhes. The Swedes were formerly poſſeſſed of this province, but were obliged to abandon it to the Ruſſians after the battle of Pultowa; and it was ceded to them by the peace of the North, concluded in 1722, which was confirmed by another treaty in 1742. It is divided into two provinces, viz. Letonia and Eſtonia; and two iſlands called *Oeſel* and *Dagho*, which are again ſubdivided into ſeveral diſtricts.

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* See *Chemiſtry*, nº 460.

LIVONICA TERRA, a kind of fine bole uſed in the ſhops of Germany and Italy. It is found in Livonia, from whence it takes its name, and alſo in ſome other parts of the world. It is generally brought to us in little cakes, ſealed with the impreſſion of a church and an eſcutcheon, with two croſs keys.

LIVRE, a French money of account, containing 20 ſols. See MONEY-*Table*.

LIXIVIOUS, an appellation given to ſalts obtained from burnt vegetables by pouring water on their aſhes.

LIXIVIUM, in pharmacy, &c. a ley obtained by pouring ſome liquor upon the aſhes of plants; which is more or leſs powerful, as it has imbibed the fixed ſalts contained in the aſhes.

LIZARD, in zoology. See LACERTA.

LIZARD, in geography, a cape or promontory of Cornwall, ſituated according to the moſt common computation, in W. Long. 5. 47. N. Lat. 49. 50.

LLOYD (Nicholas), a learned Engliſh writer in the 17th century, was born in Flintſhire in England, and educated at Wadham college, Oxford. He was rector of Newington St Mary near Lambeth, in Surry, till his death, which happened in 1680. His *Dictionarium Hiſtoricum* is a valuable work, to which Hoffman and Moreri are greatly indebted.

LLOYD (William), a moſt learned Engliſh writer and biſhop, was born in Berkſhire in England, in 1627. He was educated under his father, rector of Sonning, and vicar of Tyle-hurſt in Berkſhire; then went to Oxford, and took orders. In 1660, he was made prebendary of Rippon; and in 1666, chaplain to the king. In 1667, he took the degree of doctor of divinity; in 1672, he was inſtalled dean of Bangor; and in 1680, was conſecrated biſhop of St Aſaph. He was one of the ſix biſhops who, with archbiſhop Sancroft, were committed priſoners to the tower of London, for ſubſcribing a petition to the king againſt diſtributing and publiſhing his declaration for liberty of conſcience. Soon after the revolution he was made almoner to king William and queen Mary: in 1692, he was tranſlated to the biſhopric of Litchfield and Coventry; and in 1699, to the ſee of Worceſter, where he ſat till his death, which happened in 1717, the 91ſt year of his age. Dr Burnet gives him an exalted character, and his works are highly eſteemed.

LOACH, in ichthyology. See COBITIS.

LOADSTONE. See MAGNET.

LOAMS, in natural hiſtory, are defined to be earths compoſed of diſſimilar particles, ſtiff, denſe, hard, and rough to the touch; not eaſily broke while moiſt, readily diffuſible in water, and compoſed of ſand and a tough viſcid clay. Of theſe loams ſome are whitiſh and others brown or yellow.

LOAN, any thing given to another, on condition of return or repayment.

Public LOANS. See FUNDS, and NATIONAL *Debt*.

LOANDA, a province of the kingdom of Angola in Africa. It is an iſland about 15 miles in length, and three in breadth; remarkable chiefly for the capital of Angola ſituated upon it, in E. Long. 12. 25. S. Lat 8. 45. This town was built by the Portugueſe in 1578, under the direction of the firſt Portugueſe governor in theſe parts. It is large, populous, and pleaſantly ſeated on the declivity of a hill near the ſea-coaſt, and facing the ſouth-weſt. The iſland is ſupplied with freſh water from wells dug in it; and which are not ſunk below the depth of three feet when they are filled with excellent water. It is remarkable, however, that the water of theſe wells continues good only during the time of high-tide; for, as that ſinks, the water becomes more and more brackiſh, till at laſt it is quite ſalt, almoſt as much as the ſea itſelf. On the coaſt of this iſland are fiſhed the zimbis, or ſhells uſed in ſeveral parts of Africa, inſtead of money; and with theſe ſhells, inſtead of coin, is carried on a great part of the traffic of this country.

LOANGO, a kingdom of Africa, extending itſelf about 180 geographical miles in length from ſouth to north; that is, from cape St Catherine under the ſecond degree of ſouth latitude, to a ſmall river called *Lovanda Louiſia*, on the 5th degree of the ſame. From weſt to eaſt it extends from Cape Negro on the coaſt of Ethiopia towards the *Buchumalean* mountains, ſo called on account of their vaſt quantity of ivory and great droves of elephants, about 300 miles. It is divided into four principal provinces, viz. thoſe of Lovangiri, Loango-mongo, Chilongo, and Piri.

The inhabitants are very black, well-ſhaped, and of a mild temper. The men wear long petticoats, from the waiſt downwards; and have round their waiſt a piece of cloth, half an ell or a quarter broad, over which they wear the ſkin of a leopard, or ſome other wild beaſt, hanging before them like an apron. On their head they wear a cap made of graſs, and quilted, with a feather a-top of it; and on their ſhoulder, or in their hand, they carry a buffalo's tail, or drive away the muſkettos. The womens petticoats are made only of ſtraw, about an ell ſquare, with which they cover their privities, but leave the greateſt part of their thighs and buttocks bare: the reſt of their body is quite bare, except that on their legs they wear little ſtrings of beads made of ſhells, and ſmall bracelets of ivory on their arms. They anoint themſelves with palm-oil, mixed with a kind of red wood reduced to powder.

This country abounds with poultry, oxen, cows, ſheep, goats, elephants, tigers, leopards, civet-cats, and other animals; ſo that here are great quantities of elephants teeth, and fine furs, to be traded for.

The capital city, where the king reſides, is called *Loango*, or *Banza-Loangeri*, and, in the language of the negroes, *Boaric*. This city is ſituated in 4° S. Lat. and a half, a league and a half from the ſea-coaſt. It is a pretty large city, ſhaded and adorned with bananas, palm, and other trees. The king, who reſides in a large palace in the middle of it, has about 1500 concubines. If any of them is ſurpriſed in adultery, ſhe and her paramour are inſtantly conveyed to the top of a very high hill, whence they are hurled down headlong from the ſteepeſt place.

Every man marries as many wives here as pleaſes, who are obliged to get their huſbands livelihood, as is the practice all along the African coaſt inhabited by blacks. The women therefore cultivate the land, ſow and reap, while the lazy huſbands loiter away their time in idleneſs.

The king's revenue conſiſts in elephants teeth, copper, and a kind of petticoats made of palm-tree leaves, and called *lavogus:* he has whole ſtore-houſes full of theſe lavogus; but his greateſt riches conſiſt in ſlaves of both ſexes.

LOBE, in anatomy, any fleſhy protuberant part, as the lobes of the lungs, the lobes of the ears, &c.

LOBELIA, CARDINAL-FLOWER; a genus of the monogamia order, belonging to the ſyngeneſia claſs of plants. There is a great number of ſpecies, but only four of them are cultivated in our gardens; two of which are hardy herbaceous plants for the open ground, and two ſhrubby plants for the ſtove. They are all fibrous rooted perennials, riſing with erect ſtalks from two to five or ſix feet high, ornamented with oblong, oval, ſpear-ſhaped, ſimple leaves; and ſpikes of beautiful monopetalous, ſomewhat ringent, five-parted flowers, of ſcarlet, blue, and violet colours. They are eaſily propagated by ſeeds, offſets, and cuttings of their ſtalks. The tender kinds require the common treatment of other exotics. They are natives of America; from which their ſeeds muſt be procured.

LOBINEAU (Guy Alexis), a Benedictine monk, born at Rennes in 1666, ſpent his whole life in the ſtudy of hiſtory, and the writing of ſeveral works; the principal of which are, The hiſtory of Britany, 2 vols folio; and A continuation of Felibien's hiſtory of Paris, 9 vols folio. He died in 1727.

LOBO (Rodriguez Francis), a celebrated Portugueſe poet, was born at Leiria, a ſmall town of Eſtramadura. He wrote an heroic poem, ſome eclogues, and a piece entitled *Euphroſyne*, which is the favourite comedy of the Portugueſe. His works were collected and printed together in Portugueſe in 1721, in folio. He flouriſhed about 1610.

LOBO (Jerome), a famous Portugueſe Jeſuit, born at Liſbon, went into Ethiopia, and dwelt there for a long time. At his return he was made rector of the college of Coimbra, where he died in 1678. He wrote An hiſtorical account of Abyſſinia, which is by ſome eſteemed a very accurate performance.

LOBSTER, in zoology, a ſpecies of cancer. See CANCER.

LOCAL, in law, ſomething fixed to the freehold, or tied to a certain place: thus, real actions are local, ſince they muſt be brought in the country where they lie; and local cuſtoms are thoſe peculiar to certain countries and places.

LOCAL *Medicines*, thoſe deſtined to act upon particular parts; as fomentations, epithems, veſicatories, &c.

LOCARNO, a town of Swiſſerland, capital of a bailiwick of the ſame name, ſeated at the north end of the lake Maggiore, near the river Magie. It carries on a great trade; and the country abounds in paſtures, wine, and fruits. E. Long. 8. 41. N. Lat. 46. 6.

LOCATELLUS's BALSAM. See PHARMACY, n° 890.

LOCHABER, a diſtrict of the ſhire of Inverneſs in Scotland. It is bounded on the north by Badenoch, by Athol on the eaſt, by Lorn and Braidalbin on the ſouth, and by a mountainous ridge on the weſt towards the ſea-ſhore. It derives its name from the lake, or loch, Aber; and extends about 20 miles from eaſt to weſt, and 30 from north to ſouth. The country is barren, bleak, mountainous, and rugged. In one of the moſt barren parts of this country, near the mouth of the river Aber, in the centre between the Weſt and North Highlands, ſtands Fort-William, with the town of Maryburgh, built upon a navigable arm of the ſea, not far from the foot of a very high mountain, called *Benevis*. The town, deſigned as a ſutlery for the garriſon, was erected into a borough; and the fort itſelf was deſigned as a check upon the clan Cameron, who had been guilty of depredations and other irregularities. It is inhabited moſtly by the Macdonalds, Camerons, and Mackintoſhes; who are not the moſt civilized people in Scotland, though their chiefs are generally perſons of education, honour, and hoſpitality. Macdonald of Glengary, deſcended in a ſtraight line from Donald of the Iſles, poſſeſſed a ſeat or caſtle in this diſtrict, which was burned to the ground, and deſtroyed in the year 1715, in conſequence of his declaring for the pretender. The elegant houſe and gardens belonging to Cameron of Lochiel underwent the ſame fate, for the ſame reaſon, after the extinction of the rebellion in the year 1746. The cadets of theſe families, which have formed a kind of inferior gentry, are lazy, indigent, and uncleanly; proud, ferocious, and vindictive. The common people, though celebrated for their bravery, fidelity, and attachment to their chiefs, are counted very ſavage, and much addicted to rapine. They ſpeak the Erſe language, and conform to the cuſtoms we have deſcribed as peculiar to the Highlanders. They pay very little attention to any ſort of commerce, but that which conſiſts in the ſale of their black cattle, and lead a ſort of vagrant life among the hills; hunting, fowling, and fiſhing, as the ſeaſons permit, and as their occaſions require. They delight in arms, which they learn to handle from their infancy; ſubmit patiently to diſcipline in the character of ſoldiers; and never fail to ſignalize themſelves in the field by their ſobriety, as well as their valour. While they remain in their own country, nothing can be more penurious, mean, ſordid, and uncomfortable, than the way of life to which theſe poor people are inured, whether we conſider their dreſs, diet, or lodging. In point of proviſion, they are ſo improvident, or ill ſupplied, that, before the winter is over, whole families are in danger of ſtarving. In this emergency, they bleed their miſerable cattle, already reduced to ſkin and bone, and eat the blood boiled with oatmeal, This evacuation, added to their former weakneſs, enfeebles the cows to ſuch a degree, that, when they lie down, they cannot riſe again without aſſiſtance.

LOCHIA, in midwifery, a flux from the uterus conſequent to delivery. See MIDWIFERY.

LOCK, a well-known inſtrument uſed for faſtening doors, cheſts, &c. generally opened by a key.

LOCKE (John), a moſt eminent Engliſh philoſopher and writer in the latter end of the 17th century, was ſon of Mr John Locke of Penſford in Somerſetſhire, and born at Wrington near Briſtol in 1632. He was ſent to Chriſt-church in Oxford; but was highly diſſatisfied with the common courſe of ſtudies then purſued in the univerſity, where nothing was taught but the Ariſtotelian philoſophy; and had a great averſion to the diſputes of the ſchools then in uſe. The firſt books which gave him a reliſh for philoſophy, were the writings of Des Cartes: for though he did not always approve of his notions, yet he thought he wrote with great perſpicuity. He applied himſelf with vigour to his ſtudies, particularly to phyſic, in which he gained a conſiderable knowledge, though he never practiſed it. In 1694, he went to Germany as ſecretary to Sir William Swan, envoy from the Engliſh court to the elector of Brandenburg and ſome other German princes. In leſs than a year, he returned to England; where, among other ſtudies, he applied himſelf to that of natural philoſophy, as appears from a regiſter of the changes of the air, which he kept at Oxford from June 24. 1666, to March 28. 1667. There he became acquainted with the lord Aſhley, afterwards earl of Shafteſbury, who introduced him into the converſation of ſome of the moſt eminent perſons of that time. In 1670, he began to form the plan of his *Eſſay on Human Underſtanding;* but his employments and avocations prevented him from finiſhing it then. About this time he became a member of the Royal Society. In 1672, his patron, now earl of Shafteſbury, and lord chancellor of England, appointed him ſecretary of the preſentations, which place he held till the earl reſigned the great ſeal. In 1673, he was made ſecretary to a commiſſion of trade, worth 500l. a-year; but that commiſſion was diſſolved in 1674. The earl of Shafteſbury being reſtored to favour, and made preſident of the council in 1679, ſent for Mr Locke to London: but that nobleman did not continue long in his poſt, being ſent priſoner to the tower; and after his diſcharge, retired to Holland in 1682.

Mr Locke followed his patron thither. He had not been abſent from England a year, when he was accuſed at court of having written certain tracts againſt the government, which were afterward diſcovered to be written by another perſon; and in November 1684, he was deprived of his place of ſtudent in Chriſt-church. In 1685, the Engliſh envoy at the Hague demanded him and 83 other perſons to be delivered up by the States General: upon which he lay concealed till the year following; and during this time formed a weekly aſſembly with Mr Limborch, Mr Le Clerc, and other learned men at Amſterdam. In 1689, he returned to England in the fleet which conveyed the princeſs of Orange; and endeavoured to procure his reſtoration to his place of ſtudent of Chriſt-church, that it might appear from thence that he had been unjuſtly deprived of it: but when he found the college would admit him only as a ſupernumerary ſtudent, he deſiſted from his claim.

Being eſteemed a ſufferer for revolution-principles, he might eaſily have obtained a more profitable poſt; but he contented himſelf with that of commiſſioner of appeals, worth 200l. a-year, which was procured for him by the Lord Mordaunt, afterwards earl of Monmouth, and next of Peterborough. About the ſame time he was offered to go abroad in a public character; and it was left to his choice, whether he would be envoy at the court of the emperor, that of the elector of Brandenburg, or any other where he thought the air moſt ſuitable to him: but he waved all theſe, on account of the infirm ſtate of his health; which diſpoſed him gladly to accept another offer that was made by Sir Francis Maſham and his lady, of an apartment in their country-ſeat at Oates in Eſſex, about 25 miles from London.

This place proved ſo agreeable to him in every reſpect, that it is no wonder he ſpent the greateſt part of the remainder of his life at it. The air reſtored him almoſt to a miracle, in a few hours after his return at any time from the town, quite ſpent and unable to ſupport himſelf. Beſides this happineſs here, he found in lady Maſham a friend and companion exactly to his heart's wiſh; a lady of a contemplative and ſtudious complexion, and particularly inured, from her infancy, to deep and refined ſpeculations in theology, metaphyſics, and morality. In this family Mr Locke lived with as much eaſe as if the whole houſe had been his own: and he had the additional ſatisfaction of ſeeing this lady breed up her only ſon exactly upon the plan which he had laid down for the beſt method of education; the ſucceſs of which was ſuch as ſeemed to give a ſanction to his judgment in the choice of that method. In effect, it is to the advantage of this ſituation, that he derived ſo much ſtrength, as to continue exerting thoſe talents which the earl of Shafteſbury had obſerved to be in him for political ſubjects. Hence we find him writing in defence of the Revolution in one piece; and conſidering the great national concern at that time, the ill ſtate of the ſilver-coin, and propoſing remedies for it, in others. Hence he was made a commiſſioner of trade and plantations in 1695, which engaged him in the immediate buſineſs of the ſtate; and with regard to the church, he publiſhed a treatiſe the ſame year, to promote the ſcheme which king William had much at heart, of a comprehenſion with the diſſenters. This, however, drew him into one controverſy; which was ſcarcely ended, when he entered into another in defence of his eſſay, which held till 1698: ſoon after which the aſthma, his conſtitutional diſorder, increaſing with his years, began to ſubdue him; and he became ſo infirm, that in 1700 he reſigned his ſeat at the board of trade, becauſe he could no longer bear the air of London ſufficient for a regular attendance upon it. After this reſignation, he continued altogether at Oates; in which retirement he employed the remaining laſt years of his life entirely in the ſtudy of the holy Scriptures.

He died in 1704, aged 73. His writings will immortalize his name. The earl of Shafteſbury, author of the *Characteriſtics*, though in one place he ſpeaks of Mr Locke's philoſophy with ſeverity; yet obſerves, concerning his *Eſſay on the Human Underſtanding*, in general, "that it may qualify men as well for buſineſs and the world, as for the ſciences and the univerſity." Whoever is acquainted with the barbarous ſtate of the philoſophy of the human mind, when Mr Locke undertook to pave the way to a clear notion of knowledge, and the proper methods of purſuing and advancing it, will be ſurpriſed at this great man's abilities; and plainly diſcover how much we are beholden to him for any conſiderable improvements that have been made ſince. His *Diſcourſes on Government*, *Letters on Toleration*, and his *Commentaries on ſome of St Paul's epiſtles*, are juſtly held in the higheſt eſteem.

LOCKED Jaw. See (the *Index* ſubjoined to) Medicine.

LOCKMAN, an officer in the Iſle of Man, who executes the orders of government, much like our under-ſheriff.

Lockman, an eaſtern philoſopher. See Lokman.

LOCUS geometricus, denotes a line by which a local or indeterminate problem is ſolved.

A *locus* is a line, any point of which may equally ſolve an indeterminate problem. Thus, if a right line ſuffice for the conſtruction of the equation, it is called *locus ad rectum;* if a circle, *locus ad circulum;* if a parabola, *locus ad parabolam;* if an ellipſis, *locus ad ellipſin:* and ſo of the reſt of the conic ſections.

LOCULAMENTA, and Loculi, in botany; cells or pockets: The internal diviſions of a capſule, or other dry ſeed-veſſel, ſo termed.—Theſe cells contain or incloſe the ſeeds; and are different in number in different plants.

The term loculus is alſo ſometimes uſed to expreſs the minute diviſions in ſome ſpecies of *antheræ*, which contain the fine impalpable powder ſuppoſed by the ſexualiſts to be the principal agent in the generation of plants.

LOCUST, in zoology. See Gryllus, and Plate CXL.

The annals of moſt of the warm countries are filled with accounts of the devaſtations produced by the locuſts, who ſometimes make their appearance in clouds of two or three miles in length, and ſeveral yards deep. They ſeldom viſit Europe in ſuch ſwarms as formerly; yet in the warmer parts of it are ſtill formidable.—Thoſe which have at uncertain intervals viſited Europe in our memory, are ſuppoſed to have come from Africa, and are of that ſpecies called the *great brown locuſt*. This inſect is about three inches long, and has two horns or feelers an inch in length. The head and horns are of a browniſh colour; it is blue about the mouth, as alſo on the inſide of the larger legs. The ſhield which covers the back is greeniſh; and the upper-ſide of the body brown, ſpotted black, and the under-ſide purple. The upper-wings are brown, with ſmall duſky ſpots, and one larger ſpot at the tips. The under-wings are more tranſparent, and of a light brown tinctured with green, but there is a dark cloud of ſpots near the tips.

Theſe inſects are bred in the warm parts of Aſia and Africa, from whence they have often taken their flight into Europe, where they committed terrible devaſtations. They multiply faſter than any other animal in the creation, and are truely terrible in the countries where they breed. Some of them were ſeen in different parts of Britain in the year 1748, and great miſchiefs were apprehended: but happily for us, the coldneſs of our climate, and the humidity of our ſoil, are very unfavourable to their production; ſo that, as they are only animals of a year's continuance, they all periſh without leaving a young generation to ſucceed them.

When the locuſts take the field, as we are aſſured, they have a leader at their head, whoſe flight they obſerve, and pay a ſtrict regard to all his motions. They appear at a diſtance like a black cloud, which, as it approaches, gathers upon the horizon, and almoſt hides the light of day. It often happens, that the huſbandman ſees this imminent calamity paſs away without doing him any miſchief; and the whole ſwarm proceeds onward to ſettle upon ſome leſs fortunate country. In thoſe places, however, where they alight, they deſtroy every green thing, ſtripping the trees of their leaves, as well as devouring the corn and graſs. In the tropical climates they are not ſo pernicious as in the more ſouthern parts of Europe. In the firſt, the power of vegetation is ſo ſtrong, that an interval of three or four days repairs the damage; but in Europe this cannot be done till next year. Beſides, in their long flights to this part of the world, they are famiſhed by the length of their journey, and are therefore more voracious wherever they happen to ſettle. But as much damage is occaſioned by what they deſtroy, as by what they devour. Their bite is thought to contaminate the plant, and either to deſtroy or greatly to weaken its vegetation. To uſe the expreſſion of the huſbandmen, they burn whatever they touch, and leave the marks of their devaſtation for three or four years enſuing. When dead, they infect the air in ſuch a manner that the ſtench is inſupportable.—Oroſius tells us, that, in the year of the world 3800, Africa was infeſted with a multitude of locuſts. After having eaten up every thing that was green, they flew off and were drowned in the ſea; where they cauſed ſuch a ſtench as could not have been equalled by the putrefying carcaſes of 100,000 men.

In the year 1650, a cloud of locuſts was ſeen to enter Ruſſia in three different places; and from thence they ſpread themſelves over Poland and Lithuania in ſuch aſtoniſhing multitudes, that the air was darkened and the earth covered with their numbers. In ſome places, they were ſeen lying dead, heaped upon each other to the depth of four feet; in others, they covered the ſurface like a black cloth; the trees bent with their weight, and the damage which the country ſuſtained exceeded computation.

In Barbary, their numbers are formidable, and their viſits frequent. Dr Shaw was a witneſs of their devaſtations in that country in 1724. Their firſt appearance was in the latter end of March, when the wind had been ſoutherly for ſome time. In the beginning of April, their numbers were ſo vaſtly increaſed, that, in the heat of the day, they formed themſelves into large ſwarms that appeared like clouds, and darkened the ſun. In the middle of May they began to diſappear, retiring into the plains to depoſit their eggs. In June the young brood began to make their appearance, forming many compact bodies of ſeveral hundred yards ſquare; which afterwards marching forward, climbed the trees, walls, and houſes, eating every thing that was green in their way. The inhabitants, to ſtop their progreſs, laid trenches all over their fields and gardens, which they filled with water. Some placed large quantities of heath, ſtubble, and ſuch like combuſtible matter, in rows, and ſet them on fire on the approach of the locuſts. But all this was to no purpoſe; for the trenches were quickly filled up, and the fires put out by the great numbers of ſwarms that ſucceeded each other. A day or two after one of theſe was in motion, others that were juſt hatched came to glean after them, gnawing off the young branches, and the very bark of the trees. Having

lived

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Plate CLXI.

Fig. 1. LACERTA SALAMANDRA *or Salamander*

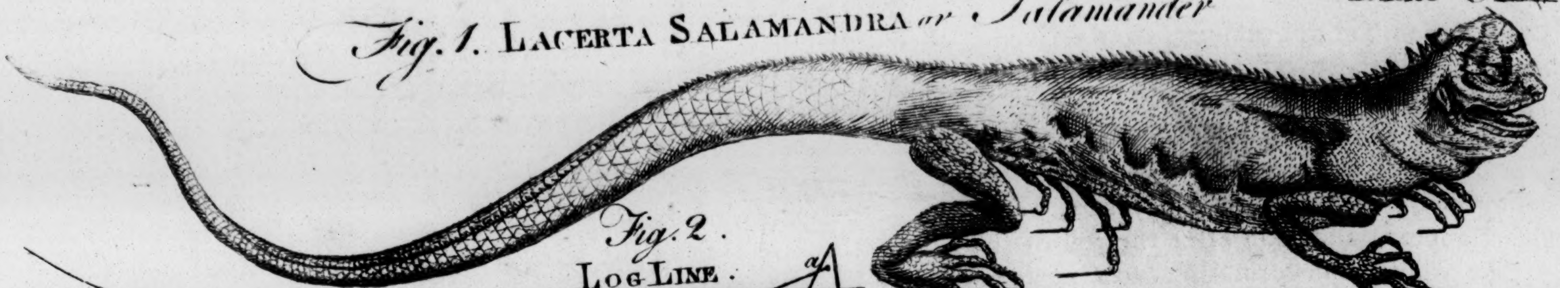
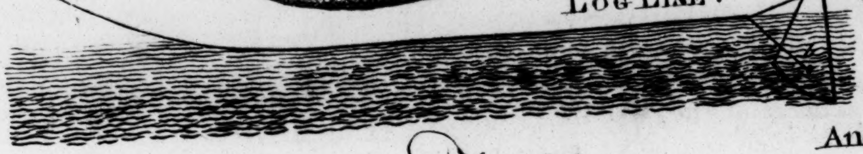


Fig. 2. LOG LINE.



Ancient LYRE'S.

Fig. 5. LOGARITHMIC CURVE.

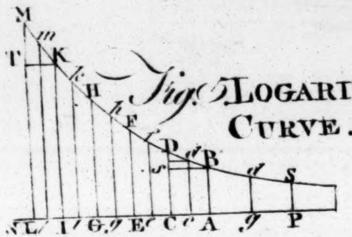

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Fig. 6. LOGARITHMS. No. 2. No. 1.

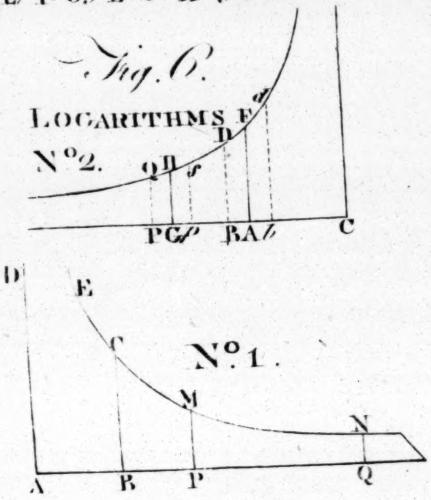
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Fig. 9

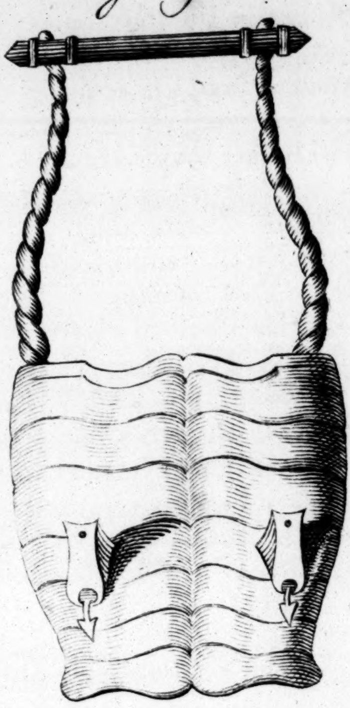


Fig. 10.

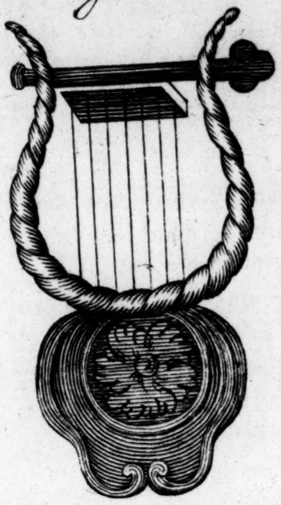


Fig. 11.

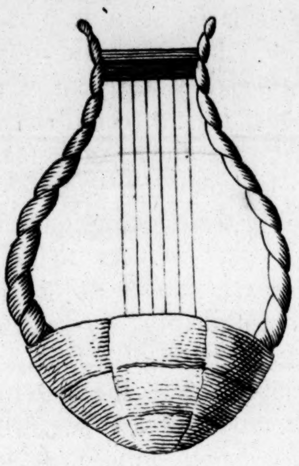


Fig. 7. HULK.

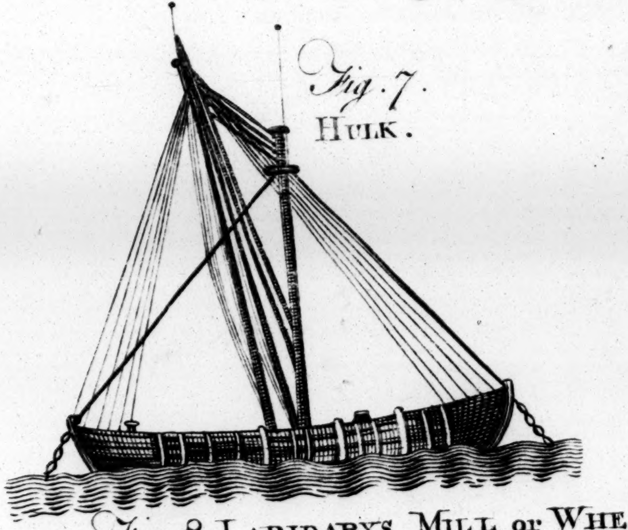


Fig. 12.

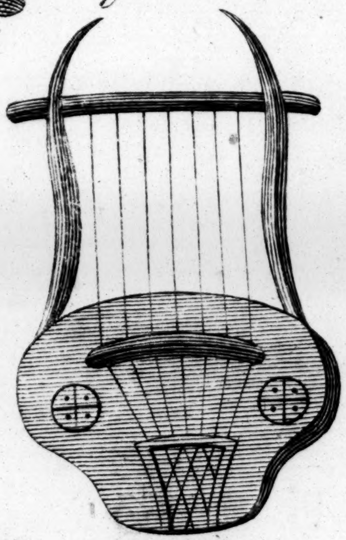


Fig. 13.

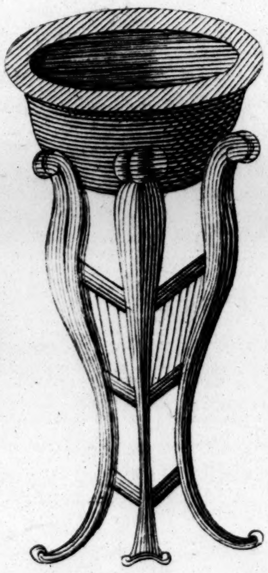


Fig. 14.

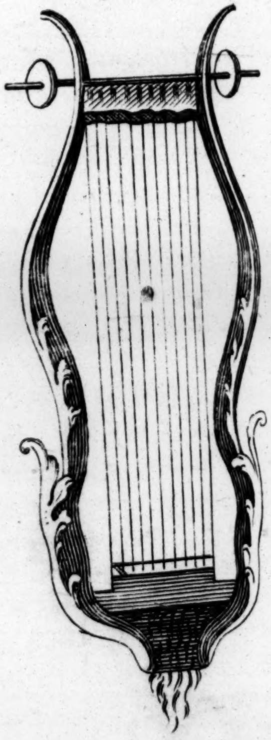
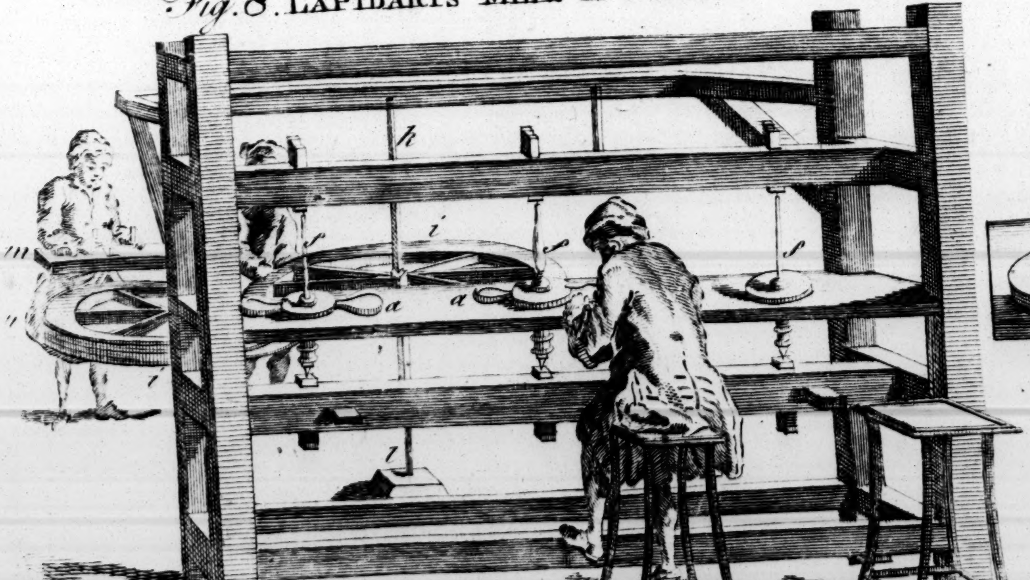


Fig. 8. LAPIDARY'S MILL or WHEEL.



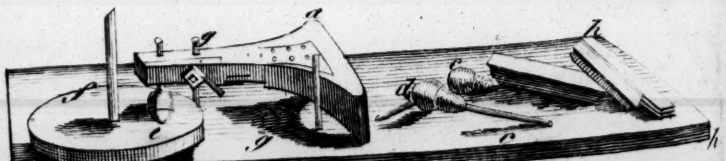


Fig. 3. LOG.

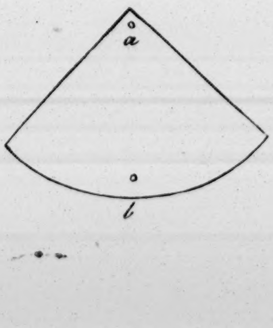
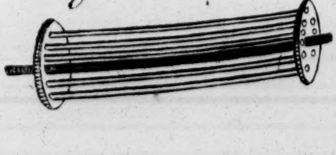


Fig. 4. LOG Reel.



A. Bell Sculp.

Locust || Log.

lived near a month in this manner, they arrived at their full growth, and threw off their worm-like ſtate, by caſting their ſkins. To prepare themſelves for this change, they fixed their hinder part to ſome buſh or twig, or corner of a ſtone, when immediately, by an undulating motion uſed on this occaſion, their heads would firſt appear, and ſoon after the reſt of their bodies. The whole transformation was performed in ſeven or eight minutes time, after which they remained for a little while in a languiſhing condition; but as ſoon as the ſun and air had hardened their wings, and dried up the moiſture that remained after caſting off their former ſloughs, they returned to their former greedineſs, with an addition both of ſtrength and agility. But they did not long continue in this ſtate before they were entirely diſperſed. After laying their eggs, they directed their courſe northward, and probably periſhed in the ſea.

It would be endleſs to recount all the miſchiefs which theſe locuſts have at different times occaſioned; but what induces them to take ſuch diſtant flights as they are known to do, ſeems not eaſily diſcovered. Moſt probably, by reaſon of very dry ſeaſons in the internal parts of Africa, they are propagated in ſuch numbers, that the vegetables of the ſpot where they are produced are not ſufficient for their maintenance. Thus being obliged to find out other countries, they traverſe the ſandy deſarts; and ſtill meeting with nothing to allure them from their flight, they proceed forward acroſs the ſea, and thus come into Europe, where they alight upon the firſt green paſtures that occur.

In ſome parts of the world, locuſts are uſed as food*. In many oriental countries they are caught in ſmall nets provided for that purpoſe. They parch them over the fire in an earthen pan; and when their wings and legs are fallen off, they turn reddiſh, of the colour of boiled ſhrimps. Dampier has eat them thus prepared, and thinks them a tolerable diſh. The natives of Barbary alſo eat them fried with ſalt; and they are ſaid to taſte like cray-fiſh.

* Acri- gi.

Locust-*Eaters*. See the laſt article, and Acridophagi.

American Locust. See Cicada.

LODGEMENT, in military affairs, a work made by the beſiegers in ſome part of a fortification, (after the beſieged have been driven out), to maintain it, and be covered from the enemy's fire.—When a lodgement is to be made on the glacis, covert-way, or in a breach, there muſt be a great proviſion made of faſcines, ſand-bags, gabions, wool-packs, &c. in the trenches; and during the action, the pioneers, under the direction of an engineer, with faſcines, ſand-bags, &c. ſhould be making the lodgement, in order to form a covering, while the grenadiers are ſtorming the covert-way.

LOG, a machine uſed to meaſure the ſhip's head-way, or the rate of her velocity as ſhe advances through the ſea. It is compoſed of a reel and line, to which is fixed a ſmall piece of wood, forming the quadrant of a circle. The term *log* however is more particularly applied to the latter. See Navigation.

It is uſual to heave the log once every hour in ſhips of war and Eaſt-Indiamen; and in all other veſſels, once in two hours; and if at any time of the watch, the wind has increaſed or abated in the intervals, ſo as to affect the ſhip's velocity, the officer generally makes a ſuitable allowance for it, at the cloſe of the watch.

Log || Logarithmic.

Log-*Board*, a ſort of table, divided into ſeveral columns, containing the hours of the day and night, the direction of the winds, the courſe of the ſhip, and all the material occurrences that happen during the 24 hours, or from noon to noon; together with the latitude by obſervation. From this table the different officers of the ſhip are furniſhed with materials to compile their journals, wherein they likewiſe inſert whatever may have been omitted, or reject what may appear ſuperfluous in the log-board.

Log-*Book*, a book into which the contents of the log-board is daily copied at noon, together with every circumſtance deſerving notice, that may happen to the ſhip, or within her cognizance, either at ſea or in a harbour, &c. The intermediate diviſions or watches of the log-book, containing four hours each, are uſually ſigned by the commanding officer thereof, in ſhips of war or Eaſt-Indiamen. See Navigation.

LOGWOOD. See Hæmatoxylon.

LOGARITHMIC curve. If on the line AN both ways indefinitely extended, be taken AC, CE, EG, GI, IL, on the right hand; and alſo A*g*, *g*P, &c. on the left, all equal to one another: and if at the points P*g*, A, C, E, G, I, L, be erected to the right line AN, the perpendiculars PS, *gd*, AB, CD, EF, GH, IK, LM, which let be continually proportional, and repreſent numbers, viz. AB, 1; CD, 10; EF, 100, &c. then ſhall we have two progreſſions of lines, arithmetical and geometrical: for the lines AC, AE, AG, &c. are in arithmetical progreſſion, or as 1, 2, 3, 4, 5, &c. and ſo repreſent the logarithms to which the geometrical lines AB, CD, EF, &c. do correſpond. For ſince AG is triple of the firſt line AC, the number GH ſhall be in the third place from unity, if CD be in the firſt: ſo likewiſe ſhall LM be in the fifth place, ſince $AL=5AC$. If the extremities of the proportionals S, *d*, B, D, F, &c. be joined by right lines, the figures SBML will become a polygon, conſiſting of more or leſs ſides, according as there are more or leſs terms in the progreſſion.

Plate CLXI. fig. 5.

If the parts AC, CE, EG, &c. be biſected in the points, *c*, *e*, *g*, *i*, *l*, and there be again raiſed the perpendiculars *cd*, *ef*, *gh*, *ik*, *lm*, which are mean proportionals between AB, CD; CD, EF, &c. then there will ariſe a new ſeries of proportionals, whoſe terms, beginning from that which immediately follows unity, are double of thoſe in the firſt ſeries, and the difference of the terms is become leſs, and approach nearer to a ratio of equality, than before. Likewiſe, in this new ſeries, the right lines AL, A*c*, expreſs the diſtances of the terms LM, *cd*, from unity, viz. ſince AL is ten times greater than A*c*, LM ſhall be the tenth term of the ſeries from unity: and becauſe A*e* is three times greater than A*c*, *ef* will be the third term of the ſeries if *cd* be the firſt, and there ſhall be two mean proportionals between AB and *ef*, and between AB and LM there will be nine mean proportionals. And if the extremities of the lines B*d*, D*f*, F*h*, &c. be joined by right lines, there will be a new polygon made, conſiſting of more but ſhorter ſides than the laſt.

If, in this manner, mean proportionals be continually placed between every two terms, the number of terms at laſt will be made ſo great, as alſo the number of the ſides of the polygon, as to be greater than any given number, or to be infinite; and every ſide of the polygon ſo leſſened, as to become leſs than any given right line; and conſequently the polygon will be changed into a curve-lined figure; for any curve-lined figure may be conceived as a polygon, whoſe ſides are infinitely ſmall and infinite in number. A curve deſcribed after this manner is called *logarithmical.*

It is manifeſt from this deſcription of the logarithmic curve, that all numbers at equal diſtances are continually proportional. It is alſo plain, that if there be four numbers, AB, CD, IK, LM, ſuch that the diſtance between the firſt and ſecond be equal to the diſtance between the third and the fourth, let the diſtance from the ſecond to the third be what it will, theſe numbers will be proportional. For becauſe the diſtances AC, IL, are equal, AB ſhall be to the increment D*s*, as IK is to the increment MT. Wherefore, by compoſition, AB : DC : : IK : ML. And, contrariwiſe, if four numbers be proportional, the diſtance between the firſt and ſecond ſhall be equal to the diſtance between the third and fourth.

The diſtance between any two numbers, is called the *logarithm of the ratio of thoſe numbers:* and, indeed, doth not meaſure the ratio itſelf, but the number of terms in a given ſeries of geometrical proportionals, proceeding from one number to another, and defines the number of equal ratios by the compoſition whereof the ratio of numbers is known.

LOGARITHMS, are the indexes or exponents (moſtly whole numbers and decimal fractions, conſiſting of ſeven places of figures at leaſt) of the powers or roots (chiefly broken) of a given number; yet ſuch indexes or exponents, that the ſeveral powers or roots they expreſs are the natural numbers 1, 2, 3, 4, 5, &c. to 10 or 100000, &c. (as, if the given number be 10, and its index be aſſumed 1.0000000, then the 0.0000000 root of 10, which is 1, will be the logarithm of 1; the 0.301036 root of 10, which is 2, will be the logarithm of 2; the 0,477121 root of 10, which is 3, will be the logarithm of 3; the 1.612060 root of 10, the logarithm of 4; the 1.041393 power of 10, the logarithm of 11; the 1.079181 power of 10 the logarithm of 12, &c.) being chiefly contrived for eaſe and expedition in performing of arithmetical operations in large numbers, and in trigonometrical calculations; but they have likewiſe been found of extenſive ſervice in the higher geometry, particularly in the method of fluxions. They are generally founded on this conſideration, that if there be any row of geometrical proportional numbers, as 1, 2, 4, 8, 16, 32, 64, 128, 256, &c. or 1, 10, 100, 1000, 10000, &c. and as many arithmetical progreſſional numbers adapted to them, or ſet over them, beginning with 0,

$$\text{thus, } \left\{\begin{array}{lllllllll} 0, & 1, & 2, & 3, & 4, & 5, & 6, & 7, & \&c. \\ 1, & 2, & 4, & 8, & 16, & 32, & 64, & 128, & \&c. \end{array}\right\}$$

$$\text{or, } \left\{\begin{array}{llllll} 0, & 1, & 2, & 3, & 4, & \&c. \\ 1, & 10, & 100, & 1000, & 10000, & \&c. \end{array}\right\}$$

then will the ſum of any two of theſe arithmetical progreſſionals, added together, be that arithmetical progreſſional which anſwers to or ſtands over the geometrical progreſſional, which is the product of the two geometrical progreſſionals over which the two aſſumed arithmetical progreſſionals ſtand: again, if thoſe arithmetical progreſſionals be ſubtracted from each other, the remainder will be the arithmetical progreſſional ſtanding over that geometrical progreſſional which is the quotient of the diviſion of the two geometrical progreſſionals belonging to the two firſt aſſumed arithmetical progreſſionals; and the double, triple, &c. of any one of the arithmetical progreſſionals, will be the arithmetical progreſſional ſtanding over the ſquare, cube, &c. of that geometrical progreſſional which the aſſumed arithmetical progreſſional ſtands over, as well as the $\frac{1}{2}$, $\frac{1}{3}$, &c. of that arithmetical progreſſional will be the geometrical progreſſional anſwering to the ſquare root, cube root, &c. of the arithmetical progreſſional over it; and from hence ariſes the following common, tho' lame and imperfect definition of logarithms, viz. "That they are ſo many arithmetical progreſſionals, anſwering to the ſame number of geometrical ones." Whereas, if any one looks into the tables of logarithms, he will find, that theſe do not all run on in an arithmetical progreſſion, nor the numbers they anſwer to in a geometrical one; theſe laſt being themſelves arithmetical progreſſionals. Dr Wallis, in his Hiſtory of Algebra, calls logarithms the indexes of the ratios of numbers to one another. Dr Halley, in the Philoſophical Tranſactions, n° 216, ſays, they are the exponents of the ratios of unity to numbers. So alſo Mr Cotes, in his *Harmonia Menſurarum,* ſays, they are the numerical meaſures of ratios. But all theſe definitions convey but a very confuſed notion of logarithms. Mr Maclaurin, in his Treatiſe of Fluxions, has explained the nature and geneſis of logarithms agreeably to the notion of their firſt inventor Lord Naper. Logarithms then, and the quantities to which they correſpond, may be ſuppoſed to be generated by the motion of a point; and if this point moves over equal ſpaces in equal times, the line deſcribed by it increaſes equally.

Again a line decreaſes proportionably, when the point that moves over it deſcribes ſuch parts in equal times as are always in the ſame conſtant ratio to the lines from which they are ſubducted, or to the diſtances of that point, at the beginning of thoſe lines, from a given term in that line. In like manner, a line may increaſe proportionably, if in equal times the moving point deſcribes ſpaces proportional to its diſtances from a certain term at the beginning of each time. Thus, in the firſt caſe, let *ac* be to *ao*, *cd* to *co*, *de* to *do*, *ef* to *eo*, *fg* to *fo*, always in the ſame ratio of QR to QS; and ſuppoſe the point P ſets out from *a*, deſcribing *ac*, *cd*, *de*, *ef*, *fg*, in equal parts of the time; and let the ſpace deſcribed by P in any given time be always in the ſame ratio to the diſtance of P from *o* at the beginning of that time; then will the right line *ao* decreaſe proportionably.

Plate CLX fig. 3. n° 1,

In like manner, the line *oa*, (*ibid.* n° 3.) increaſes proportionally, if the point *p*, in equal times, deſcribes the ſpaces *ac*, *cd*, *de*, *fg*, &c. ſo that *ac* is to *ao*, *cd* to *co*, *de* to *do*, &c. in a conſtant ratio. If we now ſuppoſe a point P deſcribing the line AG (*ibid.* n° 4.) with an uniform motion, while the point *p* deſcribes a line increaſing or decreaſing proportionally, the line AP, deſcribed by P, with this uniform motion, in the ſame time that *oa*, by increaſing or decreaſing proportionally, becomes equal to *op*, is the logarithm of *op*. Thus AC, AD, AE, &c. are the logarithms of oc, od, oe, &c. reſpectively; and oa is the quantity whoſe logarithm is ſuppoſed equal to nothing.

We have here abſtracted from numbers, that the doctrine may be the more general; but it is plain, that if AC, AD, AE, &c. be ſuppoſed 1, 2, 3, &c. in arithmetic progreſſion; oc, od, oe, &c. will be in geometric progreſſion; and that the logarithm of oa, which may be taken for unity, is nothing.

Lord Naper, in his firſt ſcheme of logarithms, ſuppoſes, that while op increaſes or decreaſes proportionally, the uniform motion of the point P, by which the logarithm of op is generated, is equal to the velocity of p at a; that is, at the term of time when the logarithms begin to be generated. Hence logarithms, formed after this model, are called *Naper's Logarithms*, and ſometimes *Natural Logarithms*.

When a ratio is given, the point p deſcribes the difference of the terms of the ratio in the ſame time. When a ratio is duplicate of another ratio, the point p deſcribes the difference of the terms in a double time. When a ratio is triplicate of another, it deſcribes the difference of the terms in a triple time; and ſo on. Alſo, when a ratio is compounded of two or more ratios, the point p deſcribes the difference of the terms of that ratio in a time equal to the ſum of the times in which it deſcribes the differences of the terms of the ſimple ratios of which it is compounded. And what is here ſaid of the times of the motion of p when op increaſes proportionally, is to be applied to the ſpaces deſcribed by P, in thoſe times, with its uniform motion.

Hence the chief properties of logarithms are deduced. They are the meaſures of ratios. The exceſs of the logarithm of the antecedent above the logarithm of the conſequent, meaſures the ratio of thoſe terms. The meaſure of the ratio of a greater quantity to a leſſer is poſitive; as this ratio, compounded with any other ratio, increaſes it. The ratio of equality, compounded with any other ratio, neither increaſes nor diminiſhes it; and its meaſure is nothing. The meaſure of the ratio of a leſſer quantity to a greater is negative; as this ratio, compounded with any other ratio, diminiſhes it. The ratio of any quantity A to unity, compounded with the ratio of unity to A, produces the ratio of A to A, or the ratio of equality; and the meaſures of thoſe two ratios deſtroy each other when added together; ſo that when the one is conſidered as poſitive, the other is to be conſidered as negative. By ſuppoſing the logarithms of quantities greater than oa (which is ſuppoſed to repreſent unity) to be poſitive, and the logarithms of quantities leſs than it to be negative, the ſame rules ſerve for the operations by logarithms, whether the quantities be greater or leſs than oa. When op increaſes proportionally, the motion of p is perpetually accelerated; for the ſpaces ac, cd, de, &c. that are deſcribed by it in any equal times that continually ſucceed after each other, perpetually increaſe in the ſame proportion as the lines oa, oc, od, &c. When the point p moves from a towards o, and op decreaſes proportionally, the motion of p is perpetually retarded; for the ſpaces deſcribed by it in any equal times that continually ſucceed after each other, decreaſe in this caſe in the ſame proportion as op decreaſes.

If the velocity of the point p be always as the diſtance op, then will this line increaſe or decreaſe in the manner ſuppoſed by Lord Naper; and the velocity of the point p being the fluxion of the line op, will always vary in the ſame ratio as this quantity itſelf. This, we preſume, will give a clear idea of the geneſis or nature of logarithms; but for more of this doctrine, ſee Maclaurin's Fluxions.

Conſtruction of LOGARITHMS.

THE firſt makers of logarithms had in this a very laborious and difficult taſk to perform. They firſt made choice of their ſcale or ſyſtem of logarithms, that is, what ſet of arithmetical progreſſionals ſhould anſwer to ſuch a ſet of geometrical ones, for this is entirely arbitrary; and they choſe the decuple geometrical progreſſionals, 1, 10, 100, 1000, 10000, &c. and the arithmetical one, 0, 1, 2, 3, 4, &c. or 0,000000, 1,000000, 2,000000, 3,000000, 4,000000, &c. as the moſt convenient. After this they were to get the logarithms of all the intermediate numbers between 1 and 10, 10 and 100, 100 and 1000, 1000 and 10000, &c. But firſt of all they were to get the logarithms of the prime numbers 3, 5, 7, 11, 13, 17, 19, 23, &c. and when theſe were once had, it was eaſy to get thoſe of the compound numbers made up of the prime ones, by the addition or ſubtraction of their logarithms.

In order to this, they found a mean proportion between 1 and 10, and its logarithm will be $\frac{1}{2}$ that of 10; and ſo given, then they found a mean proportional between the number firſt found and unity, which mean will be nearer to one than that before, and its logarithm will be $\frac{1}{2}$ of the former logarithm, or $\frac{1}{4}$ of that of 10; and having in this manner continually found a mean proportional between 1 and the laſt mean, and biſected the logarithms, they at length, after finding 54 ſuch means, came to a number 1.0000000000000001278191493200323442, ſo near to 1 as not to differ from it ſo much as $\frac{1}{10000000000000000}$dth part, and found its logarithm to be 0.00000000000000005551115123125782702, and 00000000000000012781914932003235 to be the difference whereby 1 exceeds the number of roots or mean proportionals found by extraction; and then, by means of theſe numbers, they found the logarithms of any other numbers whatſoever; and that after the following manner: Between a given number whoſe logarithm is wanted, and 1, they found a mean proportional, as above, until at length a number (mixed) be found, ſuch a ſmall matter above 1, as to have 1 and 15 cyphers after it, which are followed by the ſame number of ſignificant figures; then they ſaid, As the laſt number mentioned above is to the mean proportional thus found, ſo is the logarithm above, *viz.* 0.00000000000000005551115123125782702, to the logarithm of the mean proportional number, ſuch a ſmall matter exceeding 1 as but now mentioned; and this logarithm being as often doubled as the number of mean proportionals (formed to get that number) will be the logarithm of the given number. And this was the method Mr Briggs took to make the logarithms. But if they are to be made to only ſeven places of figures, which are enough for common uſe, they had only occaſion to find 25 mean proportionals, or, which is the ſame thing, to extract the $\frac{1}{33554432}$th root of 10. Now having the logarithms of 3, 5, and 7, they eaſily got thoſe of 2, 4, 6, 8, and 9; for ſince $\frac{10}{5}=2$, the logarithm of 2 will be the difference of the logarithms of 10 and 5, the logarithm of 4 will be two times the logarithm of 2, the logarithm of 6 will be the ſum of the logarithm of 2 and 3, and the

Logarithms

logarithm of 9 double the logarithm of 3. So, alſo having found the logarithms of 13, 17, and 19, and alſo of 23 and 29, they did eaſily get thoſe of all the numbers between 10 and 30, by addition and ſubtraction only; and ſo having found the logarithms of other prime numbers, they got thoſe of other numbers compounded of them.

But ſince the way above hinted at, for finding the logarithms of the prime numbers, is ſo intolerably laborious and troubleſome, the more ſkilful mathematicians that came after the firſt inventors, employing their thoughts about abbreviating this method, had a vaſtly more eaſy and ſhort way offered to them from the contemplation and menſuration of hyperbolic ſpaces contained between the portions of an aſymptote, right lines perpendicular to it, and the curve of the hyperbola: for if ECN (Plate CLXI. fig. 6. n° 1.) be an hyperbola, and AD, AQ, the aſymptotes, and AB, AP, AQ, &c. taken upon one of them, be repreſented by numbers, and the ordinates BC, PM, QN, &c. be drawn from the ſeveral points B, P, Q, &c. to the curve, then will the quadrilinear ſpaces BCMP, PMNQ, &c. *viz.* their numerical meaſures, be the logarithms of the quotients of the diviſion of AB by AP, AP by AQ, &c. ſince, when AB, AP, AQ, &c. are continual proportions, the ſaid ſpaces are equal, as is demonſtrated by ſeveral writers concerning conic ſections.

Having ſaid that theſe hyperbolic ſpaces, numerically expreſſed, may be taken for logarithms, we ſhall next give a ſpecimen, from the great Sir Iſaac Newton, of the method how to meaſure theſe ſpaces, and conſequently of the conſtruction of the logarithms.

Let CA (*ibid.* n° 2.) $=$AF be $=1$, and $AB=Ab=x$; then will $\frac{1}{1+x}$ be $=BD$, and $\frac{1}{1-x}=bd$; and putting theſe expreſſions into ſerieſes, it will be $\frac{1}{1+x}=1-x+x^2-x^3+x^4-x^5$, &c. and $\frac{1}{1-x}=1+x+x^2+x^3+x^4+x^5$, &c. and $\frac{\dot{x}}{1+x}=\dot{x}-x\dot{x}+x^2\dot{x}-x^3\dot{x}+x^4\dot{x}-x^5\dot{x}$, &c. and $\frac{\dot{x}}{1-x}=\dot{x}+x\dot{x}+x^2\dot{x}+x^3\dot{x}+x^4\dot{x}+x^5\dot{x}$, &c. and taking the fluents, we ſhall have the area AFDB $=x-\frac{xx}{2}+\frac{x^3}{3}-\frac{x^4}{4}+\frac{x^5}{5}$, &c. and the area AF*db*, $=x+\frac{xx}{2}+\frac{x^3}{3}+\frac{x^4}{4}+\frac{x^5}{5}$, &c. and the ſum *bd* DB$=2x+\frac{2x^3}{3}+\frac{2}{5}x^5+\frac{2}{7}x^7+\frac{2}{9}x^9$, &c. Now, if AB or *ab* be $\frac{1}{10}=x$, C*b* being$=0.9$, and $CB=1.1$, by putting this value of x in the equations above, we ſhall have the area *bd* DB$=0.2006706954621511$, for the terms of the ſeries will ſtand as you ſee in this table.

$$\left.\begin{array}{r} 0.20000000000000000 = \text{firſt} \\ 6666666666666 = \text{ſecond} \\ 40000000000 = \text{third} \\ 285714286 = \text{fourth} \\ 2222222 = \text{fifth} \\ 18182 = \text{ſixth} \\ 154 = \text{ſeventh} \\ 1 = \text{eighth} \end{array}\right\} \text{Term of the ſeries.}$$

0.2006706954621511

If the parts A*d* and AD of this area be added ſeparately, and the leſſer DA be taken from the greater *d*A, we ſhall have A*d*—AD$=x^2+\frac{x^4}{2}+\frac{x^6}{3}+\frac{x^8}{4}$ &c.$=$ $=0.0100503358535014$, for the terms reduced to decimals will ſtand thus:

$$\left.\begin{array}{r} 0.0100000000000000 = \text{firſt} \\ 500000000000 = \text{ſecond} \\ 3333333333 = \text{third} \\ 25000000 = \text{fourth} \\ 200000 = \text{fifth} \\ 1667 = \text{ſixth} \\ 14 = \text{ſeventh} \end{array}\right\} \text{Term of the ſeries.}$$

0.0100503358535014

Now if this difference of the areas be added to, or ſubtracted from their ſum before found, half the agregate, viz. 0.1053605156578263 will be the greater area A*d*, and half the remainder, viz. 0.0953101798043249, will be the leſſer area AD.

By the ſame tables, theſe areas AD and A*d*, will be obtained alſo when AB$=$A*b* are ſuppoſed to be $\frac{1}{100}$ or CB$=1.01$, and C*b*$=099$, if the numbers are but duly transferred to lower places, as

$$\left.\begin{array}{r} 0.0200000000000000 = \text{firſt} \\ 6666666666 = \text{ſecond} \\ 400000 = \text{third} \\ 28 = \text{fourth} \end{array}\right\} \begin{array}{l}\text{term} \\ \text{of the} \\ \text{ſeries.}\end{array}$$

Sum$=0.0200006667066694 =$ area *b*B.

$$\left.\begin{array}{r} 0.0001000000000000 = \text{firſt} \\ 50000000 = \text{ſecond} \\ 3333 = \text{third} \end{array}\right\} \begin{array}{l}\text{term} \\ \text{of the} \\ \text{ſeries.}\end{array}$$

0.0001000050003333 $=$ area A*d* AD.

Half the aggregate 0.0100503358535014$=$A*d*, and half the remainder, viz. 0.0099503308531681$=$AD.

And ſo putting AB$=$A*b*$=\frac{1}{1000}$, or CB$=1.001$ and C*b*$=0.999$, we obtain A*d* $=0.0010005000333583 5$, and AD$=0.0009995001333083 5$.

After the ſame manner, if AB$=$A*b*, be $=0.2$, or 0.02, or 0.002, theſe areas will ariſe.

A*d*$=0.2231435513142097$, and
AD$=0.1823215576939546$, or
A*d*$=0.0202027073175194$, and
AD$=0.1098026272961797$, or
A*d*$=0.002002$, and AD$=0.001$.

From theſe areas thus found, others may be eaſily had from addition and ſubtraction only. For ſince $\frac{1.2}{0.8}\times\frac{1.2}{0.9}=2$, the ſum of the areas belonging to the ratios $\frac{1.2}{0.8}$ and $\frac{1.2}{0.9}$ (that is, inſiſting upon the parts of the abſciſs 1.2, 0.8; and 1.2, 0.9) viz.

$$0.405465, \text{ \&c. and } \left\{\begin{array}{l} AD=0.18232, \text{ \&c.} \\ Ad=0.10536, \text{ \&c.} \end{array}\right.$$

Sum$=0.28768$, &c.

$$\text{added thus, } \left\}\begin{array}{l} 0.40546, \text{ \&c.} \\ 0.28768, \text{ \&c.} \end{array}\right.$$

Total$=0.69314$, &c. $=$ the area of AFHG, when CG is $=2$. Alſo, ſince $\frac{1.2}{0.8}\times2=3$, the ſum

1.0986122,

1.0986122, &c. of the areas belonging to $\frac{1.2}{0.8}$, and 2, will be the area of AFGH, when CG=3. Again, ſince $\frac{2\times2}{0.8}=5$, and $2\times5=10$; by adding Ad=0.2231, &c. AD=0.1823, &c. and Ad=0.1053, &c. together, their ſum is 0.5108, &c. and this added to 1.0986, &c. the area of AFGH, when CG=3. You will have 1.6093379124341004=AFGH, when CG is 5; and adding that of 2 to this, gives 2.302585092994045 7 =AFGH, when CG is equal to 10: and ſince $10\times10=100$, and $10\times100=1000$, and $\sqrt{5\times10\times0.98}=7$, and $10\times1.1=11$, and $\frac{1000\times1.091}{7\times11}=13$, and $\frac{1000\times0998}{2}=499$, it is plain that the area AFGH may be found by the compoſition of the areas found before, when CG=100, 1000, or any other of the numbers above mentioned; and all theſe areas are the hyperbolic logarithms of thoſe ſeveral numbers.

Having thus obtained the hyperbolic logarithms of the numbers 10, 0.98, 0.99, 1.01, 1.02; if the logarithms of the four laſt of them be divided by the hyperbolic logarithm 2.3025850, &c. of 10, and the index 2, be added; or, which is the ſame thing, if it be multiplied by its reciprocal 0.434294481903 518, the value of the ſubtangent of the logarithmic curve, to which Briggs's logarithms are adapted, we ſhall have the true tabular logarithms of 98, 99, 100, 101, 102. Theſe are to be interpolated by ten intervals, and then we ſhall have the logarithms of all the numbers between 980 and 1020; and all between 980 and 1000, being again interpolated by ten intervals, the table will be as it were conſtructed. Then from theſe we are to get the logarithms of all the prime numbers, and their multiples leſs than 100, which may be done by addition and ſubtraction only; for $\frac{\sqrt[12]{84\times1020}}{9945}=2$; $\frac{\sqrt[4]{8\times9963}}{984}=3$; $\frac{10}{2}=5$; $\frac{\sqrt{98}}{2}=7$; $\frac{99}{9}=11$; $\frac{1001}{7\times11}=13$; $\frac{102}{6}=17$; $\frac{988}{4\times13}=19$; $\frac{9936}{16\times27}=23$; $\frac{986}{2\times17}=29$; $\frac{992}{32}=31$; $\frac{999}{27}=37$; $\frac{984}{24}=41$; $\frac{989}{23}=43$; $\frac{987}{21}=47$; $\frac{9911}{11\times17}=53$; $\frac{9971}{13\times13}=59$; $\frac{9882}{2\times81}=61$; $\frac{9949}{3\times49}=67$; $\frac{994}{14}=71$; $\frac{9928}{8\times17}=73$; $\frac{9954}{7\times18}=79$; $\frac{996}{12}=83$; $\frac{9968}{7\times16}=89$; $\frac{9894}{6\times17}=97$; and thus having the logarithms of all the numbers leſs than 100, you have nothing to do but interpolate the ſeveral terms, through ten intervals.

Now the void places may be filled up by the following theorem. Let *n* be a number, whoſe logarithm is wanted; let *x* be the difference between that and the two neareſt numbers, equally diſtant on each ſide, whoſe logarithms are already found; and let *d* be half the difference of their logarithms: then the required logarithm of the number *n*, will be had by adding $d+\frac{dx}{2n}+\frac{dx^3}{12n^3}$, &c. to the logarithm of the leſſer number; for, if the numbers are repreſented by C*p*, CG, CP, (*ibid.* n° 2.) and the ordinates *ps*, PQ, be raiſed; if *n* be wrote for CG, and *x* for GP, or G*p*, the area *ps*QP, or $\frac{2x}{n}+\frac{x^2}{2n^2}+\frac{x^3}{3n^3}$, &c. will be to the area *ps*HG, as the difference between the logarithms of the extreme numbers, or 2 *d*, is to the difference between the logarithms of the leſſer, and of the middle one; which, therefore, will be

$$\frac{\frac{dx}{n}+\frac{dx^2}{2n}+\frac{dx^3}{3n}, \&c.}{\frac{x}{n}+\frac{x^3}{3n}+\frac{x^5}{5n}, \&c.}=d+\frac{dx}{2n}+\frac{dx^3}{12n^3}, \&c.$$

The two firſt terms $d+\frac{dx}{2n}$ of this ſeries, being ſufficient for the conſtruction of a canon of logarithms, even to 14 places of figures, provided the number, whoſe logarithm is to be found, be leſs than 1000; which cannot be very troubleſome, becauſe *x* is either 1 or 2: yet it is not neceſſary to interpolate all the places by help of this rule, ſince the logarithms of numbers, which are produced by the multiplication or diviſion of the number laſt found, may be obtained by the numbers whoſe logarithms were had before, by the addition or ſubtraction of their logarithms. Moreover, by the difference of their logarithms, and by their ſecond and third differences, if neceſſary, the void places may be ſupplied more expeditiouſly; the rule aforegoing being to be applied only where the continuation of ſome full places is wanted, in order to obtain theſe differences.

By the ſame method rules may be found for the intercalation of logarithms, when of three numbers the logarithm of the leſſer and of the middle number are given, or of the middle number and the greater; and this although the numbers ſhould not be in arithmetical progreſſion. Alſo by purſuing the ſteps of this method, rules may be eaſily diſcovered for the conſtruction of artificial ſines and tangents, without the help of the natural tables. Thus far the great Newton, who ſays, in one of his letters to Mr Leibnitz, that he was ſo much delighted with the conſtruction of logarithms, at his firſt ſetting out in thoſe ſtudies, that he was aſhamed to tell to how many places of figures he had carried them at that time: and this was before the year 1666; becauſe, he ſays, the plague made him lay aſide thoſe ſtudies, and think of other things.

Dr Keil, in his Treatiſe of Logarithms, at the end of his Commandine's Euclid, gives a ſeries, by means of which may be found eaſily and expeditiouſly the logarithms of large numbers. Thus, let *z* be an odd number, whoſe logarithm is ſought: then ſhall the numbers $z-1$ and $z+1$ be even, and accordingly their logarithms, and the difference of the logarithms will be had, which let be called *y*. Therefore, alſo the logarithm of a number, which is a geometrical mean between $z-1$ and $z+1$, will be given, *viz.* equal to half the ſum of the logarithms.

Now the ſeries $y\times\frac{1}{4z}+\frac{1}{24z^3}+\frac{181}{15120z^7}+\frac{25200z^9}{13}$, &c. ſhall be equal to the logarithm of the ratio, which the geometrical mean between the numbers $z-1$ and $z+1$, has to the arithmetical mean, *viz.* to the number z. If the number exceeds 1000, the firſt term of the ſeries, *viz.* $\frac{y}{4z}$, is ſufficient for producing the logarithm to 13 or 14 places of figures, and the ſecond term will give the logarithm to 20 places of figures. But if *z* be greater than 10000, the firſt term will exhibit the logarithm to 18 places of figures; and ſo this ſeries is of great uſe in filling up the chiliads omitted by Mr Briggs. For example, it is required to find the logarithm of 20001; the logarithm of 20000 is the ſame as the logarithm of 2, with the index 4 prefixed to it; and the difference of the logarithms of 20000 and 20001, is the ſame as the difference of the logarithms of the numbers 10000 and 10001, *viz.* 0.0000434272, &c. And if this difference be divided by $4z$, or 80004, the quotient $\frac{y}{4z}$ ſhall be 0.000000000542813; and if the logarithm of the geometrical mean, *viz.* 4.301051709302416 be added to the quotient, the ſum will be

4.301051709845230=the logarithm of 20001.

Wherefore it is manifeſt, that to have the logarithm to 14 places of figures, there is no neceſſity of continuing out the quotient beyond 6 places of figures. But if you have a mind to have the logarithm to 10 places of figures only, the two firſt figures are enough. And if the logarithms of the numbers above 20000 are to be found by this way, the labour of doing them will moſtly conſiſt in ſetting down the numbers. This ſeries is eaſily deduced from the conſideration of the hyperbolic ſpaces aforeſaid. The firſt figure of every logarithm towards the left hand, which is ſeparated from the reſt by a point, is called the *index of that logarithm;* becauſe it points out the higheſt or remoteſt place of that number from the place of unity in the infinite ſcale of proportionals towards the left hand: thus, if the index of the logarithm be 1, it ſhews that its higheſt place towards the left hand is the tenth place from unity; and therefore all logarithms which have 1 for their index, will be found between the tenth and hundredth place, in the order of numbers. And for the ſame reaſon all logarithms which have 2 for their index, will be found between the hundredth and thouſandth place, in the order of numbers, &c. Whence univerſally the index or characteriſtic of any logarithm is always leſs by one than the number of figures in whole numbers, which anſwer to the given logarithm; and, in decimals, the index is negative.

As all ſyſtems of logarithms whatever, are compoſed of ſimilar quantities, it will be eaſy to form, from any ſyſtem of logarithms, another ſyſtem in any given ratio; and conſequently to reduce one table of logarithms into another of any given form. For as any one logarithm in the given form, is to its correſpondent logarithm in another form; ſo is any other logarithm in the given form, to its correſpondent logarithm in the required form; and hence we may reduce the logarithms of lord Napier into the form of Briggs's, and contrariwiſe. For as 2.302585092, &c. lord Napier's logarithm of 10, is to 1.0000000000 Mr Briggs's logarithm of 10; ſo is any other logarithm in lord Napier's form, to the correſpondent tabular logarithm in Mr Briggs's form: And becauſe the two firſt numbers conſtantly remain the ſame; if lord Napier's logarithm of any one number be divided by 2.302585, &c. or multiplied by 4342944, &c. the ratio of 1.0000, &c. to 2.30258, &c. as is found by dividing 1.00000, &c. by 2.30258, &c. the quotient in the former, and the product in the latter, will give the correſpondent logarithm in Briggs's form, and the contrary. And, after the ſame manner, the ratio of natural logarithms to that of Briggs's will be found=868588963806.

The Uſe and Application of LOGARITHMS.

It is evident, from what has been ſaid of the conſtruction of logarithms, that addition of logarithms muſt be the ſame thing as multiplication in common arithmetick; and ſubtraction in logarithms the ſame as diviſion: therefore, in multiplication by logarithms, add the logarithms of the multiplicand and multiplier together, their ſum is the logarithm of the product.

		num.	logarithms.
Example.	Multiplicand	8.5	0.1294189
	Multiplier	10	1.0000000
	Product	85	1.9294189

And in diviſion, ſubtract the logarithm of the diviſor from the logarithm of the dividend, the remainder is the logarithm of the quotient.

		num.	logarithms.
Example.	Dividend	9712.8	3.9873444
	Diviſor	456	2.6589648
	Quotient	21.3	1.3283796

To find the Complement of a LOGARITHM.

Begin at the left hand, and write down what each figure wants of 9, only what the laſt ſignificant figure wants of 10; ſo the complement of the logarithm of 456, viz. 2.6589648, is 7.3410352.

In the rule of three. Add the logarithms of the ſecond and third terms together, and from the ſum ſubtract the logarithm of the firſt, the remainder is the logarithm of the fourth. Or, inſtead of ſubtracting a logarithm, add its complement, and the reſult will be the ſame.

To raiſe Powers by LOGARITHMS.

Multiply the logarithm of the number given, by the index of the power required; the product will be the logarithm of the power ſought.

Example. Let the cube of 32 be required by logarithms. The logarithm of 32=1.5051500, which multiplied by 3, is 4 5154500, the logarithm of 32768, the cube of 32. But in raiſing powers, viz. ſquaring, cubing, &c. of any decimal fraction by logarithms, it muſt be obſerved, that the firſt ſignificant figure of the power be put ſo many places below the place of units, as the index of its logarithm wants of 10, 100, &c. multiplied by the index of the power.

To extract the Roots of Powers by LOGARITHMS.

Divide the logarithm of the number by the index of the power, the quotient is the logarithm of the root ſought.

To find mean Proportionals between any two numbers.

Subtract the logarithm of the leaſt term from the logarithm of the greateſt, and divide the remainder by a number more by one than the number of means de-

Logarithms

deſired; then add the quotient to the logarithm of the leaſt term (or ſubtract it from the logarithm of the greateſt) continually, and it will give the logarithms of all the mean proportionals required.

Example. Let three mean proportionals be ſought, between 106 and 100.

Logarithm of 106= 2.0253058
Logarithm of 100= 2.0000000

Divided by 4)0.0253059(0.0063264.75

Logarithm of the leaſt term 100 added		2.0000000
Logarithm of the firſt mean	101.4673846	2.0063264.75
Logarithm of the ſecond mean	102.9563014	2.0126529.5
Logarithm of the third mean	104 4670483	2.0189794.25
Logarithm of the greateſt term	106	2.0253059.

The following method, communicated by Mr Thomas Atkinſon, Eſq. of Ballyſhannon, Ireland, is much more expeditious and eaſy.

In any ſeries of numbers in a geometrical progreſſion, beginning from unity, as in the margin, the ſeries is compoſed of a ſet of continued proportionals, of which the member ſtanding neareſt to unity is the common ratio or rate of the proportion. If over or under theſe another ſeries is placed, as in the example, of numbers in an arithmetical progreſſion, beginning with nought, and whoſe common difference is unity, the members of this ſeries are called *indexes*; for they ſerve to ſhow how many ſucceſſive multiplications have been made with the common rate to produce that member of the geometrical progreſſion over which each of theſe indexes does ſeverally ſtand.

0	1	2	3
1	10	100	100

This theory may be conſidered in another light. If the ſquare root of 10 (that is, of the common rate) is found, it is a mean proportional between 1 and 10, and becomes a new common rate for a new ſet of continued proportionals, as in the margin. And if the half of unity, which in the former caſe was the additional difference of the arithmetical progreſſion, is made the additional difference of this new ſeries, and noted as in the example, a new combination is formed of two ſerieſes agreeing with the firſt in theſe remarkable properties, viz. If any two members of the geometrical progreſſion are multiplied together, the ſum of their correſponding indexes will become the index of their product; and converſely, if any one of them is divided by any other, the difference of their indexes will be found to be the index of the quotient. This theory is indefinite; and repeated extractions may be made with any propoſed number of decimals, and biſection made of the correſponding indexes, until one has no more number to work with; and each of the mean proportionals thus found between 1 and 10, will be found a member of every new geometrical progreſſion formed by every ſmaller root; and conſequently all the roots thus found, together with their correſponding indexes, have, in caſes of multiplication or diviſion, the ſame connection, as has been juſt deſcribed.

0	.5	1	1.5	2	25
1	3.16	10	31.6	100	316

Let thoſe ſucceſſive roots be found, and noted in the form of a table, and, in another column, let the correſponding indexes found by theſe directions be regularly noted, each oppoſite to its own roots. Theſe indexes are commonly known by the denomination of *logarithms*; the roots themſelves may be called *natural numbers*.

Theſe roots are compoſed of natural numbers ſeldom or never wanted; but from them the logarithms of ſuch as are of general uſe may be thus found.

Suppoſe 2 the propoſed number, one muſt examine the table of roots; there he will find 3.16, &c. &c. the neareſt to 2 of thoſe which are greater; and 1.778, &c. &c. alſo neareſt to it of thoſe which are leſs. He may make a diviſion at his pleaſure, either $\frac{3.16}{2}$ or $\frac{2}{1.77}$; yet let the choice fall on what will yield the ſmalleſt quotient, and let the circumſtances of the calculation be noted, as in the margin, for future direction. Here $\frac{2}{1.77}=1.1246$. With this quotient let the table be applied to as before, and 1.1246, &c. will be found to be between 1.154, &c. &c. and 1.074, &c. &c. and diviſion to be made as in the example. In this manner one is to proceed with each ſucceſſive quotient, till at length he has one in which the number of the initial decimal noughts is equal at leaſt, if not greater than that of the ſignificant figures. Here the work of diviſion may be diſcontinued; and as it will rarely happen, that one will not have an additional initial nought for every diviſion, the number cannot be great in calculations of a moderate extent. Having at laſt found a quotient ſuch as was deſcribed, and ſuppoſing the number of decimals to be 10, one may readily find the logm. of that quotient thus:—Suppoſe the quotient 1.0000057968; he is to look into the table of roots for thoſe noted with 5 initial decimal noughts, and from any one of theſe and its correſponding logm. ſtate thus:

$\frac{2}{1.77}=1.1246$, &c. &c.
$\frac{1.154}{1.124}=1.02$, &c. &c.

.0000087837, ∴ 0000038147 its logm ∴∴ .0000057968 of the quotient.
.0000025175, its logm.

Thus knowing that 0.0000025175, or ſuch like, is the logm. of the laſt quotient, one may have that of 2, if he will but call to mind the following circumſtances.

In every caſe of diviſion, if he has logarithms of quotient and diviſor, he has alſo that of the dividend, by adding the two firſt together: if he has the logarithm of the dividend, and that of either the diviſor or quotient, he may find that of the other; for he has only to ſubtract what he knows from the logarithm of the dividend, the remainder is what he wants; and laſtly, that in every diviſion he made, he took one number from the table of roots whoſe logarithm is known, being noted in the table, and which he made uſe of as his direction either as a dividend or a diviſor: From theſe circumſtances, one may, by the help of the logarithm juſt found, diſcover the logarithm of that number of the laſt diviſion, whether it be dividend or diviſor, which was the quotient of the preceding diviſion; and thus, tracing his own work backwards by his notes from quotient to quotient, be they ever ſo few or ever ſo many, he will come at laſt by addition and ſubtraction to the logarithm of the propoſed number.

By this method, the logarithm of any number within the compaſs of the table of roots may be found: if a greater is propoſed, ſuppoſe 9495, it muſt be made 9.495, and its logarithm found; then it muſt be reſtored to the propoſed form, and have a proper index noted before the decimals juſt found. How to do this is too well known to have occaſion to mention it here.

The reaſon for finding the logarithm of the laſt quotient by the common proportion is this: He who has made a table of roots, will find, by inſpection only, that as initial noughts come into the decimal parts of the roots, the ſignificant figures juſt immediately following them do aſſume the form of a geometrical progreſſion, deſcending, whoſe common rate or diviſor is 2, as is juſt the caſe with the whole of the decimals of the correſponding logarithms; and that the number of the ſignificant figures endued with this property is generally equal to that of the initial noughts: ſo far as this, and no farther, the common proportion will hold between the ſignificant figures of the decimals in the roots and the ſame number of places in the logarithms; and for this reaſon it was needful to continue the ſucceſſive diviſions till a quotient was found ſo circumſtanced, that its logarithm could be found by the proportion.

The ſame gentleman hath alſo favoured us with the following new method

Of extracting Roots of Fractions by LOGARITHMS.

THE eaſieſt way to explain this, is firſt to give an example of involving ſuch numbers.

—3.301029995664 the logarithm of the fraction given.
7 the power to which it is to be raiſed.

—19.107209969648 the logarithm of the anſwer.

This differs from the like work in whole numbers only in this, that, in multiplying the decimals, one has at laſt 2 to be carried from them to the whole numbers; this is to be conſidered as $+2$, then $-3\times7=-21$, and $-21+2=-19$ to be noted the index of the anſwer. Extraction of the roots is only the converſe of this. Suppoſe —19.107209969648 given, to find that root whoſe exponent number is 7. As 7 is the exponent number here, one may in his mind multiply it by 2 for a trial, as in common diviſion; but the product $=14$ being leſs than 19, muſt be rejected; then he may try it with 3, this yields 21 for a product. This 3 muſt be noted with a negative ſign for the index of the new logarithm. Then, on comparing 19 with 21, the difference is 2. This 2 muſt be carried as 20 to the decimals, and one muſt from that carry on the diviſion of the decimals with 7 for a diviſor, as is uſually done in other caſes.

—19.107209969648
—3.301029995664

Another EXAMPLE.

Suppoſe —1.4771212545 given, to extract the root of its 5th power.
—1.8954252109 the logarithm of the root.

For 5, the exponent of the root ×1 is greater than the index of the given logarithm, and 4 is the remainder. Then —1 becomes the index of the logarithm of the root; and 4= the overplus, is to be carried as 40 to the decimals; and from that, diviſion is to be made with 5 as a diviſor for the reſt of the work.

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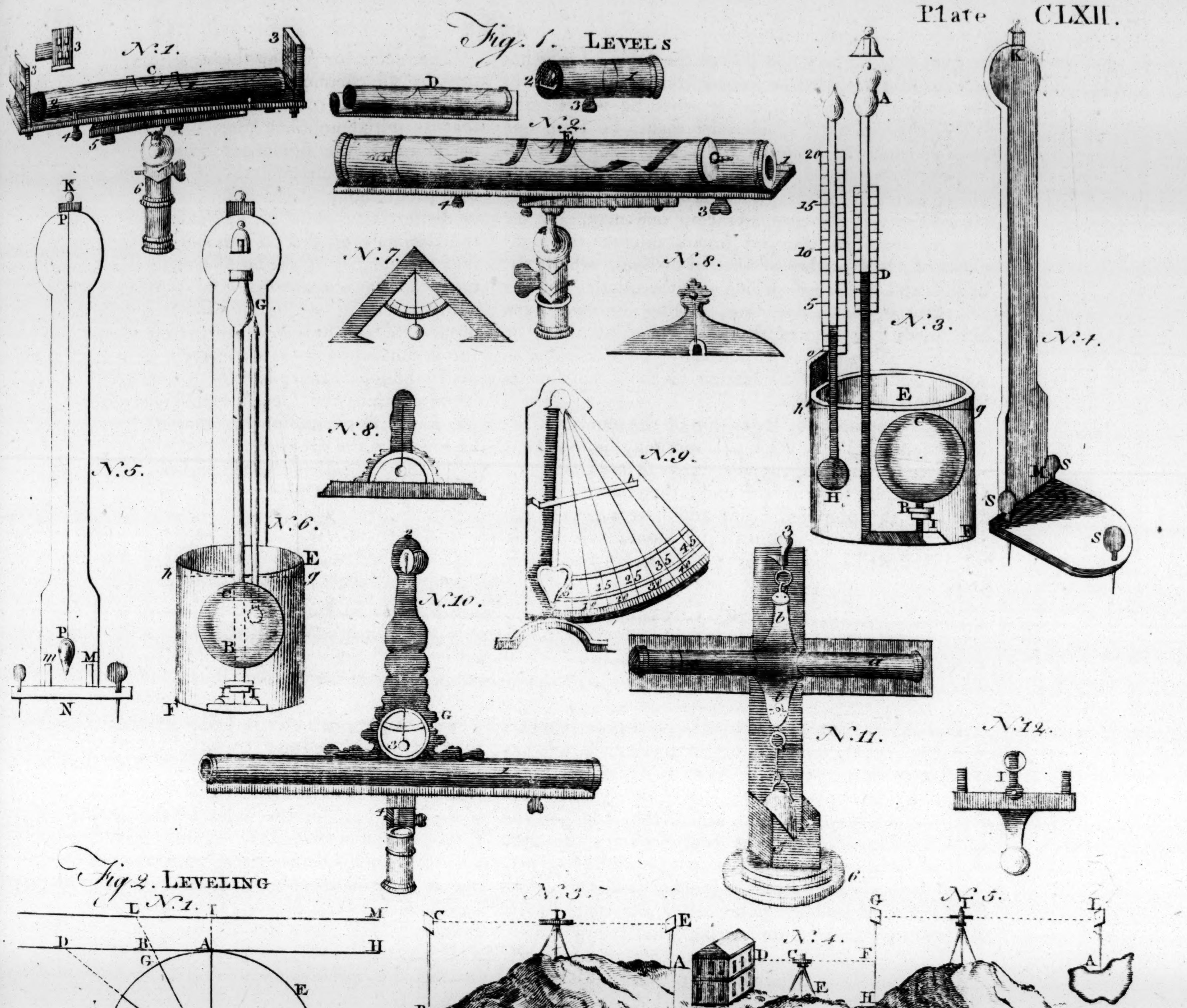
Plate CLXII.

Fig. 1. LEVELS


N°1.
N°2.
N°3.
N°4.
N°5.
N°6.
N°7.
N°8.
N°9.
N°10.
N°11.
N°12.
A
B
C
D
E
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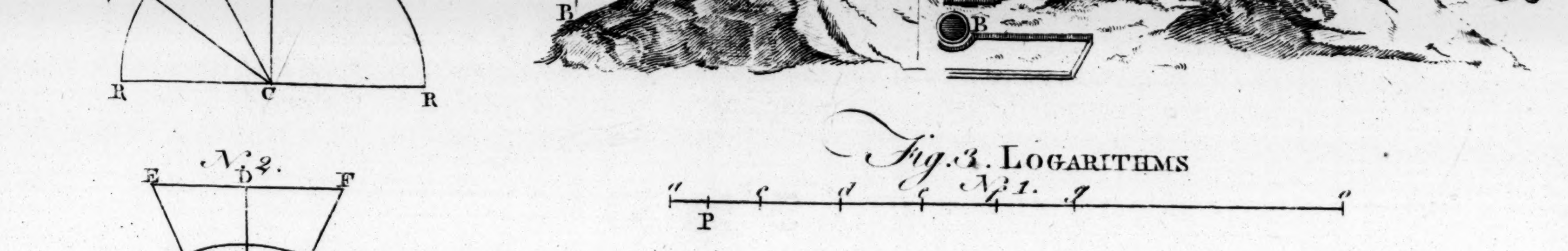
G
H
K
P
M
N
S

Fig. 2. LEVELING


N°1.
N°3.
N°4.
N°5.
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I
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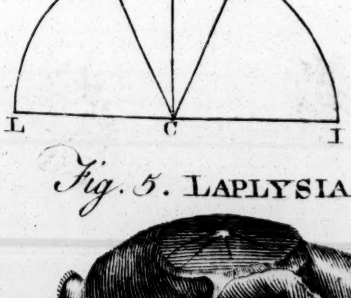

N°2.
E
D
F
B
A
H
L
C
I

Fig. 3. LOGARITHMS

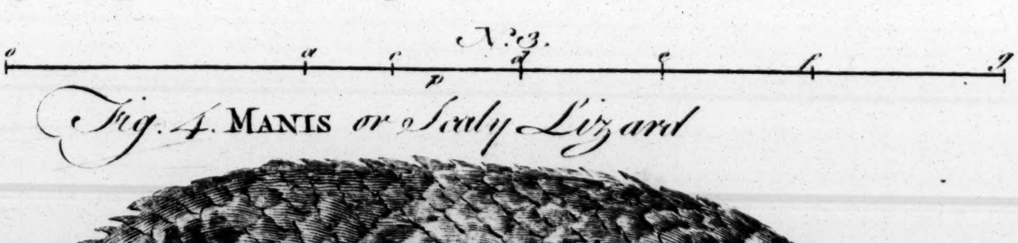
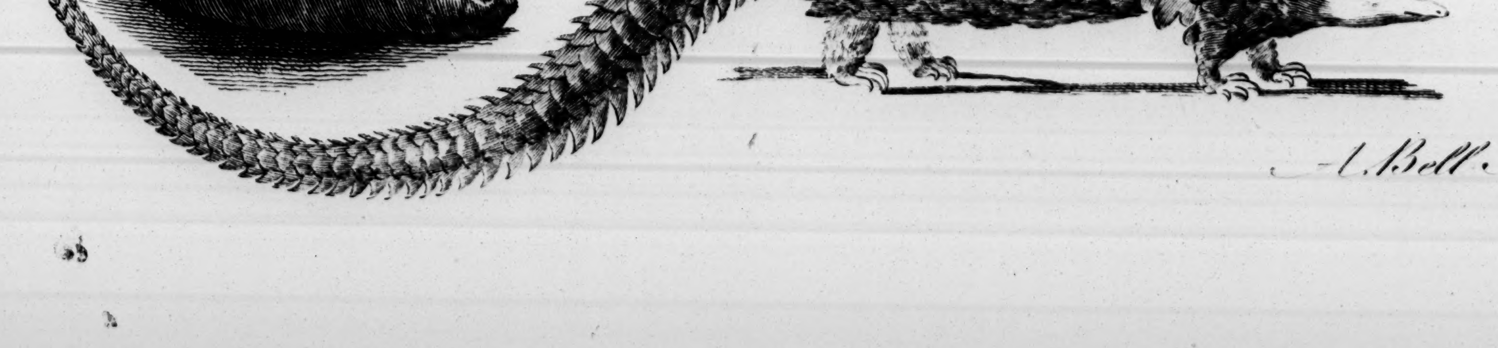

N°1.
N°2.
N°3.
N°4.
P
Q
R
S
G
F
E
D
C
A

Fig. 5. LAPLYSIA.

Fig. 4. MANIS or Scaly Lizard



A. Bell Sc.

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LOGIC,

THE art of thinking and reaſoning juſtly; or, it may be defined the ſcience or hiſtory of the human mind, inaſmuch as it traces the progreſs of our knowledge from our firſt and moſt ſimple conceptions through all their different combinations, and all thoſe numerous deductions that reſult from variouſly comparing them one with another.

The preciſe buſineſs of logic, therefore, is to explain the nature of the human mind, and the proper manner of conducting its ſeveral powers, in order to the attainment of truth and knowledge. It lays open thoſe errors and miſtakes we are apt, through inattention, to run into; and teaches us how to diſtinguiſh between truth, and what only carries the appearance of it. By this means we grow acquainted with the nature and force of the underſtanding; ſee what things lie within its reach; where we may attain certainty and demonſtration; and when we muſt be contented with probability.

This ſcience is generally divided into four parts, viz. *Perception*, *Judgment*, *Reaſoning*, and *Method*. This diviſion comprehends the whole hiſtory of the ſenſations and operations of the human mind.

PART I.

OF PERCEPTION.

WE find ourſelves ſurrounded with a variety of objects, which acting differently upon our ſenſes, convey diſtinct impreſſions into the mind, and thereby rouſe the attention and notice of the underſtanding. By reflecting too on what paſſes within us, we become ſenſible of the operations of our own minds, and attend to them as a new ſet of impreſſions. But in all this there is only bare *conſciouſneſs*. The mind, without proceeding any farther, takes notice of the impreſſions that are made upon it, and views things in order, as they preſent themſelves one after another. This attention of the underſtanding to the object acting upon it, whereby it becomes ſenſible of the impreſſions they make, is called by logicians *perception*; and the notices themſelves, as they exiſt in the mind, and are there treaſured up to be the materials of thinking and knowledge, are diſtinguiſhed by the name of *ideas*. Having ſhown at large, in the article METAPHYSICS, how the mind being furniſhed with ideas, contrives to diverſify and enlarge its ſtock; we have here chiefly to conſider the means of making known our thoughts to others; that we may not only underſtand how knowledge is acquired, but alſo in what manner it may be communicated with the greateſt certainty and advantage.

CHAP. I. *Of Words, conſidered as the Signs of our Ideas.*

OUR ideas, though manifold and various, are nevertheleſs all within our own breaſts, inviſible to others, nor can of themſelves be made appear. But God, deſigning us for ſociety, and to have fellowſhip with thoſe of our kind, has provided us with organs fitted to frame articulate ſounds, and given us alſo a capacity of uſing thoſe ſounds as ſigns of internal conceptions. Hence ſpring words and language; for, having once pitched upon any ſound to ſtand as the mark of an idea in the mind, cuſtom by degrees eſtabliſhes ſuch a connection between them, that the appearance of the idea in the underſtanding always brings to our remembrance the ſound or name by which it is expreſſed; as in like manner the hearing of the ſound never fails to excite the idea for which it is made to ſtand. And thus it is eaſy to conceive how a man may record his own thoughts, and bring them again into view in any ſucceeding period of life. For this connection being once ſettled, as the ſame ſounds will always ſerve to excite the ſame ideas; if he can but contrive to regiſter his words in the order and diſpoſition in which the preſent train of his thoughts preſent them to his imagination, it is evident he will be able to recal theſe thoughts at pleaſure, and that too in the very manner of their firſt appearance. Accordingly we find, that the inventions of writing and printing, by enabling us to fix and perpetuate ſuch periſhable things as ſounds, have alſo furniſhed us with the means of giving a kind of permanency to the tranſactions of the mind, inſomuch that they may be in the ſame manner ſubjected to our review, as any other abiding objects of nature.

2 **And of the mutual communication of knowledge from one man to another.**

II. But, beſides the ability of recording our own thoughts, there is this farther advantage in the uſe of external ſigns, that they enable us to communicate our ſentiments to each other, and alſo receive information of what paſſes in their breaſts. For any number of men, having agreed to eſtabliſh the ſame ſounds as ſigns of the ſame ideas, it is apparent that the repetition of theſe ſounds muſt excite the like perceptions in each, and create a perfect correſpondence of thoughts. When, for inſtance, any train of ideas ſucceed one another in my mind, if the names by which I am wont to expreſs them have been annexed by thoſe with whom I converſe to the very ſame ſet of ideas, nothing is more evident, than that, by repeating thoſe names according to the tenor of my preſent conceptions, I ſhall raiſe in their minds the ſame courſe of thought as has taken poſſeſſion of my own. Hence, by barely attending to what paſſes within themſelves, they will alſo become acquainted with the ideas in my underſtanding, and have them in a manner laid before their view. So that we here clearly perceive how a man may communicate his ſentiments, knowledge and diſcoveries to others, if the language in which he converſes be extenſive enough to mark all the ideas and tranſactions of his mind. But as this is not always the caſe, and men are often obliged to invent terms of their own, to expreſs new views and conceptions of things; it may be aſked, how in theſe circumſtances we can become acquainted with the thoughts of another, when we make uſe of words, to which we have never annexed any ideas, and that of courſe can raiſe no perceptions in our minds. In order to unveil this myſtery, and give ſome little inſight into the foundation, growth, and improvement of language, the following obſervations will be found of conſiderable moment.

3 Simple ideas cannot be conveyed into the mind by words, or a deſcription.

III. Firſt, That no word can be to any man the ſign of an idea, till that idea comes to have a real exiſtence in his mind. For names, being only ſo far intelligible as they denote known internal conceptions, where they have none ſuch to anſwer them, there they are plainly ſounds without ſignification, and of courſe convey no inſtruction or knowledge. But no ſooner are the ideas to which they belong raiſed in the underſtanding, than, finding it eaſy to connect them with the eſtabliſhed names, we can join in any agreement of this kind made by others, and thereby enjoy the benefit of their diſcoveries. The firſt thing therefore to be conſidered is, how theſe ideas may be conveyed into the mind; that being there, we may learn to connect them with their appropriated ſounds, and ſo become capable of underſtanding others when they make uſe of theſe ſounds in laying open and communicating their thoughts. Now, to comprehend this diſtinctly, it will be neceſſary to attend to the diviſion of our ideas into ſimple and complex, (ſee METAPHYSICS). And firſt, as for our ſimple ideas; they can find no admiſſion into the mind, but by the two original fountains of knowledge, ſenſation and reflection. If therefore any of theſe have as yet no being in the underſtanding, it is impoſſible by words or a deſcription to excite them there. A man who had never felt the impreſſion of *heat*, could not be brought to comprehend that ſenſation by any thing we might ſay to explain it. If we would really produce the idea in him, it muſt be by applying the proper object to his ſenſes, and bringing him within the influence of a hot body. When this is done, and experience has taught him the perception to which men have annexed the name *heat*, it then becomes to him the ſign of that idea, and he thenceforth underſtands the meaning of the term, which, before, all the words in this world would not have been ſufficient to convey into his mind. The caſe is the ſame in reſpect of light and colours. A man born blind, and thereby deprived of the only conveyance for the ideas of this claſs, can never be brought to underſtand the names by which they are expreſſed. The reaſon is plain: they ſtand for ideas that have no exiſtence in his mind; and as the organ appropriated to their reception is wanting, all other contrivances are vain, nor can they by any force of deſcription be raiſed in his imagination. But it is quite otherways in our complex notions. For theſe being no more than certain combinations of ſimple ideas, put together in various forms; if the original ideas out of which the collections are made have already got admiſſion into the underſtanding, and the names ſerving to expreſs them are known; it will be eaſy, by enumerating the ſeveral ideas concerned in the compoſition, and marking the order and manner in which they are united, to raiſe any complex conception in the mind. Thus the idea anſwering to the word *rainbow* may be readily excited in the imagination of another who has never ſeen the appearance itſelf, by barely deſcribing the figure, largeneſs, poſition, and order of colours; if we ſuppoſe theſe ſeveral ſimple ideas, with their names, ſufficiently known to him.

4 The na of com ideas d nable, of ſimp deas n

IV. And this leads to a ſecond obſervation upon this ſubject, namely, That words ſtanding for complex ideas are all definable, but thoſe by which we denote ſimple ideas are not; for the perceptions of this latter claſs, having no other entrance into the mind than by ſenſation or reflection, can only be got by experience, from the ſeveral objects of nature, proper to produce thoſe perceptions in us. Words indeed may very well ſerve to remind us of them, if they have already found admiſſion into the underſtanding, and their connection with the eſtabliſhed names is known; but they can never give them their original being and exiſtence there. And hence it is, that when any one aſks the meaning of a word denoting a ſimple idea, we pretend not to explain it to him by a definition, well knowing that to be impoſſible; but, ſuppoſing him already acquainted with the idea, and only ignorant of the name by which it is called, we either mention it to him by ſome other name, with which we preſume he knows its connection, or appeal to the object where the idea itſelf is found. Thus was any one to aſk the meaning of the word *white*, we ſhould tell him it ſtood for the ſame idea as *albus* in Latin, or *blanc* in French; or, if we thought him a ſtranger to theſe languages, might appeal to an object producing the idea, by ſaying it denoted the colour we obſerve in *ſnow* or *milk*. But this is by no means a definition of the word, exciting a new idea in his underſtanding; but merely a contrivance to remind him of a known idea, and teach him its connection with the eſtabliſhed name. For if the ideas after which he enquires have never yet been raiſed in his mind; as ſuppoſe one who had ſeen no other colours than *black* and *white*, ſhould aſk the meaning of the word *ſcarlet*; it is eaſy to perceive, that it would be no more poſſible to make him comprehend it by words, or a definition, than to diſcourſe the ſame perception into the imagination of a man born blind. The only method in this caſe is, to preſent ſome object, by looking at which the perception itſelf may be excited, and thus he will learn both the name and the idea together.

5 Exper and o vation bring to an ment names ſimple deas.

V. But how comes it to paſs that men agree in the names of their ſimple ideas, ſeeing they cannot view the perceptions in one another's minds, nor make known theſe perceptions by words to others? The effect is produced by experience and obſervation. Thus finding, for inſtance, that the name of *heat* is annexed to that impreſſion which men feel when they approach the fire, I make it alſo the ſign of the idea excited in me by ſuch an approach, nor have any doubt but it denotes the ſame perception in my mind as in theirs. For we are naturally led to imagine, that the ſame objects operate alike upon the organs of the human body, and produce an uniformity of ſenſations. No man fancies, that the idea raiſed in him by the taſte of *ſugar*, and which he calls *ſweetneſs*, differs from that excited in another by the like means; or that ***wormwood***, to whoſe reliſh he has given the epithet *bitter*, produces in another the ſenſation which he denotes by the word *ſweet*. Preſuming therefore upon this conformity of perceptions, when they ariſe from the ſame objects, we eaſily agree as to the names of our ſimple ideas; and if at any time, by a more narrow ſcrutiny into things, new ideas of this claſs come in our way, which we chuſe to expreſs by terms of our own invention; theſe names are explained, not by a definition, but by referring to the objects whence the ideas themſelves may be obtained.

6 con- ance of plex i- by de- ions, a contri- e in na.

VI. Being in this manner furniſhed with ſimple ideas, and the names by which they are expreſſed, the meaning of terms that ſtand for complex ideas is eaſily got; becauſe the ideas themſelves anſwering to theſe terms may be conveyed into the mind by definitions. For our complex notions are only certain combinations of ſimple ideas. When therefore theſe are enumerated, and the manner in which they are united into one conception, explained, nothing more is wanting to raiſe that conception in the underſtanding; and thus the term denoting it comes of courſe to be underſtood. And here it is worth while to reflect a little upon the wiſe contrivance of nature, in thus furniſhing us with the very apteſt means of communicating our thoughts. For were it not ſo ordered, that we could thus convey our complex ideas from one to another by definitions, it would in many caſes be impoſſible to make them known at all. This is apparent in thoſe ideas which are the proper work of the mind. For as they exiſt only in the underſtanding, and have no real objects in nature in conformity to which they are framed; if we could not make them known by deſcription, they muſt lie for ever hid within our own breaſts, and be confined to the narrow acquaintance of a ſingle mind. All the fine ſcenes that ariſe from time to time in the poet's fancy, and by his lively painting give ſuch entertainment to his readers; were he deſtitute of this faculty of laying them open to the view of others by words and deſcription, could not extend their influence beyond their own imagination, or give joy to any but the original inventor.

7 of t avail rds the rove- t of wledge.

VII. There is this farther advantage, in the ability we enjoy of communicating our complex notions by definitions; that as theſe make by far the largeſt claſs of our ideas, and moſt frequently occur in the progreſs and improvement of knowledge, ſo they are by theſe means imparted with the greateſt readineſs, than which nothing could tend more to the increaſe and ſpreading of ſcience: for a definition is ſoon peruſed; and if the terms of it are well underſtood, the idea itſelf finds an eaſy admiſſion into the mind. Whereas in ſimple perceptions, where we are referred to the objects producing them, if theſe cannot be come at, as is ſometimes the caſe, the names by which they are expreſſed muſt remain empty ſounds. But new ideas of this claſs occurring very rarely in the ſciences, they ſeldom create any great obſtruction. It is otherwiſe with our complex notions; for every ſtep we take leading us into new combinations and views of things, it becomes neceſſary to explain theſe to others, before they can be made acquainted with our diſcoveries. and as the manner of definitions is eaſy, requiring no apparatus but that of words, which are always ready, and at hand; hence we can with the leſs difficulty remove ſuch obſtacles as might ariſe from terms of our own invention, when they are made to ſtand for new complex ideas ſuggeſted to the mind by ſome preſent train of thinking. And thus at laſt we are let into the myſtery hinted at in the beginning of this chapter, *viz.* how we may become acquainted with the thoughts of another, when he makes uſe of words to which we have as yet joined no ideas. The anſwer is obvious from what has been already ſaid. If the terms denote ſimple perceptions, he muſt refer us to theſe objects of nature whence the perceptions themſelves are to be obtained; but, if they ſtand for complex ideas, their meaning may be explained by a *definition*.

Chap. II. *Of Definitions.*

8 Definition defined.

I. A definition *is the unfolding of ſome conception of the mind, anſwering to the word or term made uſe of as the ſign of it.* Now as, in exhibiting any idea to another, it is neceſſary that the deſcription be ſuch as may excite that preciſe idea in his mind; hence it is plain that definitions, properly ſpeaking, are not arbitrary, but confined to the repreſenting of certain determinate ſettled notions, ſuch namely as are annexed by the ſpeaker or writer to the words he uſes. As nevertheleſs it is univerſally allowed that the ſignification of words is perfectly voluntary, and not the effect of any natural and neceſſary connection between them and the ideas for which they ſtand; ſome may perhaps wonder why definitions are not ſo too. In order therefore to unravel this difficulty, and ſhew diſtinctly what is and what is not arbitrary in ſpeech, we muſt carefully diſtinguiſh between the connection of our words and ideas, and the unfolding of the ideas themſelves.

9 The connection between words and ideas, a perfectly voluntary eſtabliſhment.

II. Firſt, as to the connection of our words and ideas; this, it is plain, is a purely arbitrary inſtitution. When, for inſtance, we have in our minds the idea of any particular ſpecies of metals, the calling it by the name *gold* is an effect of the voluntary choice of men ſpeaking the ſame language, and not of any peculiar aptneſs in that ſound to expreſs that idea. Other nations we find make uſe of different ſounds, and with the ſame effect. Thus *aurum* denotes that idea in Latin, and *or* in French, and even the word *gold* itſelf would have as well ſerved to expreſs the idea of that metal which we call *ſilver*, had cuſtom in the beginning eſtabliſhed it.

10 The deſcription of ideas not ſo, but bounded to the repreſentation of that preciſe appearance by which they are diſtinguiſhed among themſelves.

III. But although we are thus entirely at liberty in connecting any idea with any ſound, yet it is quite otherwiſe in unfolding the ideas themſelves. For every idea having a preciſe appearance of its own, by which it is diſtinguiſhed from every other idea; it is manifeſt, that in laying it open to others, we muſt ſtudy ſuch a deſcription as ſhall exhibit that peculiar appearance. When we have formed to ourſelves the idea of a figure bounded by four equal ſides, joined together at right angles, we are at liberty to expreſs that idea by any ſound, and call it either a *ſquare* or a *triangle*. But which ever of theſe names we uſe, ſo long as the idea is the ſame, the deſcription by which we would ſignify it to another muſt be ſo too. Let it be called *ſquare* or *triangle*, it is ſtill a figure having four equal ſides, and all its angles right ones. Hence we clearly ſee what is and what is not arbitrary in the uſe of words. The eſtabliſhing any ſound as the mark of ſome determinate idea in the mind, is the effect of free choice, and a voluntary combination among men. And as different nations make uſe of different ſounds to denote the ſame ideas, hence proceeds all that variety of languages which we meet with in the world. But when a connection between our ideas and words is once ſettled, the unfolding of the idea anſwering to any word, which properly conſtitutes a definition, is by no means an arbitrary thing. For here we are bound to exhibit that preciſe conception which either the uſe of language, or our own particular choice, hath annexed to the term we uſe.

11 Cauſes of the obſcurity that has hitherto perplexed the theory of definitions.

IV. And thus it appears, that definitions, conſidered as deſcriptions of ideas in the mind, are ſteady and invariable, being bounded to the repreſentation of theſe preciſe ideas. But then, in the application of definitions to particular names, we are altogether left to our own free choice. Becauſe as the connecting of any idea with any ſound is a perfectly arbitrary inſtitution; the applying the deſcription of that idea to that ſound muſt be ſo too. When therefore logicians tell us that the definition of the name is arbitrary, they mean no more than this; that as different ideas may be connected with any term, according to the good pleaſure of him that uſes it, in like manner may different deſcriptions be applied to the term ſuitable to the ideas ſo connected. But this connection being ſettled, and the term conſidered as the ſign of ſome fixed idea in the underſtanding, we are no longer left to arbitrary explications, but muſt ſtudy ſuch a deſcription as correſponds with that preciſe idea. Now this alone, according to what has been before laid down, ought to be accounted a definition. What ſeems to have occaſioned no ſmall confuſion in this matter, is, that many explanations of words where no idea is unfolded, but merely the connection between ſome word and idea aſſerted, have yet been dignified with the name of definitions. Thus, when we ſay that *a clock is an inſtrument by which we meaſure time*; that is by ſome called a definition; and yet it is plain that we are beforehand ſuppoſed to have an idea of this inſtrument, and only taught that the word *clock* ſerves in common language to denote that idea. By this rule all explications of words in our dictionaries will be definitions, nay, the names of even ſimple ideas may be thus defined. *White*, we may ſay, is the colour we obſerve in ſnow or milk; *heat* the ſenſation produced by approaching the fire; and ſo in innumerable other inſtances. But theſe, and all others of the like kind, are by no means definitions, exciting new ideas in the underſtanding, but merely contrivances to remind us of known ideas, and teach their connection with the eſtabliſhed names.

12 Complex ideas alone capable of that kind of deſcription which goes by the name of a definition.

V. But now in definitions properly ſo called, we firſt conſider the term we uſe, as the ſign of ſome inward conception, either annexed to it by cuſtom, or our own free choice; and then the buſineſs of the definition is to unfold and explicate that idea. As therefore the whole art lies in giving juſt and true copies of our ideas; a definition is then ſaid to be made perfect, when it ſerves diſtinctly to excite the idea deſcribed in the mind of another, even ſuppoſing him before wholly unacquainted with it. This point ſettled, let us next inquire what thoſe ideas are which are capable of being thus unfolded? And in the firſt place it is evident, that all our ſimple ideas are neceſſarily excluded. We have ſeen already that experience alone is to be conſulted here, inſomuch that if either the objects whence they are derived come not in our way, or the avenues appointed by nature for their reception are wanting, no deſcription is ſufficient to convey them into the mind. But where the underſtanding is already ſupplied with theſe original and primitive conceptions, as they may be united together in an infinity of different forms; ſo may all their ſeveral combinations be diſtinctly laid open, by enumerating the ſimple ideas concerned in the various collections, and tracing the order and manner in which they are linked one to another. Now theſe combinations of ſimple notices conſtitute what we call our complex notions; whence it is evident that complex ideas, and thoſe alone, admit of that kind of deſcription which goes by the name of a definition.

VI. Definitions, then, are pictures or repreſentations of our ideas; and as theſe repreſentations are then only poſſible when the ideas themſelves are complex, it is obvious to remark, that definitions cannot have place but where we make uſe of terms ſtanding for ſuch complex ideas. But our complex ideas, being as we have ſaid nothing more than different combinations of ſimple ideas; we then know and comprehend them perfectly, when we know the ſeveral ſimple ideas of which they conſiſt, and can ſo put them together in our minds as is neceſſary towards the framing of that peculiar connection which gives every idea its diſtinct and proper appearance.

VII. Two things are therefore required in every definition. Firſt, that all the original ideas, out of which the complex one is formed, be diſtinctly enumerated. Secondly, that the order and manner of combining them into one conception be clearly explained. Where a definition has theſe requiſites, nothing is wanting to its perfection; becauſe every one who reads it and underſtands the terms, ſeeing at once what ideas he is to join together, and alſo in what manner, can at pleaſure form in his own mind the complex conception anſwering to the term defined. Let us, for inſtance, ſuppoſe the word *ſquare* to ſtand for that idea by which we repreſent to ourſelves a figure whoſe ſides ſubtend quadrants of a circumſcribed circle. The parts of this idea are the ſides bounding the figure. Theſe muſt be four in number, and all equal among themſelves, becauſe they are each to ſubtend a fourth part of the ſame circle. But, beſides theſe component parts, we muſt alſo take notice of the manner of putting them together, if we would exhibit the preciſe idea for which the word *ſquare* here ſtands. For four equal right lines, any-how joined, will not ſubtend quadrants of a circumſcribed circle. A figure with this property muſt have its ſides ſtanding alſo at right angles. Taking in therefore this laſt conſideration reſpecting the manner of combining the parts, the idea is fully deſcribed, and the definition thereby rendered compleat. For a figure bounded by four equal ſides, joined together at right angles, has the property required; and is moreover the only right lined figure to which that property belongs.

14 we are proceed rrive at and a- uate de- ions.

VIII. It will now be obvious to every one in what manner we ought to proceed, in order to arrive at juſt and adequate definitions. Firſt, we are to take an exact view of the idea to be deſcribed, trace it to its original principles, and mark the ſeveral ſimple perceptions that enter into the compoſition of it. Secondly, we are to conſider the particular manner in which theſe elementary ideas are combined, in order to the forming of that preciſe conception for which the term we make uſe of ſtands. When this is done, and the idea wholly unravelled, we have nothing more to do than fairly tranſcribe the appearance it makes to our own minds. Such a deſcription, by diſtinctly exhibiting the order and number of our primitive conceptions, cannot fail to excite at the ſame time in the mind of every one that reads it, the complex idea reſulting from them; and therefore attains the true and proper end of a definition.

Chap. III. *Of the Compoſition and Reſolutions of our Ideas, and the Rules of Definition thence ariſing.*

15 om- ding ideas, roceed ſucceſ. grada-

I. The rule laid down in the foregoing chapter is general, extending to all poſſible caſes; and is indeed that to which alone we can have recourſe, where any doubt or difficulty ariſes. It is not however neceſſary that we ſhould practiſe it in every particular inſtance. Many of our ideas are extremely complicated, inſomuch that to enumerate all the ſimple perceptions out of which they are formed, would be a very troubleſome and tedious work. For this reaſon logicians have eſtabliſhed certain compendious rules of defining, of which it may not be amiſs here to give ſome account. But in order to the better underſtanding of what follows, it will be neceſſary to obſerve that there is a certain gradation in the compoſition of our ideas. The mind of man is very limited in its views, and cannot take in a great number of objects at once. We are therefore fain to proceed by ſteps, and make our firſt advances ſubſervient to thoſe which follow. Thus in forming our complex notions, we begin at firſt with but a few ſimple ideas, ſuch as we can manage with eaſe, and unite them together into one conception. When we are provided with a ſufficient ſtock of theſe, and have by habit and uſe rendered them familiar to our minds, they become the component parts of other ideas ſtill more complicated, and form what we may call a ſecond order of compound notions. This proceſs, as is evident, may be continued to any degree of compoſition we pleaſe, mounting from one ſtage to another, and enlarging the number of combinations.

6 ideas claſs om- nded, we ce lly h all veral

II. But now in a ſeries of this kind, whoever would acquaint himſelf perfectly with the laſt and higheſt order of ideas, finds it much the moſt expedient method to proceed gradually thorough all the intermediate ſteps. For, was he to take any very compound idea to pieces, and, without regard to the ſeveral claſſes of ſimple perceptions that have already been formed into diſtinct combinations, break it at once into its original principles, the number would be ſo great as perfectly to confound the imagination, and overcome the utmoſt reach and capacity of the mind. When we ſee a prodigious multitude of men jumbled together in crowds, without order or any regular poſition, we find it impoſſible to arrive at an exact knowledge of their number. But if they are formed into ſeparate battalions, and ſo ſtationed as to fall within the leiſure ſurvey of the eye; by viewing them ſucceſſively and in order, we come to an eaſy and certain determination. It is the ſame in our complex ideas. When the original perceptions, out of which they are framed, are very numerous, it is not enough that we take a view of them in looſe and ſcattered bodies; we muſt form them into diſtinct claſſes, and unite theſe claſſes in a juſt and orderly manner, before we can arrive at a true knowledge of the compound notices reſulting from them.

17 Our definitions ſhould keep pace with our ideas, and obſerve a like gradation.

III. This gradual progreſs of the mind to its compound notions, through a variety of intermediate ſteps, plainly points out the manner of conducting the definitions, by which theſe notions are conveyed into the minds of others. For as the ſeries begins with ſimple and eaſy combinations, and advances through a ſucceſſion of different orders, riſing one above another in the degree of compoſition; it is evident that, in a train of definitions expreſſing theſe ideas, a like gradation is to be obſerved. Thus the complex ideas of the loweſt order can no otherwiſe be deſcribed than by enumerating the ſimple ideas out of which they are made, and explaining the manner of their union. But then in the ſecond, or any other ſucceeding order; as they are formed out of thoſe gradual combinations, and conſtitute the inferior claſſes, it is not neceſſary, in deſcribing them, to mention one by one all the ſimple ideas of which they conſiſt. They may be more diſtinctly and briefly unfolded, by enumerating the compound ideas of a lower order, from whoſe union they reſult, and which are all ſuppoſed to be already known in conſequence of previous definitions. Here then it is that the logical method of defining takes place; which that it may be the better underſtood, we ſhall explain ſomewhat more particularly the ſeveral ſteps and gradations of the mind in compounding its ideas, and thence deduce that peculiar form of a definition which logicians have thought fit to eſtabliſh.

18 The ſteps by which the mind proceeds from particular to general ideas.

IV. All the ideas we receive from the ſeveral objects of nature that ſurround us, repreſent diſtinct individuals. Theſe individuals, when compared together, are found in certain particulars to reſemble. Hence, by collecting the reſembling particulars into one conception, we form the notion of a *ſpecies*. And here let it be obſerved, that this laſt idea is leſs complicated than that by which we repreſent any of the particular objects contained under it. For the idea of the ſpecies excludes the peculiarities of the ſeveral individuals, and retains only ſuch properties as are common to them all. Again, by comparing ſeveral ſpecies together, and obſerving their reſemblance, we form the idea of a *genus*; where, in the ſame manner as before, the compoſition is leſſened, becauſe we leave out what is peculiar to the ſeveral ſpecies compared, and retain only the particulars wherein they agree. It is eaſy to conceive the mind proceeding thus from one ſtep to another, and advancing through its ſeveral claſſes of general notions, until at laſt it comes to the higheſt genus of all, denoted by the word *being*, where the bare idea of exiſtence is only concerned.

19 The conduct of the mind in compounding its ideas, as it advances thro' the different orders of perception.

V. In this procedure we ſee the mind unravelling a complex idea, and tracing it in the aſcending ſcale, from greater or leſs degrees of compoſition, until it terminates in one ſimple perception. If now we take the ſeries the contrary way, and, beginning with the laſt or higheſt genus, carry our view downwards, through all the inferior genera and ſpecies, quite to the individuals, we ſhall thereby arrive at a diſtinct apprehenſion of the conduct of the underſtanding in compounding its ideas. For, in the ſeveral claſſes of our perceptions, the higheſt in the ſcale is for the moſt part made up of but a few ſimple ideas, ſuch as the mind can take in and ſurvey with eaſe. This firſt general notion, when branched out into the different ſubdiviſions contained under it, has in every one of them ſomething peculiar, by which they are diſtinguiſhed among themſelves; inſomuch that, in deſcending from the genus to the ſpecies, we always ſuperadd ſome new idea, and thereby increaſe the degree of compoſition. Thus the idea denoted by the word *figure* is of a very general nature, and compoſed of but few ſimple perceptions, as implying no more than ſpace every-where abounded. But if we deſcend farther, and conſider the boundaries of this ſpace, as that they may be either lines or ſurface, we fall into the ſeveral ſpecies of figure. For where the ſpace is bounded by one or more ſurfaces, we give it the name of a *ſolid figure;* but where the boundaries are lines, it is called a *plain figure*.

20 The idea of the ſpecies found by ſuperadding the ſpecific difference to the genus.

VI. In this view of things it is evident, that the ſpecies is formed by ſuperadding a new idea to the genus. Here, for inſtance, the genus is circumſcribed ſpace. If now to this we ſuperadd the idea of a circumſcription by lines, we frame the notion of that ſpecies of figures which are called *plain;* but if we conceive the circumſcription to be by ſurfaces, we have the ſpecies of ſolid figures. This ſuperadded idea is called the *ſpecific difference*, not only as it ſerves to divide the ſpecies from the genus, but becauſe, being different in all the ſeveral ſubdiviſions, we thereby alſo diſtinguiſh the ſpecies one from another. And as it is likewiſe that conception, which, by being joined to the general idea, compleats the notion of the ſpecies; hence it is plain, that the genus and ſpecific difference are to be conſidered as the proper and conſtituent parts of the ſpecies. If we trace the progreſs of the mind ſtill farther, and obſerve it advancing through the inferior ſpecies, we ſhall find its manner of proceeding to be always the ſame. For every lower ſpecies is formed by ſuperadding ſome new idea to the ſpecies next above it; inſomuch that in this deſcending ſcale of our perceptions, the underſtanding paſſes through different orders of complex notions, which become more and more complicated at every ſtep it takes. Let us reſume here, for inſtance, the ſpecies of plain figures. They imply no more than ſpace bounded by lines. But if we take in an additional conſideration of the nature of theſe lines, as whether they are *right* or *curves*, we fall into the ſubdiviſions of plain figure, diſtinguiſhed by the names of *rectilinear*, *curvilinear*, and *mixtilinear*.

21 And in the inf ſpecies ſupera ding ſpecific ferenc the ne genus.

VII. And here we are to obſerve, that though plain figures, when conſidered as one of thoſe branches that come under the notion of figure in general, take the name of a ſpecies; yet compared with the claſſes of curvilinear, rectilinear, and mixtilinear, into which they themſelves may be divided, they really become a genus, of which the before mentioned ſubdiviſions conſtitute the ſeveral ſpecies. Theſe ſpecies, in the ſame manner as in the caſe of plain and ſolid figures, conſiſt of the genus and ſpecific difference as their conſtituent parts. For in the curvilinear kind, the curvity of the lines bounding the figure makes what is called the *ſpecific difference;* to which if we join the genus, which here is a plain figure, or ſpace circumſcribed by lines, we have all that is neceſſary towards compleating the notion of this ſpecies. We are only to take notice, that this laſt ſubdiviſion, having two genera above it, *viz.* plain figure, and figure in general; the genus joined with the ſpecific difference, in order to conſtitute the ſpecies of curvilinears, is that which lies neareſt to the ſaid ſpecies. It is the notion of plain figure, and not of figure in general, that joined with the idea of curvity makes up the complex conception of curve-lined figures. For in this deſcending ſcale of our ideas, figure in general, plain figures, curve-lined figures, the two firſt are conſidered as genera in reſpect of the third; and the ſecond in order, or that which ſtands next to the third, is called the *neareſt genus*. But now as it is this ſecond idea, which, joined with the notion of curvity, forms the ſpecies of curve-lined figures; it is plain, that the third or laſt idea in the ſeries is made up of the neareſt genus and ſpecific difference. This rule holds invariably, however far the ſeries is continued; becauſe, in a train of ideas thus ſucceeding one another, all that precede the laſt are conſidered as ſo many genera in reſpect of that laſt; and the laſt itſelf is always formed by ſuperadding the ſpecific difference to the genus next it.

2 The i any i dual poſed the lo ſpecie nume differ

VIII. Here then we have an univerſal deſcription, applicable to all our ideas of whatever kind, from the higheſt genus to the loweſt ſpecies. For, taking them in order downwards from the ſaid general idea, they every where conſiſt of the *genus proximum*, and *differentia ſpecifica*, as logicians love to expreſs themſelves. But when we come to the loweſt ſpecies of all, comprehending under it only individuals, the ſuperadded idea, by which theſe individuals are diſtinguiſhed one from another, no longer takes the name of the ſpecific difference. For here it ſerves not to denote diſtinct ſpecies, but merely a variety of individuals, each of which, having a particular exiſtence of its own, is therefore numerically different from every other of the ſame kind. And hence it is, that in this laſt caſe, logicians chuſe to call the ſuperadded idea by the name of the *numerical difference;* inſomuch that, as the idea of a ſpecies is made up of the neareſt genus and ſpecific difference, ſo the idea of an individual conſiſts of the loweſt ſpecies and numeric difference. Thus the circle is a ſpecies of curve-lined figures, and what we call the *loweſt ſpecies*, as comprehending under it only individuals. Circles in particular are diſtinguiſhed from one another by the length and poſition of their diameters. The length therefore and poſition of the diameter of a circle is what logicians call the *numerical difference*; becauſe, theſe being given, the circle itſelf may be deſcribed, and an individual thereby conſtituted.

IX. Thus the mind, in compounding its ideas, begins, we ſee, with the moſt general notions, which, conſiſting of but a few ſimple notices, are eaſily combined and brought together into one conception. Thence it proceeds to the ſpecies comprehended under this general idea, and theſe are formed by joining together the genus and ſpecific difference. And as it often happens, that theſe ſpecies may be ſtill farther ſubdivided, and run on in a long ſeries of continued gradations, producing various orders of compound perceptions; ſo all theſe ſeveral orders are regularly and ſucceſſively formed by annexing in every ſtep the ſpecific difference to the neareſt genus. When by this method of procedure we are come to the loweſt order of all, by joining the ſpecies and numeric difference we frame the ideas of individuals. And here the ſeries neceſſarily terminates, becauſe it is impoſſible any farther to bound or limit our conceptions. This view of the compoſition of our ideas, repreſenting their conſtituent parts in every ſtep of the progreſſion, naturally points out the true and genuine form of a definition. For as definitions are no more than deſcriptions of the ideas for which the terms defined ſtand; and as ideas are then deſcribed, when we enumerate diſtinctly and in order the parts of which they conſiſt; it is plain that, by making our definitions follow one another according to the natural train of our conceptions, they will be ſubject to the ſame rules, and keep pace with the ideas they deſcribe.

24
The form of a definition in all the various orders of conception.

X. As therefore the firſt order of our compound notions, or the ideas that conſtitute the higheſt genera in the different ſcales of perception, are formed by uniting together a certain number of ſimple notices; ſo the terms expreſſing theſe genera are defined *by enumerating the ſimple notices ſo combined.* And as the ſpecies comprehended under any genus, or the complex ideas of the ſecond order, ariſe from ſuperadding the ſpecific difference to the ſaid general idea; ſo the definition of the names of the ſpecies is abſolved, in a detail of the ideas of the ſpecific difference, connected with the term of the genus. For the genus having been before defined, the term by which it is expreſſed ſtands for a known idea, and may therefore be introduced into all ſubſequent definitions, in the ſame manner as the names of ſimple perceptions. It will now be ſufficiently obvious, that the definitions of all the ſucceeding orders of compound notions will every where conſiſt of the term of the neareſt genus, joined with an enumeration of the ideas that conſtitute the ſpecific difference; and that the definition of individuals unites the names of the loweſt ſpecies with the terms by which we expreſs the ideas of the numeric difference.

XI. Here then we have the true and proper form of a definition, in all the various orders of conception. This is that method of defining which is commonly called *logical*, and which we ſee is perfect in its kind, inaſmuch as it preſents a full and adequate deſcription of the idea for which the term defined ſtands.

PART II.

OF JUDGMENT.

CHAP. I. *Of the Grounds of human Judgment.*

THE mind being furniſhed with ideas, its next ſtep in the way to knowledge is, the comparing theſe ideas together, in order to judge of their agreement or diſagreement. In this joint view of our ideas, if the relation is ſuch as to be immediately diſcoverable by the bare inſpection of the mind, the judgments thence obtained are called *intuitive*; from a word that denotes *to look at*; for in this caſe, a mere attention to the ideas compared ſuffices to let us ſee how far they are connected or disjoined. Thus, *that the Whole is greater than any of its Parts*, is an intuitive judgment, nothing more being required to convince us of its truth, than an attention to the ideas of *whole* and *part*. And this too is the reaſon why we call the act of the mind forming theſe judgments, *intuition*; as it is indeed no more than an immediate perception of the agreement or diſagreement of any two ideas.

II. But here it is to be obſerved, that our knowledge of this kind reſpects only our ideas, and the relations between them; and therefore can ſerve only as a foundation to ſuch reaſonings as are employed in inveſtigating theſe relations. Now it ſo happens, that many of our judgments are converſant about facts, and the real exiſtence of things, which cannot be traced by the bare contemplation of our ideas. It does not follow, becauſe I have the idea of a circle in my mind, that therefore a figure anſwering to that idea has a real exiſtence in nature. I can form to myſelf the notion of a centaur, or golden mountain, but never imagine on that account, that either of them exiſt. What then are the grounds of our judgment in relation to facts? *experience* and *teſtimony*. By experience we are informed of the exiſtence of the ſeveral objects which ſurround us, and operate upon our ſenſes. Teſtimony is of a wider extent, and reaches not only to objects beyond the preſent ſphere of our obſervation, but alſo to facts and tranſactions, which being now paſt, and having no longer any exiſtence, could not without this conveyance have fallen under our cognizance.

27
Three foundations of human judgment, *viz.* 1. Intuition, the ground of ſcientifical knowledge.

III. Here we have three foundations of human judgment, from which the whole ſyſtem of our knowledge may with eaſe and advantage be derived. Firſt, intuition, which reſpects our ideas themſelves, and their relations, and is the foundation of that ſpecies of reaſoning which we call *demonſtration*. For whatever is deduced from our intuitive perceptions, by a clear and connected ſeries of proofs, is ſaid to be demonſtrated, and produces abſolute certainty in the mind. Hence the knowledge obtained in this manner is what we properly term *ſcience*; becauſe in every ſtep of the procedure it carries its own evidence along with it, and leaves no room for doubt or heſitation. And what is highly worthy of notice; as the truths of this claſs expreſs the relation between our ideas, and the ſame relations muſt ever and invariably ſubſiſt between the ſame ideas, our deductions in the way of ſcience conſtitute what we call *eternal, neceſſary,* and *immutable truths.* If it be true that the whole is equal to all its parts, it muſt be ſo unchangeably; becauſe the relation of equality being attached to the ideas themſelves, muſt ever intervene where the ſame ideas are compared. Of this nature are all the truths of natural religion, morality, and mathematics, and, in general, whatever may be gathered from the bare view and conſideration of our ideas.

28 2. Experience, the ground of our knowledge of the powers and qualities of bodies.

IV. The ſecond ground of human judgment is *experience;* from which we infer the exiſtence of thoſe ſubjects that ſurround us, and fall under the immediate notice of our ſenſes. When we ſee the ſun, or caſt our eyes towards a building, we not only have ideas of theſe objects within ourſelves, but aſcribe to them a real exiſtence out of the mind. It is alſo by the information of the ſenſes, that we judge of the qualities of bodies; as when we ſay that *ſnow is white, fire hot,* or *ſteel hard.* For as we are wholly unacquainted with the internal ſtructure and conſtitution of the bodies that produce theſe ſenſations in us, nay, and are unable to trace any connection between that ſtructure and the ſenſations themſelves, it is evident, that we build our judgments altogether upon obſervation, aſcribing to bodies ſuch qualities as are anſwerable to the perceptions they excite in us. But this is not the only advantage derived from experience, for to that too are we indebted for all our knowledge regarding the co-exiſtence of ſenſible qualities in objects, and the operations of bodies one upon another. Ivory, for inſtance, is hard and elaſtic; this we know by experience, and indeed by that alone. For, being altogether ſtrangers to the true nature both of elaſticity and hardneſs, we cannot by the bare contemplation of our ideas determine how far the one neceſſarily implies the other, or whether there may not be a repugnance between them. But when we obſerve them to exiſt both in the ſame object, we are then aſſured from experience, that they are not incompatible; and when we alſo find, that a ſtone is hard and not elaſtic, and that air though elaſtic is not hard, we alſo conclude upon the ſame foundation, that the ideas are not neceſſarily conjoined, but may exiſt ſeparately in different objects. In like manner with regard to the operations of bodies one upon another, it is evident, that our knowledge this way is all derived from obſervation. *Aqua regia* diſſolves gold, as has been found by frequent trial, nor is there any other way of arriving at the diſcovery. Naturaliſts may tell us, if they pleaſe, that the parts of *aqua regia* are of a texture apt to inſinuate between the corpuſcles of gold, and thereby looſen and ſhake them aſunder. If this is a true account of the matter, it will notwithſtanding be allowed, that our conjecture in regard to the conformation of theſe bodies is deduced from the experiment, and not the experiment from the conjecture. It was not from any previous knowledge of the intimate ſtructure of *aqua regia* and *gold,* and the aptneſs of their parts to act or to be acted upon, that we came by the concluſion above-mentioned. The internal conſtitution of bodies is in a manner wholly unknown to us; and could we even ſurmount this difficulty, yet as the ſeparation of the parts of gold implies ſomething like an active force in the *menſtruum,* and we are unable to conceive how it comes to be poſſeſſed of this activity; the effect muſt be owned to be altogether beyond our comprehenſion. But when repeated trials had once confirmed it, inſomuch that it was admitted as an eſtabliſhed truth in natural knowledge, it was then eaſy for men to ſpin out theories of their own invention, and contrive ſuch a ſtructure of parts, both for *gold* and *aqua regia,* as would beſt ſerve to explain the phænomenon upon the principles of that ſyſtem of philoſophy they had adopted.

V. From what has been ſaid it is evident, that as intuition is the foundation of what we call *ſcientifical* knowledge, ſo is experience of *natural.* For this laſt being wholly taken up with objects of ſenſe, or thoſe bodies that conſtitute the natural world; and their properties, as far as we can diſcover them, being to be traced only by a long and painful ſeries of obſervations; it is apparent, that in order to improve this branch of knowledge, we muſt betake ourſelves to the method of trial and experiment.

VI. But though experience is what we may term the immediate foundation of natural knowledge, yet with reſpect to particular perſons its influence is very narrow and confined. The bodies that ſurround us are numerous, many of them lie at a great diſtance, and ſome quite beyond our reach. Life is too ſhort, and ſo crouded with cares, that but little time is left for any ſingle man to employ himſelf in unfolding the myſteries of nature. Hence it is neceſſary to admit many things upon the teſtimony of others, which by this means becomes the foundation of a great part of our knowledge of body. No man doubts of the power of *aqua regia* to diſſolve gold, though perhaps he never himſelf made the experiment. In theſe therefore and ſuch like caſes we judge of the facts and operations of nature, upon the mere ground of teſtimony. However, as we can always have recourſe to experience where any doubt or ſcruple ariſes, this is juſtly conſidered as the true foundation of natural philoſophy; being indeed the ultimate ſupport upon which our aſſent reſts, and whereto we appeal when the higheſt degree of evidence is required.

29 3. Teſ ny, th ground hiſtoric knowl

VII. But there are many facts that will not allow of an appeal to the ſenſes, and in this caſe teſtimony is the true and only foundation of our judgments. All human actions of whatever kind, when conſidered as already paſt, are of the nature here deſcribed; becauſe having now no longer any exiſtence, both the facts themſelves, and the circumſtances attending them, can be known only from the relations of ſuch as had ſufficient opportunities of arriving at the truth. *Teſtimony* therefore is juſtly accounted a third ground of human judgment; and as from the other two we have deduced *ſcientifical* and *natural* knowledge, ſo we may from this derive *hiſtorical;* by which we mean, not merely a knowledge of the civil tranſactions of ſtates and kingdoms, but of all facts whatſoever, where teſtimony is the ultimate foundation of our belief.

Chap. II. *Of Affirmative and Negative Propoſitions.*

I. While the comparing of our ideas is conſidered merely as an act of the mind, aſſembling them together, and joining or disjoining them according to the reſult of its perceptions, we call it *judgment*; but when our judgments are put into words, they then bear the name of *propoſitions*. A propoſition therefore is a ſentence expreſſing ſome judgment of the mind, whereby two or more ideas are affirmed to agree or diſagree. Now as our judgments include at leaſt two ideas, one of which is affirmed or denied of the other, ſo muſt a propoſition have terms anſwering to theſe ideas. The idea of which we affirm or deny, and of courſe the term expreſſing that idea, is called the *ſubject* of the propoſition. The idea affirmed or denied, as alſo the term anſwering it, is called the *predicate*. Thus in the propoſition, *God is omnipotent*: *God* is the ſubject, it being of him that we affirm omnipotence; and *omnipotent* is the predicate, becauſe we affirm the idea expreſſed by that word to belong to God.

II. But as in propoſitions, ideas are either joined or disjoined; it is not enough to have terms expreſſing thoſe ideas, unleſs we have alſo ſome words to denote their agreement or diſagreement. That word in a propoſition, which connects two ideas together, is called the *copula*; and if a negative particle be annexed, we thereby underſtand that the ideas are diſjoined. The *ſubſtantive verb* is commonly made uſe of for the copula, as in the above-mentioned propoſition, *God is omnipotent*; where *is* repreſents the copula, and ſignifies the agreement of the ideas of *God* and *omnipotence*. But if we mean to ſeparate two ideas; then, beſides the ſubſtantive verb, we muſt alſo uſe ſome particle of negation, to expreſs this repugnance. The propoſition, *man is not perfect*, may ſerve as an example of this kind, where the notion of *perfection* being removed from the idea of *man*, the negative particle *not* is inſerted after the copula, to ſignify the diſagreement between the ſubject and predicate.

III. Every propoſition neceſſarily conſiſts of theſe three parts; but then it is not alike needful that they be all ſeverally expreſſed in words; becauſe the copula is often included in the term of the predicate, as when we ſay, *he ſits*; which imports the ſame as *he is ſitting*. In the Latin language, a ſingle word has often the force of a whole ſentence. Thus *ambulat* is the ſame as *ille eſt ambulans*; *amo*, as *ego ſum amans*, and ſo in innumerable other inſtances; by which it appears, that we are not ſo much to regard the number of words in a ſentence, as the ideas they repreſent, and the manner in which they are put together. For wherever two ideas are joined or disjoined in an expreſſion, though of but a ſingle word, it is evident that we have a ſubject, predicate, and copula, and of conſequence a complete propoſition.

IV. When the mind joins two ideas, we call it an *affirmative* judgment; when it ſeparates them, a *negative*: and as any two ideas compared together muſt neceſſarily either agree or not agree, it is evident, that all our judgments fall under theſe two diviſions. Hence likewiſe the propoſitions expreſſing theſe judgments are all either affirmative or negative. An affirmative propoſition connects the predicate with the ſubject, as *a ſtone is heavy*; a negative propoſition ſeparates them, as *God is not the author of evil*. *Affirmation* therefore is the ſame as joining two ideas together, and this is done by means of the copula. *Negation* on the contrary marks a repugnance between the ideas compared, in which caſe a negative particle muſt be called in, to ſhew that the connection included in the copula does not take place.

34 When the negative particle ſerves to disjoin ideas.

V. Hence we ſee the reaſon of the rule commonly laid down by logicians; that in all negative propoſitions the negation ought to affect the copula. For as the copula, when placed by itſelf, between the ſubject and the predicate, manifeſtly binds them together; it is evident, that, in order to render a propoſition negative, the particles of negation muſt enter it in ſuch a manner as to deſtroy this union. In a word, then only are two ideas disjoined in a propoſition, when the negative particle may be ſo referred to the copula, as to break the affirmation included in it, and undo that connection it would otherwiſe eſtabliſh. When we ſay, for inſtance, *No man is perfect*; take away the negation, and the copula of itſelf plainly unites the ideas in the propoſition. But as this is the very reverſe of what is intended, a negative mark is added, to ſhew that this union does not here take place. The negation therefore, by deſtroying the effect of the copula, changes the very nature of the propoſition, inſomuch that, inſtead of binding two ideas together, it denotes their ſeparation. On the contrary, in this ſentence; *The man who departs not from an upright behaviour, is beloved of God*: the predicate *beloved of God* is evidently affirmed of the ſubject an *upright man*; ſo that, notwithſtanding the negative particle, the propoſition is ſtill affirmative. The reaſon is plain; the negation here affects not the copula, but making properly a part of the ſubject, ſerves with other terms in the ſentence, to form one complex idea, of which the predicate *beloved of God*, is directly affirmed.

Chap. III. *Of Univerſal and Particular Propoſitions.*

35 Diviſion of propoſitions into univerſal and particular.

I. The next conſiderable diviſion of propoſitions is into *univerſal* and *particular*. Our ideas, according to what has been already obſerved in the firſt Part, are all ſingular as they enter the mind, and repreſent individual objects. But as by abſtraction we can render them univerſal, ſo as to comprehend a whole claſs of things, and ſometimes ſeveral claſſes at once; hence the terms expreſſing theſe ideas muſt be in like manner univerſal. If therefore we ſuppoſe any general term to become the ſubject of a propoſition, it is evident, that whatever is affirmed of the abſtract idea belonging to that term may be affirmed of all the individuals to which that idea extends. Thus when we ſay, *Men are mortal*; we conſider mortality, not as confined to one or any number of particular men, but as what may be affirmed without reſtriction of the whole ſpecies. By this means the propoſition becomes as general as the idea which makes the ſubject of it, and indeed derives its univerſality intirely from that idea, being more or leſs ſo according as this may be ry ſtep of the procedure it carries its own evidence along with it, and leaves no room for doubt or heſitation. And what is highly worthy of notice; as the truths of this claſs expreſs the relation between our ideas, and the ſame relations muſt ever and invariably ſubſiſt between the ſame ideas, our deductions in the way of ſcience conſtitute what we call *eternal, neceſſary*, and *immutable truths*. If it be true that the whole is equal to all its parts, it muſt be ſo unchangeably; becauſe the relation of equality being attached to the ideas themſelves, muſt ever intervene where the ſame ideas are compared. Of this nature are all the truths of natural religion, morality, and mathematics, and, in general, whatever may be gathered from the bare view and conſideration of our ideas.

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2. Experience, the ground of our knowledge of the powers and qualities of bodies.

IV. The ſecond ground of human judgment is *experience*; from which we infer the exiſtence of thoſe ſubjects that ſurround us, and fall under the immediate notice of our ſenſes. When we ſee the ſun, or caſt our eyes towards a building, we not only have ideas of theſe objects within ourſelves, but aſcribe to them a real exiſtence out of the mind. It is alſo by the information of the ſenſes, that we judge of the qualities of bodies; as when we ſay that *ſnow is white, fire hot*, or *ſteel hard*. For as we are wholly unacquainted with the internal ſtructure and conſtitution of the bodies that produce theſe ſenſations in us, nay, and are unable to trace any connection between that ſtructure and the ſenſations themſelves, it is evident, that we build our judgments altogether upon obſervation, aſcribing to bodies ſuch qualities as are anſwerable to the perceptions they excite in us. But this is not the only advantage derived from experience, for to that too are we indebted for all our knowledge regarding the co-exiſtence of ſenſible qualities in objects, and the operations of bodies one upon another. Ivory, for inſtance, is hard and elaſtic; this we know by experience, and indeed by that alone. For, being altogether ſtrangers to the true nature both of elaſticity and hardneſs, we cannot by the bare contemplation of our ideas determine how far the one neceſſarily implies the other, or whether there may not be a repugnance between them. But when we obſerve them to exiſt both in the ſame object, we are then aſſured from experience, that they are not incompatible; and when we alſo find, that a ſtone is hard and not elaſtic, and that air though elaſtic is not hard, we alſo conclude upon the ſame foundation, that the ideas are not neceſſarily conjoined, but may exiſt ſeparately in different objects. In like manner with regard to the operations of bodies one upon another, it is evident, that our knowledge this way is all derived from obſervation. *Aqua regia* diſſolves gold, as has been found by frequent trial, nor is there any other way of arriving at the diſcovery. Naturaliſts may tell us, if they pleaſe, that the parts of *aqua regia* are of a texture apt to inſinuate between the corpuſcles of gold, and thereby looſen and ſhake them aſunder. If this is a true account of the matter, it will notwithſtanding be allowed, that our conjecture in regard to the conformation of theſe bodies is deduced from the experiment, and not the experiment from the conjecture. It was not from any previous knowledge of the intimate ſtructure of *aqua regia* and *gold*, and the aptneſs of their parts to act or to be acted upon, that we came by the concluſion above-mentioned. The internal conſtitution of bodies is in a manner wholly unknown to us; and could we even ſurmount this difficulty, yet as the ſeparation of the parts of gold implies ſomething like an active force in the *menſtruum*, and we are unable to conceive how it comes to be poſſeſſed of this activity; the effect muſt be owned to be altogether beyond our comprehenſion. But when repeated trials had once confirmed it, inſomuch that it was admitted as an eſtabliſhed truth in natural knowledge, it was then eaſy for men to ſpin out theories of their own invention, and contrive ſuch a ſtructure of parts, both for *gold* and *aqua regia*, as would beſt ſerve to explain the phænomenon upon the principles of that ſyſtem of philoſophy they had adopted.

V. From what has been ſaid it is evident, that as intuition is the foundation of what we call *ſcientifical* knowledge, ſo is experience of *natural*. For this laſt being wholly taken up with objects of ſenſe, or thoſe bodies that conſtitute the natural world; and their properties, as far as we can diſcover them, being to be traced only by a long and painful ſeries of obſervations; it is apparent, that in order to improve this branch of knowledge, we muſt betake ourſelves to the method of trial and experiment.

VI. But though experience is what we may term the immediate foundation of natural knowledge, yet with reſpect to particular perſons its influence is very narrow and confined. The bodies that ſurround us are numerous, many of them lie at a great diſtance, and ſome quite beyond our reach. Life is too ſhort, and ſo crouded with cares, that but little time is left for any ſingle man to employ himſelf in unfolding the myſteries of nature. Hence it is neceſſary to admit many things upon the teſtimony of others, which by this means becomes the foundation of a great part of our knowledge of body. No man doubts of the power of *aqua regia* to diſſolve gold, though perhaps he never himſelf made the experiment. In theſe therefore and ſuch like caſes we judge of the facts and operations of nature, upon the mere ground of teſtimony. However, as we can always have recourſe to experience where any doubt or ſcruple ariſes, this is juſtly conſidered as the true foundation of natural philoſophy; being indeed the ultimate ſupport upon which our aſſent reſts, and whereto we appeal when the higheſt degree of evidence is required.

VII. But there are many facts that will not allow of an appeal to the ſenſes, and in this caſe teſtimony is the true and only foundation of our judgments. All human actions of whatever kind, when conſidered as already paſt, are of the nature here deſcribed; becauſe having now no longer any exiſtence, both the facts themſelves, and the circumſtances attending them, can be known only from the relations of ſuch as had ſufficient opportunities of arriving at the truth. *Teſtimony* therefore is juſtly accounted a third ground of human judgment; and as from the other two we have deduced *ſcientifical* and *natural* knowledge, ſo we may from this derive *hiſtorical*; by which we mean, not merely a knowledge of the civil tranſactions of ſtates and kingdoms, but of all facts whatſoever

ever, where teſtimony is the ultimate foundation of our belief.

Chap. II. *Of Affirmative and Negative Propoſitions.*

I. While the comparing of our ideas is conſidered merely as an act of the mind, aſſembling them together, and joining or disjoining them according to the reſult of its perceptions, we call it *judgment*; but when our judgments are put into words, they then bear the name of *propoſitions*. A propoſition therefore is a ſentence expreſſing ſome judgment of the mind, whereby two or more ideas are affirmed to agree or diſagree. Now as our judgments include at leaſt two ideas, one of which is affirmed or denied of the other, ſo muſt a propoſition have terms anſwering to theſe ideas. The idea of which we affirm or deny, and of courſe the term expreſſing that idea, is called the *ſubject* of the propoſition. The idea affirmed or denied, as alſo the term anſwering it, is called the *predicate*. Thus in the propoſition, *God is omnipotent: God* is the ſubject, it being of him that we affirm omnipotence; and *omnipotent* is the predicate, becauſe we affirm the idea expreſſed by that word to belong to God.

II. But as in propoſitions, ideas are either joined or disjoined; it is not enough to have terms expreſſing thoſe ideas, unleſs we have alſo ſome words to denote their agreement or diſagreement. That word in a propoſition, which connects two ideas together, is called the *copula*; and if a negative particle be annexed, we thereby underſtand that the ideas are diſjoined. The *ſubſtantive verb* is commonly made uſe of for the copula, as in the above-mentioned propoſition, *God is omnipotent;* where *is* repreſents the copula, and ſignifies the agreement of the ideas of *God* and *omnipotence*. But if we mean to ſeparate two ideas; then, beſides the ſubſtantive verb, we muſt alſo uſe ſome particle of negation, to expreſs this repugnance. The propoſition, *man is not perfect*, may ſerve as an example of this kind, where the notion of *perfection* being removed from the idea of *man*, the negative particle *not* is inſerted after the copula, to ſignify the diſagreement between the ſubject and predicate.

III. Every propoſition neceſſarily conſiſts of theſe three parts; but then it is not alike needful that they be all ſeverally expreſſed in words; becauſe the copula is often included in the term of the predicate, as when we ſay, *he ſits;* which imports the ſame as *he is ſitting*. In the Latin language, a ſingle word has often the force of a whole ſentence. Thus *ambulat* is the ſame as *ille eſt ambulans; amo*, as *ego ſum amans*, and ſo in innumerable other inſtances; by which it appears, that we are not ſo much to regard the number of words in a ſentence, as the ideas they repreſent, and the manner in which they are put together. For wherever two ideas are joined or disjoined in an expreſſion, though of but a ſingle word, it is evident that we have a ſubject, predicate, and copula, and of conſequence a complete propoſition.

IV. When the mind joins two ideas, we call it an *affirmative* judgment; when it ſeparates them, a *negative:* and as any two ideas compared together muſt neceſſarily either agree or not agree, it is evident, that all our judgments fall under theſe two diviſions. Hence likewiſe the propoſitions expreſſing theſe judgments are all either affirmative or negative. An affirmative propoſition connects the predicate with the ſubject, as *a ſtone is heavy*; a negative propoſition ſeparates them, as *God is not the author of evil*. *Affirmation* therefore is the ſame as joining two ideas together, and this is done by means of the copula. *Negation* on the contrary marks a repugnance between the ideas compared, in which caſe a negative particle muſt be called in, to ſhew that the connection included in the copula does not take place.

34 When the negative particle ſerves to disjoin ideas.

V. Hence we ſee the reaſon of the rule commonly laid down by logicians; that in all negative propoſitions the negation ought to affect the copula. For as the copula, when placed by itſelf, between the ſubject and the predicate, manifeſtly binds them together; it is evident, that, in order to render a propoſition negative, the particles of negation muſt enter it in ſuch a manner as to deſtroy this union. In a word, then only are two ideas disjoined in a propoſition, when the negative particle may be ſo referred to the copula, as to break the affirmation included in it, and undo that connection it would otherwiſe eſtabliſh. When we ſay, for inſtance, *No man is perfect*; take away the negation, and the copula of itſelf plainly unites the ideas in the propoſition. But as this is the very reverſe of what is intended, a negative mark is added, to ſhew that this union does not here take place. The negation therefore, by deſtroying the effect of the copula, changes the very nature of the propoſition, inſomuch that, inſtead of binding two ideas together, it denotes their ſeparation. On the contrary, in this ſentence; *The man who departs not from an upright behaviour, is beloved of God:* the predicate *beloved of God* is evidently affirmed of the ſubject an *upright man*; ſo that, notwithſtanding the negative particle, the propoſition is ſtill affirmative. The reaſon is plain; the negation here affects not the copula, but making properly a part of the ſubject, ſerves with other terms in the ſentence, to form one complex idea, of which the predicate *beloved of God*, is directly affirmed.

Chap. III. *Of Univerſal and Particular Propoſitions.*

35 Diviſion of propoſitions into univerſal and particular.

I. The next conſiderable diviſion of propoſitions is into *univerſal* and *particular*. Our ideas, according to what has been already obſerved in the firſt Part, are all ſingular as they enter the mind, and repreſent individual objects. But as by abſtraction we can render them univerſal, ſo as to comprehend a whole claſs of things, and ſometimes ſeveral claſſes at once; hence the terms expreſſing theſe ideas muſt be in like manner univerſal. If therefore we ſuppoſe any general term to become the ſubject of a propoſition, it is evident, that whatever is affirmed of the abſtract idea belonging to that term may be affirmed of all the individuals to which that idea extends. Thus when we ſay, *Men are mortal;* we conſider mortality, not as confined to one or any number of particular men, but as what may be affirmed without reſtriction of the whole ſpecies. By this means the propoſition becomes as general as the idea which makes the ſubject of it, and indeed derives its univerſality intirely from that idea, being more or leſs ſo according as this may be extended to more or fewer individuals. But it is further to be obſerved of theſe general terms, that they ſometimes enter a propoſition in their full latitude, as in the example given above; and ſometimes appear with a mark of limitation. In this laſt caſe we are given to underſtand, that the predicate agrees not to the whole univerſal idea, but only to a part of it; as in the propoſition, *ſome men are wiſe:* For here wiſdom is not affirmed of every particular man, but reſtrained to a few of the human ſpecies.

36 Propoſitions univerſal where the ſubject is ſo, without a mark of reſtriction.

II. Now from this different appearance of the general idea, that conſtitutes the ſubject of any judgment, ariſes the diviſion of propoſitions into *univerſal* and *particular*. An univerſal propoſition is that wherein the ſubject is ſome general term taken in its full latitude, inſomuch that the predicate agrees to all the individuals comprehended under it, if it denotes a proper ſpecies; and to all the ſeveral ſpecies, and their individuals, if it marks an idea of a higher order. The words *all, every, no, none,* &c. are the proper ſigns of this univerſality; and as they ſeldom fail to accompany general truths, ſo they are the moſt obvious criterion whereby to diſtinguiſh them. *All animals have a power of beginning motion.* This is an univerſal propoſition; as we know from the word *all* prefixed to the ſubject *animal,* which denotes that it muſt be taken in its full extent. Hence the power of beginning motion may be affirmed of all the ſeveral ſpecies of animals.

37 Propoſitions particular where ſome univerſal ſubject appears with a mark of limitation.

III. A *particular* propoſition has in like manner ſome general term for its ſubject, but with a mark of limitation added, to denote, that the predicate agrees only to ſome of the individuals comprehended under a ſpecies, or to one or more of the ſpecies belonging to any genus, and not to the whole univerſal idea. Thus, *Some ſtones are heavier than iron; ſome men have an uncommon ſhare of prudence.* In the laſt of theſe propoſitions, the ſubject *ſome men* implies only a certain number of individuals, comprehended under a ſingle ſpecies. In the former, where the ſubject is a genus that extends to a great variety of diſtinct claſſes, *ſome ſtones* may not only imply any number of particular ſtones, but alſo ſeveral whole ſpecies of ſtones; inaſmuch as there may be not a few with the property there deſcribed. Hence we ſee that a propoſition does not ceaſe to be particular by the predicate's agreeing to a whole ſpecies, unleſs that ſpecies, ſingly and diſtinctly conſidered, makes alſo the ſubject of which we affirm or deny.

38 Singular propoſitions contained under the head of particulars.

IV. There is ſtill one ſpecies of propoſitions that remains to be deſcribed, and which the more deſerves our notice, as it is not yet agreed among logicians to which of the two claſſes mentioned above they ought to be referred; namely, *ſingular* propoſitions, or thoſe where the ſubject is an individual. Of this nature are the following: *Sir Iſaac Newton was the inventor of fluxions; this book contains many uſeful truths.* What occaſions ſome difficulty as to the proper rank of theſe propoſitions is; that the ſubject being taken according to the whole of its extenſion, they ſometimes have the ſame effect in reaſoning as univerſals. But if it be conſidered that they are in truth the moſt limited kind of particular propoſitions, and that no propoſition can with any propriety be called univerſal but where the ſubject is ſome univerſal idea; we ſhall not be long in determining to which claſs they ought to be referred. When we ſay, *Some books contain uſeful truths;* the propoſition is particular, becauſe the general term appears with a mark of reſtriction. If therefore we ſay, *This book contains uſeful truths;* it is evident that the propoſition muſt be ſtill more particular, as the limitation implied in the word *this* is of a more confined nature than in the former caſe.

V. We ſee therefore that all propoſitions are either *affirmative* or *negative;* nor is it leſs evident, that in both caſes they may be *univerſal* or *particular.* Hence ariſes that celebrated fourfold diviſion of them into *univerſal affirmative* and *univerſal negative, particular affirmative* and *particular negative,* which comprehends indeed all their varieties. The uſe of this method of diſtinguiſhing them will appear more fully afterwards, when we come to treat of reaſoning and ſyllogiſm.

CHAP. IV. *Of Abſolute and Conditional Propoſitions.*

I. THE objects about which we are chiefly converſant in this world, are all of a nature liable to change. What may be affirmed of them at one time cannot often at another; and it makes no ſmall part of our knowledge to diſtinguiſh rightly theſe variations, and trace the reaſons upon which they depend. For it is obſervable, that amidſt all the viciſſitude of nature, ſome things remain conſtant and invariable; nor even are the changes to which we ſee others liable, effected, but in conſequence of uniform and ſteady laws, which, when known, are ſufficient to direct us in our judgments about them. Hence philoſophers, in diſtinguiſhing the objects of our perception into various claſſes, have been very careful to note, that ſome properties belong eſſentially to the general idea, ſo as not to be ſeparable from it but by deſtroying its very nature; while others are only accidental, and may be affirmed or denied of it in different circumſtances. Thus ſolidity, a yellow colour, and great weight are conſidered as eſſential qualities of gold; but whether it ſhall exiſt as an uniform conjoined maſs, is not alike neceſſary. We ſee that by a proper menſtruum it may be reduced to a fine powder, and that an intenſe heat will bring it into a ſtate of fuſion.

II. From this diverſity in the ſeveral qualities of things ariſes a conſiderable difference as to the manner of our judging about them. For all ſuch properties as are inſeparable from objects, when conſidered as belonging to any genus or ſpecies, are affirmed abſolutely, and without reſerve of that general idea. Thus we ſay; *Gold is very weighty, a ſtone is hard, animals have a power of ſelf-motion.* But in the caſe of mutable or accidental qualities, as they depend upon ſome other conſideration diſtinct from the general idea; that alſo muſt be taken into the account, in order to form an accurate judgment. Should we affirm, for inſtance, of ſome ſtones, that they are very ſuſceptible of a rolling motion; the propoſition, while it remains in this general form, cannot with any advantage be introduced into our reaſonings. An aptneſs to receive that mode of motion flows from the figure of the ſtone; which, as it may vary infinitely, our judgment then only becomes applicable and determinate,

nate, when the particular figure, of which volubility is a conſequence, is alſo taken into the account. Let us then bring in this other conſideration, and the propoſition will run as follows: *Stones of a ſpherical form are eaſily put into a rolling motion.* Here we ſee the condition upon which the predicate is affirmed, and therefore know in what particular caſes the propoſition may be applied.

III. This conſideration of propoſitions reſpecting the manner in which the predicate is affirmed of the ſubject gives riſe to the diviſion of them into *abſolute* and *conditional*. *Abſolute* propoſitions are thoſe wherein we affirm ſome property inſeparable from the idea of the ſubject, and which therefore belongs to it in all poſſible caſes; as *God is infinitely wiſe. Virtue tends to the ultimate happineſs of man.* But where the predicate is not neceſſarily connected with the idea of the ſubject, unleſs upon ſome conſideration diſtinct from that idea, there the propoſition is called *conditional*. The reaſon of the name is taken from the ſuppoſition annexed, which is of the nature of a condition, and may be expreſſed as ſuch. Thus, *If a ſtone is expoſed to the rays of the ſun, it will contract ſome degree of heat. If a river runs in a very declining channel, its rapidity will conſtantly increaſe.*

IV. There is not any thing of greater importance in philoſophy than a due attention to this diviſion of propoſitions. If we are careful never to affirm things abſolutely but where the ideas are inſeparably conjoined; and if in our other judgments we diſtinctly mark the conditions which determine the predicate to belong to the ſubject; we ſhall be the leſs liable to miſtake in applying general truths to the particular concerns of human life. It is owing to the exact obſervance of this rule that mathematicians have been ſo happy in their diſcoveries, and that what they demonſtrate of magnitude in general may be applied with eaſe in all obvious occurrences.

V. The truth of it is, particular propoſitions are then known to be true, when we can trace their connection with univerſals; and it is accordingly the great buſineſs of ſcience to find out general truths that may be applied with ſafety in all obvious inſtances. Now the great advantage ariſing from determining with care the conditions upon which one idea may be affirmed or denied of another is this: that thereby particular propoſitions really become univerſal, may be introduced with certainty into our reaſonings, and ſerve as ſtandards to conduct and regulate our judgments. To illuſtrate this by a familiar inſtance: if we ſay, *Some water acts very forcibly*; the propoſition is particular: and as the conditions on which this forcible action depends are not mentioned, it is as yet uncertain in what caſes it may be applied. Let us then ſupply theſe conditions, and the propoſition will run thus; *Water conveyed in ſufficient quantity along a ſteep deſcent acts very forcibly.* Here we have an univerſal judgment, inaſmuch as the predicate *forcible action* may be aſcribed to all water under the circumſtances mentioned. Nor is it leſs evident that the propoſition in this new form is of eaſy application; and in fact we find that men do apply it in inſtances where the forcible action of water is required; as in corn-mills and many other works of art.

CHAP. V. *Of Simple and Compound Propoſitions.*

45 **Diviſion of propoſitions into ſimple and compound.**

I. HITHERTO we have treated of propoſitions, where only two ideas are compared together. Theſe are in the general called *ſimple*; becauſe, having but one ſubject and one predicate, they are the effect of a ſimple judgment that admits of no ſubdiviſion. But if it ſo happens that ſeveral ideas offer themſelves to our thoughts at once, whereby we are led to affirm the ſame thing of different objects, or different things of the ſame object; the propoſitions expreſſing theſe judgments are called *compound*: becauſe they may be reſolved into as many others as there are ſubjects or predicates in the whole complex determination of the mind. Thus, *God is infinitely wiſe and infinitely powerful.* Here there are two predicates, *infinite wiſdom and infinite power*, both affirmed of the ſame ſubject; and accordingly the propoſition may be reſolved into two others, affirming theſe predicates ſeverally. In like manner in the propoſition, *Neither kings nor people are exempt from death*; the predicate is denied of both ſubjects, and may therefore be ſeparated from them in diſtinct propoſitions. Nor is it leſs evident that if a complex judgment conſiſts of ſeveral ſubjects and predicates, it may be reſolved into as many ſimple propoſitions as are the number of different ideas compared together. *Riches and honours are apt to elate the mind, and increaſe the number of our deſires.* In this judgment there are two ſubjects and two predicates, and it is at the ſame time apparent that it may be reſolved into four diſtinct propoſitions. *Riches are apt to elate the mind. Riches are apt to increaſe the number of our deſires.* And ſo of honours.

46 **The proper notion of a compound propoſition aſcertained.**

II. Logicians have divided theſe compound propoſitions into a great many different claſſes; but, in our opinion, not with a due regard to their proper definition. Thus *conditionals, caſuals, relatives*, &c. are mentioned as ſo many diſtinct ſpecies of this kind, though in fact they are no more than ſimple propoſitions. To give an inſtance of a conditional; *If a ſtone is expoſed to the rays of the ſun, it will contract ſome degree of heat.* Here we have but one ſubject and one predicate; for the complex expreſſion, *A ſtone expoſed to the rays of the ſun*, conſtitutes the proper ſubject of this propoſition, and is no more than one determinate idea. The ſame thing happens in cauſals. *Rehoboam was unhappy becauſe he followed evil counſel.* There is here an appearance of two propoſitions ariſing from the complexity of the expreſſion; but when we come to conſider the matter more nearly, it is evident that we have but a ſingle ſubject and predicate. *The purſuit of evil counſel brought miſery upon Rehoboam.* It is not enough therefore to render a propoſition compound, that the ſubject and predicate are complex notions, requiring ſometimes a whole ſentence to expreſs them: for in this caſe the compariſon is ſtill confined to two ideas, and conſtitutes what we call a ſimple judgment. But where there are ſeveral ſubjects or predicates, or both, as the affirmation or negation may be alike extended to them all, the propoſition expreſſing ſuch a judgment is truly a collection of as many ſimple ones as there are different ideas compared. Confining ourſelves therefore to this more ſtrict and juſt notion of compound propoſitions, they are all reducible to two kinds, *viz. copulatives* and *disjunctives.*

47 **Compound propoſitions, either copulative:**

III. A *copulative* propoſition is, where the ſubjects and predicates are ſo linked together, that they may be all ſeverally affirmed or denied one of another. Of this nature are the examples of compound propoſitions given above. *Riches and honours are apt to elate the mind, and increaſe the number of our deſires. Neither kings nor people are exempt from death.* In the firſt of theſe the two predicates may be affirmed ſeverally of each ſubject, whence we have four diſtinct propoſitions. The other furniſhes an example of the negative kind, where the ſame predicate, being disjoined from both ſubjects, may be alſo denied of them in ſeparate propoſitions.

48 **Or disjunctive.**

IV. The other ſpecies of compound propoſitions are thoſe called disjunctives; in which, comparing ſeveral predicates with the ſame ſubject; we affirm that one of them neceſſarily belongs to it, but leave the particular predicate undetermined. If any one for example ſays, *This world either exiſts of itſelf, or is the work of ſome all-wiſe and powerful cauſe,* it is evident that one of the two predicates muſt belong to the world; but as the propoſition determines not which, it is therefore of the kind we call *disjunctive.* Such too are the following: *The ſun either moves round the earth, or is the centre about which the earth revolves. Friendſhip finds men equal, or makes them ſo.* It is the nature of all propoſitions of this claſs, ſuppoſing them to be exact in point of form, that upon determining the particular predicate, the reſt are of courſe to be removed; or if all the predicates but one are removed, that one neceſſarily takes place. Thus in the example given above; if we allow the world to be the work of ſome wiſe and powerful cauſe, we of courſe deny it to be ſelf-exiſtent; or if we deny it to be ſelf-exiſtent, we muſt neceſſarily admit that it was produced by ſome wiſe and powerful cauſe. Now this particular manner of linking the predicates together, ſo that the eſtabliſhing one diſplaces all the reſt; or the excluding all but one neceſſarily eſtabliſhes that one; cannot otherwiſe be effected than by means of *disjunctive* particles. And hence it is that propoſitions of this claſs take their names from theſe particles which make ſo neceſſary a part of them, and indeed conſtitute their very nature conſidered as a diſtinct ſpecies.

Chap. VI. *Of the Diviſion of Propoſitions into Self-evident and Demonſtrable.*

49 **Propoſitions divided into ſelf-evident and demonſtrable.**

I. When any propoſition is offered to the view of the mind, if the terms in which it is expreſſed and underſtood; upon comparing the ideas together, the agreement or diſagreement aſſerted is either immediately perceived, or found to lie beyond the preſent reach of the underſtanding. In the firſt caſe the propoſition is ſaid to be *ſelf-evident,* and admits not of any proof, becauſe a bare attention to the ideas themſelves produces full conviction and certainty; nor is it poſſible to call in any thing more evident by way of confirmation. But where the connection or repugnance comes not ſo readily under the inſpection of the mind, there we muſt have recourſe to reaſoning; and if by a clear ſeries of proofs we can make out the truth propoſed, inſomuch that ſelf-evidence ſhall accompany every ſtep of the procedure, we are then able to demonſtrate what we aſſert, and the propoſition itſelf is ſaid to be *demonſtrable.* When we affirm, for inſtance, *that it is impoſſible for the ſame thing to be and not to be*; whoever underſtands the terms made uſe of perceives at firſt glance the truth of what is aſſerted, nor can he by any efforts bring himſelf to believe the contrary. The propoſition therefore is *ſelf-evident,* and ſuch that it is impoſſible by reaſoning to make it plainer; becauſe there is no truth more obvious or better known, from which as a conſequence it may be deduced. But if we ſay, *This world had a beginning;* the aſſertion is indeed equally true, but ſhines not forth with the ſame degree of evidence. We find great difficulty in conceiving how the world could be made out of nothing: and are not brought to a free and full conſent, until by reaſoning we arrive at a clear view of the abſurdity involved in the contrary ſuppoſition. Hence this propoſition is of the kind we call *demonſtrable,* inaſmuch as its truth is not immediately perceived by the mind, but yet may be made appear by means of others more known and obvious, whence it follows as an unavoidable conſequence.

II. From what has been ſaid it appears, that reaſoning is employed only about demonſtrable propoſitions, and that our intuitive and ſelf-evident perceptions, are the ultimate foundation on which it reſts.

III. Self-evident propoſitions furniſh the firſt principles of reaſoning; and it is certain, that if in our reſearches we employ only ſuch principles as have this character of ſelf-evidence, and apply them according to the rules to be afterwards explained, we ſhall be in no danger of error in advancing from one diſcovery to another. For this I may appeal to the writings of the mathematicians, which, being conducted by the expreſs model here mentioned, are an inconteſtible proof of the firmneſs and ſtability of human knowledge, when built upon ſo ſure a foundation. For not only have the propoſitions of this ſcience ſtood the teſt of ages; but are found attended with that invincible evidence, as forces the aſſent of all who duly conſider the proofs upon which they are eſtabliſhed.

IV. Firſt then it is to be obſerved, that they have been very careful in aſcertaining their ideas, and fixing the ſignification of their terms. For this purpoſe they begin with *definitions,* in which the meaning of their words is ſo diſtinctly explained, that they cannot fail to excite in the mind of an attentive reader the very ſame ideas as are annexed to them by the writer. And indeed the clearneſs and irreſiſtible evidence of mathematical knowledge is owing to nothing ſo much as this care in laying the foundation. Where the relation between any two ideas is accurately and juſtly traced, it will not be difficult for another to comprehend that relation, if in ſetting himſelf to diſcover it he brings the very ſame ideas into compariſon. But if, on the contrary, he affixes to his words ideas different from thoſe that were in the mind of him who firſt advanced the demonſtration; it is evident, that as the ſame ideas are not compared, the ſame relation cannot ſubſiſt, inſomuch that a propoſition will be rejected as falſe, which, had the terms been rightly underſtood, muſt have appeared unexceptionably true. A ſquare, for inſtance, is a figure bounded by four equal right lines, joined together at right angles. Here the nature of the angles makes no leſs a part of the idea, than the equality of the ſides; and many properties demonſtrated of the ſquare flow entirely from its being a rectangular figure. If therefore we ſuppoſe a man, who has formed a partial notion of a ſquare, comprehending only the equality of its ſides, without regard to the angles, reading ſome demonſtration that implies alſo this latter conſideration; it is plain he would reject it as not univerſally true, inaſmuch as it could not be applied where the ſides were joined together at unequal angles. For this laſt figure, anſwering ſtill to his idea of a ſquare, would be yet found without the property aſſigned to it in the propoſition. But if it comes afterwards to correct his notion, and render his idea compleat, he will then readily own the truth and juſtneſs of the demonſtration.

52 ematic- , by ning them, re a re- on to ruths

V. We ſee therefore, that nothing contributes ſo much to the improvement and certainty of human knowledge, as the having determinate ideas, and keeping them ſteady and invariable in all our diſcourſes and reaſonings about them. And on this account it is, that mathematicians, as was before obſerved, always begin by defining their terms, and diſtinctly unfolding the notions they are intended to expreſs. Hence ſuch as apply themſelves to theſe ſtudies have exactly the ſame views of things; and, bringing always the very ſame ideas into compariſon, readily diſcern the relations between them.

53 ſta- ng of ples, cond n ma- tical ledge.

VI. When they have taken this firſt ſtep, and made known the ideas whoſe relations they intend to inveſtigate; their next care is, to lay down ſome ſelf-evident truths, which may ſerve as a foundation for their future reaſonings. And here indeed they proceed with remarkable circumſpection, admitting no principles but what flow immediately from their definitions, and neceſſarily force themſelves upon a mind in any degree attentive to its perceptions. Thus a *circle* is a figure formed by a right line moving round ſome fixed point in the ſame plane. The fixed point round which the line is ſuppoſed to move, and where one of its extremities terminates, is called the *centre* of the circle. The other extremity, which is conceived to be carried round until it returns to the point whence it firſt ſet out, deſcribes a curve running into itſelf, and termed the *circumference*. All right lines drawn from the centre to the circumference are called *radii*. From theſe definitions compared, geometricians derive this ſelf-evident truth; *that the radii of the ſame circle are all equal to one another*.

54 ſiti- vided ecu- and al.

VII. We now obſerve, that in all propoſitions we either affirm or deny ſome property of the idea that conſtitutes the ſubject of our judgment, or we maintain that ſomething may be done or effected. The firſt ſort are called *ſpeculative* propoſitions, as in the example mentioned above, *the radii of the ſame circle are all equal one to another*. The others are called *practical*, for a reaſon too obvious to be mentioned; thus, *that a right line may be drawn from one point to another*, is a practical propoſition; inaſmuch as it expreſſes that ſomething may be done.

55 Hence mathematical principles diſtinguiſhed into axioms and poſtulates.

VIII. From this twofold conſideration of propoſitions ariſes the twofold diviſion of mathematical principles into axioms and poſtulates. By an axiom they underſtand any ſelf-evident ſpeculative truth; as, *that the whole is greater than its parts: That things equal to one and the ſame thing are equal to one another*. But a ſelf-evident practical propoſition is what they call a *poſtulate*. Such are thoſe of Euclid; *that a finite right line may be continued directly forwards; that a circle may be deſcribed about any centre with any diſtance*. And here we are to obſerve, that as in an axiom the agreement or diſagreement between the ſubject and predicate muſt come under the immediate inſpection of the mind; ſo in a poſtulate, not only the poſſibility of the thing aſſerted muſt be evident at firſt view, but alſo the manner in which it may be effected. For where this manner is not of itſelf apparent, the propoſition comes under the notion of the demonſtrable kind, and is treated as ſuch by geometrical writers. Thus, *to draw a right-line from one point to another*, is aſſumed by Euclid as a poſtulate, becauſe the manner of doing it is ſo obvious, as to require no previous teaching. But then it is not equally evident, how we are to conſtruct an equilateral triangle. For this reaſon he advances it as a demonſtrable propoſition, lays down rules for the exact performance, and at the ſame time proves, that if theſe rules are followed, the figure will be juſtly deſcribed.

56 And demonſtrable propoſitions into theorems and problems.

IX. This leads us to take notice, that as ſelf-evident truths are diſtinguiſhed into different kinds, according as they are ſpeculative or practical; ſo is it alſo with demonſtrable propoſitions. A demonſtrable ſpeculative propoſition is by mathematicians called a *theorem*. Such is the famous 47th propoſition of the firſt book of the elements, known by the name of the *Pythagoric theorem*, from its ſuppoſed inventor Pythagoras, *viz*. "that in every right-angled triangle, the ſquare deſcribed upon the ſide ſubtending the right-angle is equal to both the ſquares deſcribed upon the ſides containing the right-angle." On the other hand, a demonſtrable practical propoſition is called a *problem*; as where Euclid teaches us to deſcribe a ſquare upon a given right-line.

57 Corollaries are obvious deductions from theorems or problems.

X. It may not be amiſs to add, that, beſides the four kinds of propoſitions already mentioned, mathematicians have alſo a fifth, known by the name of *corollaries*. Theſe are uſually ſubjoined to theorems or problems, and differ from them only in this; that they flow from what is there demonſtrated in ſo obvious a manner as to diſcover their dependence upon the propoſition whence they are deduced, almoſt as ſoon as propoſed. Thus Euclid having demonſtrated, "that in every right-lined triangle all the three angles taken together are equal to two right-angles;" adds by way of corollary, "that all the three angles of any one triangle taken together are equal to all the three angles of any other triangle taken together:" which is evident at firſt ſight; becauſe in all caſes they are equal to two right ones, and things equal to one and the ſame thing are equal to one another.

58 Scholia ſerve the purpoſes of annotations or a comment.

The ſcholia of mathematicians are indifferently annexed to definitions, propoſitions, or corollaries; and anſwer the ſame purpoſes as annotations upon a claſſic author. For in them occaſion is taken to explain whatever may appear intricate and obſcure in a train of reaſoning; to anſwer objections; to teach the application and uſes of propoſitions; to lay open the original and hiſtory of the ſeveral diſcoveries made in the ſcience; and in a word, to acquaint us with all ſuch particulars as deſerve to be known, whether conſidered as points of curioſity or profit.

PART III.

OF REASONING.

CHAP. I. *Of Reaſoning in general, and the parts of which it conſiſts.*

59 Remote relations diſcovered by means of intermediate ideas.

IT often happens in comparing ideas together, that their agreement or diſagreement cannot be diſcerned at firſt view, eſpecially if they are of ſuch a nature as not to admit of an exact application one to another. When, for inſtance, we compare two figures of a different make, in order to judge of their equality or inequality, it is plain, that by barely conſidering the figures themſelves, we cannot arrive at an exact determination; becauſe, by reaſon of their diſagreeing forms, it is impoſſible ſo to put them together, as that their ſeveral parts ſhall mutually coincide. Here then it becomes neceſſary to look out for ſome third idea that will admit of ſuch an application as the preſent caſe requires; wherein if we ſucceed, all difficulties vaniſh, and the relation we are in queſt of may be traced with eaſe. Thus right-lined figures are all reduced to ſquares, by means of which we can meaſure their areas, and determine exactly their agreement or diſagreement in point of magnitude.

60 This manner of arriving at truth termed reaſoning.

II. But how can any third idea ſerve to diſcover a relation between two others? The anſwer is, by being compared ſeverally with theſe others; for ſuch a compariſon enables us to ſee how far the ideas with which this third is compared are connected or disjoined between themſelves. In the example mentioned above of two right-lined figures, if we compare each of them with ſome ſquare whoſe area is known, and find the one exactly equal to it, and the other leſs by a ſquare inch, we immediately conclude that the area of the firſt figure is a ſquare inch greater than that of the ſecond. This manner of determining the relation between any two ideas, by the intervention of ſome third with which they may be compared, is that which we call *reaſoning*; and is indeed the chief inſtrument by which we puſh on our diſcoveries, and enlarge our knowledge. The great art lies in finding out ſuch intermediate ideas, as, when compared with the others in the queſtion, will furniſh evident and known truths; becauſe, as will afterwards appear, it is only by means of them that we arrive at the knowledge of what is hidden and remote.

61 The parts that conſtitute an act of reaſoning and a ſyllogiſm.

III. Hence it appears, that every act of reaſoning neceſſarily includes three diſtinct judgments; two wherein the ideas whoſe relation we want to diſcover are ſeverally compared with the middle idea, and a third wherein they are themſelves connected or disjoined, according to the reſult of that compariſon. Now as in the ſecond part of logic our judgments, when put into words, were called propoſitions, ſo here in the third part the expreſſions of our reaſonings are termed *ſyllogiſms*. And hence it follows, that as every act of reaſoning implies three ſeveral judgments, ſo every ſyllogiſm muſt include three diſtinct propoſitions. When a reaſoning is thus put into words, and appears in form of a ſyllogiſm, the intermediate idea made uſe of, to diſcover the agreement or diſagreement we ſearch for, is called the *middle term*; and the two ideas themſelves, with which this third is compared, go by the name of the *extremes*.

62 Inſtanc man an countab neſs.

IV. But as theſe things are beſt illuſtrated by examples; let us, for inſtance, ſet ourſelves to inquire *whether men are accountable for their actions*. As the relation between the ideas of *man* and *accountableneſs* comes not within the immediate view of the mind, our firſt care muſt be to find out ſome third idea that will enable us the more eaſily to diſcover and trace it. A very ſmall meaſure of reflection is ſufficient to inform us, that no creature can be accountable for his actions, unleſs we ſuppoſe him capable of diſtinguiſhing the good from the bad; that is, unleſs we ſuppoſe him poſſeſſed of reaſon. Nor is this alone ſufficient. For what would it avail him to know good from bad actions, if he had no freedom of choice, nor could avoid the one and purſue the other? hence it becomes neceſſary to take in both conſiderations in the preſent caſe. It is at the ſame time equally apparent, that where ever there is this ability of diſtinguiſhing good from bad actions, and of purſuing the one and avoiding the other, there alſo a creature is accountable. We have then got a third idea, with which *accountableneſs* is inſeparably connected, *viz. reaſon and liberty*; which are here to be conſidered as making up one complex conception. Let us now take this middle idea, and compare it with the other term in the queſtion, *viz. man*, and we all know by experience that it may be affirmed of him. Having thus by means of the intermediate idea formed two ſeveral judgments, *viz. that man is poſſeſſed of reaſon and liberty*; and *that reaſon and liberty imply accountableneſs*; a third obviouſly and neceſſarily follows, *viz. that man is accountable for his actions*. Here then we have a compleat act of reaſoning, in which, according to what has been already obſerved, there are three diſtinct judgments; two that may be ſtiled previous, inaſmuch as they lead to the other, and ariſe from comparing the middle idea with the two ideas in the queſtion: the third is a conſequence of theſe previous acts, and flows from combining the extreme ideas between themſelves. If now we put this reaſoning into words, it exhibits what logicians term a ſyllogiſm; and, when propoſed in due form, runs thus:

"Every creature poſſeſſed of reaſon and liberty is "accountable for his actions.

"Man is a creature poſſeſſed of reaſon and liberty;

"Therefore man is accountable for his actions."

V.

63 V. In this ſyllogiſm we may obſerve, that there are three ſeveral propoſitions expreſſing the three judgments implied in the act of reaſoning; and ſo diſpoſed, as to repreſent diſtinctly what paſſes within the mind in tracing the more diſtant relations of its ideas. The two firſt propoſitions anſwer the two previous judgments in reaſoning, and are called the *premiſes*, becauſe they are placed before the other. The third is termed the *concluſion*, as being gained in conſequence of what was aſſerted in the premiſes. We are alſo to remember, that the terms expreſſing the two ideas whoſe relations we inquire after, as here *man* and *accountableneſs*, are in general called the *extremes;* and that the intermediate idea, by means of which the relation is traced, *viz. a creature poſſeſſed of reaſon and liberty*, takes the name of the *middle term.* Hence it follows, that by the *premiſes* of a ſyllogiſm we are always to underſtand the two propoſitions where the middle term is ſeverally compared with the *extremes;* for theſe conſtitute the previous judgments, whence the truth we are in queſt of is by reaſoning deduced. The *concluſion* is that other propoſition, in which the *extremes* themſelves are joined or ſeparated agreeably to what appears upon the above compariſon.

64 VI. The concluſion is made up of the extreme terms of the ſyllogiſm: and the extreme, which ſerves as the predicate of the concluſion, goes by the name of the *major term:* the other extreme, which makes the ſubject in the ſame propoſition, is called the *minor term.* From this diſtinction of the extremes ariſes alſo a diſtinction between the premiſes, where theſe extremes are ſeverally compared with the middle term. That propoſition which compares the greater extreme, or the predicate of the concluſion with the middle term, is called the *major propoſition:* the other, wherein the ſame middle term is compared with the ſubject of the concluſion or leſſer extreme, is called the *minor propoſition.* All this is obvious from the ſyllogiſm already given, where the concluſion is, *man is accountable for his actions.* For here the predicate *accountable for his actions*, being connected with the middle term in the firſt of the two premiſes; *every creature poſſeſſed of reaſon and liberty is accountable for his actions*, gives what we call the *major propoſition.* In the ſecond of the premiſes; *man is a creature poſſeſſed of reaſon and liberty*, we find the leſſer extreme, or ſubject of the concluſion, viz. *man*, connected with the ſame middle term, whence it is known to be the *minor propoſition.* When a ſyllogiſm is propoſed in due form, the major propoſition is always placed firſt, the minor next, and the concluſion laſt.

65 VII. Theſe things premiſed, we may in the general define reaſoning to be an act or operation of the mind, deducing ſome unknown propoſition from other previous ones that are evident and known. Theſe previous propoſitions, in a ſimple act of reaſoning, are only two in number; and it is always required that they be of themſelves apparent to the underſtanding, inſomuch that we aſſent to and perceive the truth of them as ſoon as propoſed. In the ſyllogiſm given above, the premiſes are ſuppoſed to be ſelf-evident truths; otherwiſe the concluſion could not be inferred by a ſingle act of reaſoning. If, for inſtance, in the major, *every creature poſſeſſed of reaſon and liberty is accountable for his actions*, the connection between the ſubject and predicate could not be perceived by a bare attention to the ideas themſelves; it is evident that this propoſition would no leſs require a proof than the concluſion deduced from it. In this caſe a new middle term muſt be ſought for, to trace the connection here ſuppoſed; and this of courſe furniſhes another ſyllogiſm, by which having eſtabliſhed the propoſition in queſtion, we are then, and not before, at liberty to uſe it in any ſucceeding train of reaſoning. And ſhould it ſo happen, that in this ſecond eſſay there was ſtill ſome previous propoſition whoſe truth did not appear at firſt ſight, we muſt then have recourſe to a third ſyllogiſm, in order to lay open that truth to the mind; becauſe ſo long as the premiſes remain uncertain, the concluſion built upon them muſt be ſo too. When, by conducting our thoughts in this manner, we at laſt arrive at ſome ſyllogiſm where the previous propoſitions are intuitive truths; the mind then reſts in full ſecurity, as perceiving that the ſeveral concluſions it has paſſed through ſtand upon the immoveable foundation of ſelf-evidence, and when traced to their ſource terminate in it.

66 Reaſoning, in the higheſt exerciſe of it, only a concatenation of ſyllogiſms.

VIII. We ſee therefore, that in order to infer a concluſion by a ſingle act of reaſoning, the premiſes muſt be intuitive propoſitions. Where they are not, previous ſyllogiſms are required; in which caſe reaſoning becomes a complicated act, taking in a variety of ſucceſſive ſteps. This frequently happens in tracing the more remote relation of our ideas; where, many middle terms being called in, the concluſion cannot be made out but in conſequence of a ſeries of ſyllogiſms following one another in train. But although in this concatenation of propoſitions, thoſe that form the premiſes of the laſt ſyllogiſm are often conſiderably removed from ſelf-evidence; yet if we trace the reaſoning backwards, we ſhall find them the concluſions of previous ſyllogiſms, whoſe premiſes approach nearer and nearer to intuition in proportion as we advance, and are found at laſt to terminate in it. And if, after having thus unravelled a demonſtration, we take it the contrary way; and obſerve how the mind, ſetting out with intuitive perceptions, couples them together to form a concluſion; how, by introducing this concluſion into another ſyllogiſm, it ſtill advances one ſtep farther; and ſo proceeds, making every new diſcovery ſubſervient to its future progreſs; we ſhall then perceive clearly, that reaſoning, in the higheſt exerciſe of that faculty, is no more than an orderly combination of thoſe ſimple acts which we have already ſo fully explained.

67 Requires intuitive certainty in every ſtep of the progreſſion.

IX. Thus we ſee, that reaſoning beginning with firſt principles, riſes gradually from one judgment to another, and connects them in ſuch manner, that every ſtage of the progreſſion brings intuitive certainty along with it. And now at length we may clearly underſtand the definition given above of this diſtinguiſhing faculty of the human mind. Reaſon, we have ſaid, is the ability of deducing unknown truths from principles or propoſitions that are already known. This evidently appears by the foregoing account, where we ſee that no propoſition is admitted into a ſyllogiſm, to ſerve as one of the previous judgments on which the concluſion reſts, unleſs it is itſelf a known and eſtabliſhed truth, whoſe connection with ſelf-evident principles has been already traced.

CHAP. II. *Of the ſeveral kinds of Reaſoning; and firſt, of that by which we determine the Genera and Species of Things.*

68 Reaſoning twofold.

I. ALL the aims of human reaſon may in the general be reduced to theſe two: 1. To rank things under thoſe univerſal ideas to which they truly belong; and, 2. To aſcribe to them their ſeveral attributes and properties in conſequence of that diſtribution.

69 The firſt kind regards the genera and ſpecies of things.

II. One great aim of human reaſon is to determine the genera and ſpecies of things. We have ſeen in the firſt Part of this treatiſe, how the mind proceeds in framing general ideas. We have alſo ſeen in the ſecond Part, how by means of theſe general ideas we come by univerſal propoſitions. Now as in theſe univerſal propoſitions we affirm ſome property of a genus or ſpecies, it is plain that we cannot apply this property to particular objects till we have firſt determined whether they are comprehended under that general idea of which the property is affirmed. Thus there are certain properties belonging to all *even* numbers, which nevertheleſs cannot be applied to any particular number, until we have firſt diſcovered it to be of the ſpecies expreſſed by that natural name. Hence reaſoning begins with referring things to their ſeveral diviſions and claſſes in the ſcale of our ideas; and as theſe diviſions are all diſtinguiſhed by particular names, we hereby learn to apply the terms expreſſing general conceptions to ſuch particular objects as come under our immediate obſervation.

70 The ſteps by which we arrive at concluſions of this ſort.

III. Now in order to arrive at theſe concluſions, by which the ſeveral objects of perception are brought under general names, two things are manifeſtly neceſſary. Firſt, that we take a view of the idea itſelf denoted by that general name, and carefully attend to the diſtinguiſhing marks which ſerve to characterize it. Secondly, that we compare this idea with the object under conſideration, obſerving diligently wherein they agree or differ. If the idea is found to correſpond with the particular object, we then without heſitation apply the general name; but if no ſuch correſpondence intervenes, the concluſion muſt neceſſarily take a contrary turn. Let us, for inſtance, take the number *eight*, and conſider by what ſteps we are led to pronounce it an *even* number. Firſt then, we call to mind the idea ſignified by the expreſſion *an even number*, viz. that it is a number diviſible into two equal parts. We then compare this idea with the number *eight*, and, finding them manifeſtly to agree, ſee at once the neceſſity of admitting the concluſion. Theſe ſeveral judgments therefore transferred into language, and reduced to the form of a ſyllogiſm, appear thus:

"Every number that may be divided into two
" equal parts is an *even* number.

"The number *eight* may be divided into two equal
" parts;

"Therefore the number *eight* is an *even* number."

71 Thoſe ſteps always followed, tho' in familiar caſes we do not always attend to them.

IV. Here it may be obſerved, that where the general idea, to which particular objects are referred, is very familiar to the mind, and frequently in view; this reference, and the application of the general name, ſeem to be made without any apparatus of reaſoning. When we ſee a horſe in the fields, or a dog in the ſtreet, we readily apply the name of the ſpecies; habit, and a familiar acquaintance with the general idea, ſuggeſting it inſtantaneouſly to the mind. We are not however to imagine on this account that the underſtanding departs from the uſual rules of juſt thinking. A frequent repetition of acts begets a habit; and habits are attended with a certain promptneſs of execution, that prevents our obſerving the ſeveral ſteps and gradations by which any courſe of action is accompliſhed. But in other inſtances, where we judge not by precontracted habits, as when the general idea is very complex, or leſs familiar to the mind, we always proceed according to the form of reaſoning eſtabliſhed above. A goldſmith, for inſtance, who is in doubt as to any piece of metal, whether it be of the ſpecies called *gold*, firſt examines its properties, and then comparing them with the general idea ſignified by that name, if he finds a perfect correſpondence, no longer heſitates under what claſs of metals to rank it.

7 The g impor of thi branch reaſon

V. Nor let it be imagined that our reſearches here, becauſe in appearance bounded to the impoſing of general names upon particular objects, are therefore trivial and of little conſequence. Some of the moſt conſiderable debates among mankind, and ſuch too as nearly regard their lives, intereſt, and happineſs, turn wholly upon this article. Is it not the chief employment of our ſeveral courts of judicature to determine in particular inſtances, what is law, juſtice, and equity? Of what importance is it in many caſes to decide aright whether an action ſhall be termed *murder* or *manſlaughter?* We ſee then that no leſs than the lives and fortunes of men depend often upon theſe deciſions. The reaſon is plain. Actions, when once referred to a general idea, draw after them all that may be affirmed of that idea; inſomuch that the determining the ſpecies of actions is all one with determining what proportion of praiſe or diſpraiſe, commendation or blame, &c. ought to follow them. For as it is allowed that murder deſerves death; by bringing any particular action under the head of murder, we of courſe decide the puniſhment due to it.

And act o vance practi mathe cians.

VI. But the great importance of this branch of reaſoning, and the neceſſity of care and circumſpection in referring particular objects to general ideas, is ſtill farther evident from the practice of the mathematicians. Every one who has read Euclid knows, that he frequently requires us to draw lines through certain points, and according to ſuch and ſuch directions. The figures thence reſulting are often ſquares, parallelograms, or rectangles. Yet Euclid never ſuppoſes this from their bare appearance, but always demonſtrates it upon the ſtricteſt principles of geometry. Nor is the method he takes in any thing different from that deſcribed above. Thus, for inſtance, having defined a ſquare to be a figure bounded by four equal ſides joined together at right angles; when ſuch a figure ariſes in any conſtruction previous to the demonſtration of a propoſition, yet he never calls it by that name until he has ſhewn that its ſides are equal, and all its angles right ones. Now this is apparently the ſame form of reaſoning we have before exhibited in proving *eight* to be an even number.

VII. Having thus explained the rules by which we are to conduct ourſelves in ranking particular objects under general ideas, and ſhewn their conformity to the practice and manner of the mathematicians; it remains only to obſerve, that the true way of rendering this part of knowledge both eaſy and certain, is, by habituating ourſelves to clear and determinate ideas, and keeping them ſteadily annexed to their reſpective names. For as all our aim is to apply general words aright, if theſe words ſtand for invariable ideas that are perfectly known to the mind, and can be readily diſtinguiſhed upon occaſion, there will be little danger of miſtake or error in our reaſonings. Let us ſuppoſe that, by examining any object, and carrying our attention ſucceſſively from one part to another, we have acquainted ourſelves with the ſeveral particulars obſervable in it. If among theſe we find ſuch as conſtitute ſome general idea, framed and ſettled beforehand by the underſtanding, and diſtinguiſhed by a particular name, the reſemblance thus known and perceived neceſſarily determines the ſpecies of the object, and thereby gives it a right to the name by which that ſpecies is called. Thus four equal ſides, joined together at right angles, make up the notion of a *ſquare*. As this is a fixed and invariable idea, without which the general name cannot be applied, we never call any particular figure a *ſquare* until it appears to have theſe ſeveral conditions; and contrarily, wherever a figure is found with theſe conditions, it neceſſarily takes the name of a *ſquare*. The ſame will be found to hold in all our other reaſonings of this kind, where nothing can create any difficulty but the want of ſettled ideas. If, for inſtance, we have not determined within ourſelves the preciſe notion denoted by the word *manſlaughter*, it will be impoſſible for us to decide whether any particular action ought to bear that name: becauſe, however nicely we examine the action itſelf, yet, being ſtrangers to the general idea with which it is to be compared, we are utterly unable to judge of their agreement or diſagreement. But if we take care to remove this obſtacle, and diſtinctly trace the two ideas under conſideration, all difficulties vaniſh, and the reſolution becomes both eaſy and certain.

VIII. Thus we ſee of what importance it is towards the improvement and certainty of human knowledge, that we accuſtom ourſelves to clear and determinate ideas, and a ſteady application of words.

CHAP. III. *Of Reaſoning, as it regards the Powers and Properties of Things, and the Relations of our general Ideas.*

I. WE come now to the ſecond great end which men have in view in their reaſonings; namely, the diſcovering and aſcribing to things their ſeveral attributes and properties. And here it will be neceſſary to diſtinguiſh between reaſoning, as it regards the ſciences, and as it concerns common life. In the ſciences, our reaſon is employed chiefly about univerſal truths, it being by them alone that the bounds of human knowledge are enlarged. Hence the diviſion of things into various claſſes, called otherwiſe *genera* and *ſpecies*. For theſe univerſal ideas being ſet up as the repreſentatives of many particular things, whatever is affirmed of them may be alſo affirmed of all the individuals to which they belong. *Murder*, for inſtance, is a general idea, repreſenting a certain ſpecies of human actions. Reaſon tells us that the puniſhment due to it is *death*. Hence every particular action, coming under the notion of *murder*, has the puniſhment of *death* allotted to it. Here then we apply the general truth to ſome obvious inſtance; and this is what properly conſtitutes the reaſoning of common life. For men, in their ordinary tranſactions and intercourſe one with another, have, for the moſt part, to do only with particular objects. Our friends and relations, their characters and behaviour, the conſtitution of the ſeveral bodies that ſurround us, and the uſes to which they may be applied, are what chiefly engage our attention. In all theſe, we reaſon about particular things; and the whole reſult of our reaſoning is, the applying the general truths of the ſciences in the ordinary tranſactions of human life. When we ſee a viper, we avoid it. Wherever we have occaſion for the forcible action of water to move a body that makes conſiderable reſiſtance, we take care to convey it in ſuch a manner that it ſhall fall upon the object with impetuoſity. Now all this happens in conſequence of our familiar and ready application of theſe two general truths. *The bite of a viper is mortal. Water, falling upon a body with impetuoſity, acts very forcibly towards ſetting it in motion.* In like manner, if we ſet ourſelves to conſider any particular character, in order to determine the ſhare of praiſe or diſpraiſe that belongs to it, our great concern is to aſcertain exactly the proportion of virtue and vice. The reaſon is obvious. A juſt determination, in all caſes of this kind, depends entirely upon an application of theſe general maxims of morality. *Virtuous actions deſerve praiſe. Vicious actions deſerve blame.*

76 The ſteps by which we proceed in the reaſoning of common life.

II. Hence it appears that reaſoning, as it regards common life, is no more than the aſcribing the general properties of things to thoſe ſeveral objects with which we are more immediately concerned, according as they are found to be of that particular diviſion or claſs to which the properties belong. The ſteps then by which we proceed are manifeſtly theſe. Firſt, we refer the object under conſideration to ſome general idea or claſs of things. We then recollect the ſeveral attributes of that general idea. And, laſtly, aſcribe all thoſe attributes to the preſent object. Thus, in conſidering the character of *Sempronius*, if we find it to be of the kind called *virtuous*, when we at the ſame time reflect that a virtuous character is deſerving of eſteem, it naturally and obviouſly follows that Sempronius is ſo too. Theſe thoughts put into a *ſyllogiſm*, in order to exhibit the form of reaſoning here required, run thus:

"Every virtuous man is worthy of eſteem.
"*Sempronius* is a virtuous man:
"Therefore *Sempronius* is worthy of eſteem."

77 The connection and dependence of the two grand branches of reaſoning one upon another.

III. By this *ſyllogiſm* it appears, that before we affirm any thing of a particular object, that object muſt be referred to ſome general idea. Sempronius is pronounced worthy of eſteem only in conſequence of his being a virtuous man, or coming under that general notion. Hence we ſee the neceſſary connection of the various parts of reaſoning, and the dependence they have one upon another. The determining the genera and ſpecies of things is, as we have ſaid, one exerciſe of human reaſon; and here we find that this exerciſe is the firſt in order, and previous to the other, which conſiſts in aſcribing to them their powers, properties, and relations. But when we have taken this previous ſtep, and brought particular objects under general names; as the properties we aſcribe to them are no other than thoſe of the general idea, it is plain that, in order to a ſucceſsful progreſs in this part of knowledge, we muſt thoroughly acquaint ourſelves with the ſeveral relations and attributes of theſe our general ideas. When this is done, the other part will be eaſy, and requires ſcarce any labour or thought, as being no more than an application of the general form of reaſoning repreſented in the foregoing ſyllogiſm. Now as we have already ſufficiently ſhown how we are to proceed in determining the genera and ſpecies of things, which, as we have ſaid, is the previous ſtep to this ſecond branch of human knowledge; all that is farther wanting towards a due explanation of it is, to offer ſome conſiderations as to the manner of inveſtigating the general relations of our ideas. This is the higheſt exerciſe of the powers of the underſtanding, and that by means whereof we arrive at the diſcovery of univerſal truths; inſomuch that our deductions in this way conſtitute that particular ſpecies of reaſoning which we have before ſaid regards principally the ſciences.

78
Two things required to make a good reaſoner.

IV. But that we may conduct our thoughts with ſome order and method, we ſhall begin with obſerving, that the relations of our general ideas are of two kinds: either ſuch as immediately diſcover themſelves, upon comparing the ideas one with another; or ſuch as, being more remote and diſtant, require art and contrivance to bring them into view. The relations of the firſt kind furniſh us with intuitive and ſelf-evident truths: thoſe of the ſecond are traced by reaſoning, and a due application of intermediate ideas. It is of this laſt kind that we are to ſpeak here, having diſpatched what was neceſſary with regard to the other in the ſecond Part. As, therefore, in tracing the more diſtant relations of things, we muſt always have recourſe to intervening ideas, and are more or leſs ſucceſsful in our reſearches according to our acquaintance with theſe ideas, and ability of applying them; it is evident that, to make a good reaſoner, two things are principally required. *Firſt*, An extenſive knowlege of thoſe intermediate ideas, by means of which things may be compared one with another. *Secondly*, The ſkill and talent of applying them happily in all particular inſtances that come under conſideration.

79
Firſt, an extenſive knowledge of intermediate ideas.

V. In order to our ſucceſsful progreſs in reaſoning, we muſt have an extenſive knowledge of thoſe intermediate ideas by means of which things may be compared one with another. For as it is not every idea that will anſwer the purpoſe of our inquiries, but ſuch only as are peculiarly related to the objects about which we reaſon, ſo as, by a compariſon with them, to furniſh evident and known truths; nothing is more apparent than that the greater variety of conceptions we can call into view, the more likely we are to find ſome among them that will help us to the truths here required. And, indeed, it is found to hold in experience, that in proportion as we enlarge our views of things, and grow acquainted with a multitude of different objects, the reaſoning faculty gathers ſtrength: for, by extending our ſphere of knowledge, the mind acquires a certain force and penetration, as being accuſtomed to examine the ſeveral appearances of its ideas, and obſerve what light they caſt one upon another.

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VI. This is the reaſon why, in order to excel remarkably in any one branch of learning, it is neceſſary to have at leaſt a general acquaintance with the whole circle of arts and ſciences. The truth of it is, all the various diviſions of human knowledge are very nearly related among themſelves, and, in innumerable inſtances, ſerve to illuſtrate and ſet off each other. And although it is not to be denied that, by an obſtinate application to one branch of ſtudy, a man may make conſiderable progreſs, and acquire ſome degree of eminence in it; yet his views will be always narrow and contracted, and he will want that maſterly diſcernment which not only enables us to purſue our diſcoveries with eaſe, but alſo, in laying them open to others, to ſpread a certain brightneſs around them. But when our reaſoning regards a particular ſcience, it is farther neceſſary that we more nearly acquaint ourſelves with whatever relates to that ſcience. A general knowledge is a good preparation, and enables us to proceed with eaſe and expedition in whatever branch of learning we apply to. But then, in the minute and intricate queſtions of any ſcience, we are by no means qualified to reaſon with advantage until we have perfectly maſtered the ſcience to which they belong.

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VII. We come now to the ſecond thing required, in order to a ſucceſsful progreſs in reaſoning; namely, the ſkill and talent of applying intermediate ideas happily in all particular inſtances that come under conſideration. And here, rules and precepts are of little ſervice. Uſe and experience are the beſt inſtructors. For, whatever logicians may boaſt of being able to form perfect reaſoners by book and rule, we find by experience, that the ſtudy of their precepts does not always add any great degree of ſtrength to the underſtanding. In ſhort, it is the habit alone of reaſoning that makes a reaſoner. And therefore the true way to acquire this talent is, by being much converſant in thoſe ſciences where the art of reaſoning is allowed to reign in the greateſt perfection. Hence it was that the ancients, who ſo well underſtood the manner of forming the mind, always began with *mathematics*, as the foundation of their philoſophical ſtudies. Here the underſtanding is by degrees habituated to truth, contracts inſenſibly a certain fondneſs for it, and learns never to yield its aſſent to any propoſition, but where the evidence is ſufficient to produce full conviction. For this reaſon *Plato* has called mathematical demonſtrations the *cathartics* or purgatives of the ſoul, as being the proper means to cleanſe it from error, and reſtore that natural exerciſe of its faculties in which juſt thinking conſiſts.

VIII. If therefore we would form our minds to a habit of reaſoning cloſely and in train, we cannot take

82 ſtudy athe- ical de- ſtrati- of great l in this ect.

take any more certain method, than the exerciſing ourſelves in mathematical demonſtrations, ſo as to contract a kind of familiarity with them. Not that we look upon it as neceſſary that all men ſhould be deep mathematicians; but that, having got the way of reaſoning which that ſtudy neceſſarily brings the mind to, they may be able to transfer it to other parts of knowledge, as they ſhall have occaſion.

83 lſo of au- s on o- ſub- , as are nguiſh- or gth juſtneſs aſon-

IX. But although the ſtudy of mathematics be of all others the moſt uſeful, to form the mind, and give it an early reliſh of truth, yet ought not other parts of philoſophy to be neglected. For there alſo we meet with many opportunities of exerciſing the powers of the underſtanding; and the variety of ſubjects naturally leads us to obſerve all thoſe different turns of thinking that are peculiarly adapted to the ſeveral ideas we examine, and the truth we ſearch after. A mind thus trained acquires a certain maſtery over its own thoughts, inſomuch that it can range and model them at pleaſure, and call ſuch into view as beſt ſuit its preſent deſigns. Now in this the whole art of reaſoning conſiſts; from among a great variety of different ideas to ſingle out thoſe that are moſt proper for the buſineſs in hand, and to lay them together in ſuch order, that from plain and eaſy beginnings, by gentle degrees, and a continued train of evident truths, we may be inſenſibly led on to ſuch diſcoveries, as at our firſt ſetting out appeared beyond the reach of human underſtanding. For this purpoſe, beſides the ſtudy of mathematics before recommended, we ought to apply ourſelves diligently to the reading of ſuch authors as have diſtinguiſhed themſelves for ſtrength of reaſoning, and a juſt and accurate manner of thinking. For it is obſervable, that a mind exerciſed and ſeaſoned to truth, ſeldom reſts ſatiſfied in a bare contemplation of the arguments offered by others; but will be frequently aſſaying its own ſtrength, and purſuing its diſcoveries upon the plan it is moſt accuſtomed to. Thus we inſenſibly contract a habit of tracing truth from one ſtage to another, and of inveſtigating thoſe general relations and properties which we afterwards aſcribe to particular things, according as we find them comprehended under the abſtract ideas to which the properties belong.

CHAP. IV. *Of the Forms of Syllogiſms.*

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I. HITHERTO we have contented ourſelves with a general notion of ſyllogiſms, and of the parts of which they conſiſt. It is now time to enter a little more particularly into the ſubject, to examine their various forms, and lay open the rules of argumentation proper to each. In the ſyllogiſms mentioned in the foregoing chapters, we may obſerve, that the *middle term* is the ſubject of the *major* propoſition, and the predicate of the *minor*. This diſpoſition, though the moſt natural and obvious, is not however neceſſary; it frequently happening, that the middle term is the ſubject in both the premiſes, or the predicate in both; and ſometimes, directly contrary to its diſpoſition in the foregoing chapters, the predicate in the major, and the ſubject in the minor. Hence the diſtinction of ſyllogiſms into various kinds, called *figures* by logicians. For figure, according to their uſe of the word, is nothing elſe but the order and diſpoſition of the middle term in any ſyllogiſm. And as this diſpoſition is, we ſee, fourfold, ſo the figures of ſyllogiſms thence ariſing are four in number. When the middle term is the ſubject of the major propoſition, and the predicate of the minor, we have what is called the *firſt figure*. If, on the other hand, it is the predicate of both the premiſes, the ſyllogiſm is ſaid to be the *ſecond figure*. Again, in the *third figure*, the middle term is the ſubject of the two premiſes. And laſtly, by making it the predicate of the major, and ſubject of the minor, we obtain ſyllogiſms in the *fourth figure*.

85 The moods of ſyllogiſms.

II. But, beſides this fourfold diſtinction of ſyllogiſms, there is alſo a farther ſubdiviſion of them in every figure, ariſing from the *quantity* and *quality*, as they are called, of the propoſitions. By quantity we mean the conſideration of propoſitions, as univerſal or particular; by quality, as affirmative or negative.

Now as, in all the ſeveral diſpoſitions of the middle term, the propoſitions of which a ſyllogiſm conſiſts may be either univerſal or particular, affirmative or negative; the due determination of theſe, and ſo putting them together as the laws of argumentation require, conſtitute what logicians call the *moods* of ſyllogiſms. Of theſe moods there is a determinate number to every figure, including all the poſſible ways in which propoſitions differing in quantity or quality can be combined, according to any diſpoſition of the middle term, in order to arrive at a juſt concluſion.

86 Foundation of the other diviſion of ſyllogiſms.

III. The diviſion of ſyllogiſms according to mood and figure reſpects thoſe eſpecially which are known by the name of plain ſimple ſyllogiſms; that is, which are bounded to three propoſitions, all ſimple, and where the extremes and middle term are connected, according to the rules laid down above. But as the mind is not tied down to any one preciſe form of reaſoning, but ſometimes makes uſe of more, ſometimes of fewer premiſes, and often takes in compound and conditional propoſitions, it may not be amiſs to take notice of the different forms derived from this ſource, and explain the rules by which the mind conducts itſelf in the uſe of them.

87 Conditional ſyllogiſms.

IV. When in any ſyllogiſm the major is a conditional propoſition, the ſyllogiſm itſelf is termed *conditional*. Thus:

"If there is a God, he ought to be worſhipped.
"But there is a God:
"Therefore he ought to be worſhipped."

In this example, the major, or firſt propoſition, is, we ſee, conditional, and therefore the ſyllogiſm itſelf is alſo of the kind called by that name. And here we are to obſerve, that all conditional propoſitions are made of two diſtinct parts: one expreſſing the condition upon which the predicate agrees or diſagrees with the ſubject, as in this now before us, *if there is a God;* the other joining or disjoining the ſaid predicate and ſubject, as here, *he ought to be worſhipped*. The firſt of theſe parts, or that which implies the condition, is called the *antecedent;* the ſecond, where we join or disjoin the predicate and ſubject, has the name of the *conſequent*.

88 Ground of illation in conditional ſyllogiſms.

V. In all propoſitions of this kind, ſuppoſing them to be exact in point of form, the relation between the antecedent and conſequent muſt ever be true and real; that is, the antecedent muſt always contain ſome certain and genuine condition, which neceſſarily implies the conſequent; for otherwiſe the propoſition itſelf will be falſe, and therefore ought not to be admitted into our reaſonings. Hence it follows, that when any conditional propoſition is aſſumed, if we admit the antecedent of that propoſition, we muſt at the ſame time neceſſarily admit the conſequent, but if we reject the conſequent, we are in like manner bound to reject the antecedent. For as the antecedent always expreſſes ſome condition which neceſſarily implies the truth of the conſequent; by admitting the antecedent, we allow of that condition, and therefore ought alſo to admit the conſequent. In like manner, if it appears that the conſequent ought to be rejected, the antecedent evidently muſt be ſo too; becauſe, as was juſt now demonſtrated, the admitting of the antecedent would neceſſarily imply the admiſſion alſo of the conſequent.

89 The two moods of conditional ſyllogiſms.

VI. There are two ways of arguing in *hypothetical* ſyllogiſms, which lead to a certain and unavoidable concluſion. For as the major is always a conditional propoſition, conſiſting of an antecedent and a conſequent; if the minor admits the antecedent, it is plain that the concluſion muſt admit the conſequent. This is called arguing from the admiſſion of the antecedent to the admiſſion of the conſequent, and conſtitutes that mood or ſpecies of hypothetical ſyllogiſms which is diſtinguiſhed in the ſchools by the name of the *modus ponens*, inaſmuch as by it the whole conditional propoſition, both antecedent and conſequent, is eſtabliſhed. Thus:

"If God is infinitely wiſe, and acts with perfect
"freedom, he does nothing but what is beſt.
"But God is infinitely wiſe, and acts with perfect
"freedom:
"Therefore he does nothing but what is beſt."

Here we ſee the antecedent or firſt part of the conditional propoſition is eſtabliſhed in the minor, and the conſequent or ſecond part in the concluſion; whence the ſyllogiſm itſelf is an example of the *modus ponens*. But if now we on the contrary ſuppoſe that the minor rejects the conſequent, then it is apparent that the concluſion muſt alſo reject the antecedent. In this caſe we are ſaid to argue from the removal of the conſequent to the removal of the antecedent, and the particular mood or ſpecies of ſyllogiſms thence ariſing is called by logicians the *modus tollens*; becauſe in it both antecedent and conſequent are rejected or taken away, as appears by the following example.

"If God were not a Being of infinite goodneſs,
"neither would he conſult the happineſs of his
"creatures.
"But God does conſult the happineſs of his crea-
"tures:
"Therefore he is a Being of infinite goodneſs."

90 They include all the legitimate ways of arguing.

VII. Theſe two ſpecies take in the whole claſs of conditional ſyllogiſms, and include all the poſſible ways of arguing that lead to a legitimate concluſion; becauſe we cannot here proceed by a contrary proceſs of reaſoning, that is, from the removal of the antecedent to the removal of the conſequent, or from the eſtabliſhing of the conſequent to the eſtabliſhing of the antecedent. For although the antecedent always expreſſes ſome real condition, which, once admitted, neceſſarily implies the conſequent, yet it does not follow that there is therefore no other condition; and if ſo, then, after removing the antecedent, the conſequent may ſtill hold, becauſe of ſome other determination that infers it. When we ſay, *If a ſtone is expoſed ſome time to the rays of the Sun, it will contract a certain degree of heat*; the propoſition is certainly true; and, admitting the antecedent, we muſt alſo admit the conſequent. But as there are other ways by which a ſtone may gather heat, it will not follow, from the ceaſing of the before-mentioned condition, that therefore the conſequent cannot take place. In other words, we cannot argue: *But the ſtone has not been expoſed to the rays of the ſun; therefore neither has it any degree of heat:* Inaſmuch as there are a great many other ways by which heat might have been communicated to it. And if we cannot argue from the removal of the antecedent to the removal of the conſequent, no more can we from the admiſſion of the conſequent to the admiſſion of the antecedent: becauſe, as the conſequent may flow from a great variety of different ſuppoſitions, the allowing of it does not determine the preciſe ſuppoſition, but only that ſome one of them muſt take place. Thus in the foregoing propoſition, *If a ſtone is expoſed ſometime to the rays of the ſun, it will contract a certain degree of heat:* admitting the conſequent, viz. *that it has contracted a certain degree of heat*, we are not therefore bound to admit the antecedent, *that it has been ſometime expoſed to the rays of the ſun*; becauſe there are many other cauſes whence that heat may have proceeded. Theſe two ways of arguing, therefore, hold not in conditional ſyllogiſms.

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VIII. As from the major's being a conditional propoſition, we obtain the ſpecies of conditional ſyllogiſms; ſo where it is a disjunctive propoſition, the ſyllogiſm to which it belongs, is alſo called *disjunctive*, as in the following example:

"The world is either ſelf-exiſtent, or the work
"of ſome finite, or of ſome infinite Being.
"But it is not ſelf-exiſtent, nor the work of a fi-
"nite being:
"Therefore it is the work of an infinite Being."

Now a disjunctive propoſition is that, where of ſeveral predicates, we affirm one neceſſarily to belong to the ſubject, to the excluſion of all the reſt, but leave that particular one undetermined. Hence it follows, that as ſoon as we determine the particular predicate, all the reſt are of courſe to be rejected; or if we reject all the predicates but one, that one neceſſarily takes place. When, therefore, in a disjunctive ſyllogiſm, the ſeveral predicates are enumerated in the major; if the minor eſtabliſhes any one of theſe predicates, the concluſion ought to remove all the reſt; or if, in the minor, all the predicates but one are removed, the concluſion muſt neceſſarily eſtabliſh that one. Thus, in the disjunctive ſyllogiſm given above, the major affirms one of the three predicates to belong to the earth, *viz. ſelf-exiſtence*, or that it is *the work of a finite*, or that it is *the work of an infinite Being*. Two of theſe predicates are removed in the minor, *viz. ſelf-exiſtence*, and *the work of a finite being*. Hence the concluſion neceſſarily aſcribes to it the third predicate, and affirms that it is *the work of an infinite Being*. If now we give the ſyllogiſm another turn, inſomuch that the minor may eſtabliſh one of the predicates, by affirming the earth to be *the production of an infinite Being*; then the concluſion muſt remove the other two, aſſerting it to be neither *ſelf-exiſtent*, nor *the work of a finite being*. Theſe are the forms of reaſoning in theſe ſpecies of ſyllogiſms, the juſtneſs of which appears at firſt ſight; and that there can be no other, is evident from the very nature of a disjunctive propoſition.

92 erfect utila- ſyllo- s.

IX. In the ſeveral kinds of ſyllogiſms hitherto mentioned, we may obſerve, that the parts are complete; that is, the three propoſitions of which they conſiſt are repreſented in form. But it often happens, that ſome one of the premiſes is not only an evident truth, but alſo familiar and in the minds of all men; in which caſe it is uſually omitted, whereby we have an imperfect ſyllogiſm, that ſeems to be made up of only two propoſitions. Should we, for inſtance, argue in this manner:

"Every man is mortal:
"Therefore every king is mortal."

The ſyllogiſm appears to be imperfect, as conſiſting but of two propoſitions. Yet it is really complete; only the minor [*every king is a man*] is omitted, and left to the reader to ſupply, as being a propoſition ſo familiar and evident that it cannot eſcape him.

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X. Theſe ſeemingly imperfect ſyllogiſms are called *enthymemes*, and occur very frequently in reaſoning, eſpecially where it makes a part of common converſation. Nay, there is a particular elegance in them, becauſe, not diſplaying the argument in all its parts, they leave ſomewhat to the exerciſe and invention of the mind. By this means we are put upon exerting ourſelves, and ſeem to ſhare in the diſcovery of what is propoſed to us. Now this is the great ſecret of fine writing, ſo to frame and put together our thoughts, as to give full play to the reader's imagination, and draw him inſenſibly into our very views and courſe of reaſoning. This gives a pleaſure not unlike to that which the author himſelf feels in compoſing. It beſides ſhortens diſcourſe, and adds a certain force and livelineſs to our arguments, when the words in which they are conveyed favour the natural quickneſs of the mind in its operations, and a ſingle expreſſion is left to exhibit a whole train of thoughts.

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XI. But there is another ſpecies of reaſoning with two propoſitions, which ſeems to be complete in itſelf, and where we admit the concluſion without ſuppoſing any tacit or ſuppreſſed judgment in the mind, from which it follows ſyllogiſtically. This happens between propoſitions, where the connection is ſuch, that the admiſſion of the one neceſſarily and at the firſt ſight implies the admiſſion alſo of the other. For if it ſo falls out, that the propoſition on which the other depends is ſelf-evident, we content ourſelves with barely affirming it, and infer that other by a direct concluſion. Thus, by admitting an univerſal propoſition, we are forced alſo to admit of all the particular propoſitions comprehended under it, this being the very condition that conſtitutes a propoſition univerſal. If then that univerſal propoſition chances to be ſelf-evident, the particular ones follow of courſe, without any farther train of reaſoning. Whoever allows, for inſtance, *that things equal to one and the ſame thing are equal to one another*, muſt at the ſame time allow, *that two triangles, each equal to a ſquare whoſe ſide is three inches, are alſo equal between themſelves*. This argument therefore,

"Things equal to one and the ſame thing, are equal
"to one another:
"Therefore theſe two triangles, each equal to the
"ſquare of a line of three inches, are equal be-
"tween themſelves:"

is complete in its kind, and contains all that is neceſſary towards a juſt and legitimate concluſion. For the firſt or univerſal propoſition is ſelf-evident, and therefore requires no farther proof. And as the truth of the particular is inſeparably connected with that of the univerſal, it follows from it by an obvious and unavoidable conſequence.

95 All reducible to ſyllogiſms of ſome one form or other.

XII. Now in all caſes of this kind, where propoſitions are deduced one from another, on account of a known and evident connection, we are ſaid to reaſon by immediate conſequence. Such a coherence of propoſitions manifeſt at firſt ſight, and forcing itſelf upon the mind, frequently occurs in reaſoning. Logicians have explained at ſome length the ſeveral ſuppoſitions upon which it takes place, and allow of all immediate conſequences that follow in conformity to them. It is however obſervable, that theſe arguments, though ſeemingly complete, becauſe the concluſion follows neceſſarily from the ſingle propoſition that goes before, may yet be conſidered as real enthymemes, whoſe major, which is a conditional propoſition, is wanting. The ſyllogiſm but juſt mentioned, when repreſented according to this view, will run as follows:

"If things equal to one and the ſame thing, are e-
"qual to one another; theſe two triangles, each equal
"to a ſquare whoſe ſide is three inches, are alſo equal
"between themſelves.
"But things equal to one and the ſame thing, are
"equal to one another:
"Therefore alſo theſe triangles, *&c.* are equal be-
"tween themſelves."

This obſervation will be found to hold in all immediate conſequences whatſoever, inſomuch that they are in fact no more than enthymemes of hypothetical ſyllogiſms. But then it is particular to them, that the ground on which the concluſion reſts, namely its coherence with the minor, is of itſelf apparent, and ſeen immediately to flow from the rules and reaſons of logic.

96 A ſorites of plain ſimple ſyllogiſms.

XIII. The next ſpecies of reaſoning we ſhall take notice of here is what is commonly known by the name of a *ſorites*. This is a way of arguing, in which a great number of propoſitions are ſo linked together, that the predicate of one becomes continually the ſubject of the next following, until at laſt a concluſion is formed, by bringing together the ſubject of the firſt propoſition, and the predicate of the laſt. Of this kind is the following argument.

"God is omnipotent.
"An omnipotent being can do every thing poſſible.
"He that can do every thing poſſible, can do what-
"ever involves not a contradiction.
"Therefore God can do whatever involves not a
"contradiction."

This particular combination of propoſitions may be continued to any length we pleaſe, without in the leaſt weakening the ground upon which the concluſion reſts. The reaſon is, becauſe the ſorites itſelf may be reſolved into as many ſimple ſyllogiſms as there are middle terms in it; where this is found univerſally to hold, that when ſuch a reſolution is made, and the ſyllogiſms are placed in train, the concluſion of the laſt in the ſeries is alſo the concluſion of the ſorites. This kind of argument, therefore, as it ſerves to unite ſeveral ſyllogiſms into one, muſt ſtand upon the ſame foundation with the ſyllogiſms of which it conſiſts, and is indeed, properly ſpeaking, no other than a compendious way of reaſoning ſyllogiſtically.

97 A ſorites of hypothetical ſyllogiſms.

XIV. What is here ſaid of plain ſimple propoſitions may be as well applied to thoſe that are conditional; that is, any number of them may be ſo joined together in a ſeries, that the conſequent of one ſhall become continually the antecedent of the next following; in which caſe, by eſtabliſhing the antecedent of the firſt propoſition, we eſtabliſh the conſequent of the laſt, or by removing the laſt conſequent remove alſo the firſt antecedent. This way of reaſoning is exemplified in the following argument.

“If we love any perſon, all emotions of hatred to-
“ wards him ceaſe.
“ If all emotions of hatred towards a perſon ceaſe,
“ we cannot rejoice in his misfortunes.
“ If we rejoice not in his misfortunes, we certainly
“ wiſh him no injury:
“ Therefore, if we love a perſon, we wiſh him no
“ injury.”

It is evident that this ſorites, as well as the laſt, may be reſolved into a ſeries of diſtinct ſyllogiſms, with this only difference, that here the ſyllogiſms are all conditional.

98 The ground of reaſoning by induction.

XV. We come now to that kind of argument which logicians call *induction*; in order to the right underſtanding of which, it will be neceſſary to obſerve, that our general ideas are for the moſt part capable of various ſubdiviſions. Thus the idea of the loweſt ſpecies may be ſubdivided into its ſeveral individuals, the idea of any genus into the different ſpecies it comprehends, and ſo of the reſt. If then we ſuppoſe this diſtribution to be duly made, and ſo as to take in the whole extent of the idea to which it belongs; then it is plain that all the ſubdiviſions or parts of any idea taken together conſtitute that whole idea. Thus the ſeveral individuals of any ſpecies taken together conſtitute the whole ſpecies, and all the various ſpecies comprehended under any genus make up the whole genus. This being allowed, it is apparent, that whatever may be affirmed of all the ſeveral ſubdiviſions and claſſes of any idea ought to be affirmed of the whole general idea to which theſe ſubdiviſions belong. What may be affirmed of all the individuals of any ſpecies may be affirmed of the whole ſpecies; and what may be affirmed of all the ſpecies of any genus may be alſo affirmed of the whole genus; becauſe all the individuals taken together are the ſame with the ſpecies, and all the ſpecies taken together the ſame with the genus.

99 The form and ſtructure of an argument by induction.

XVI. This way of arguing, where we infer univerſally concerning any idea what we had before affirmed or denied ſeparately of all its ſeveral ſubdiviſions and parts, is called reaſoning by induction. Thus if we ſuppoſe the whole tribe of animals ſubdivided into men, beaſts, birds, inſects, and fiſhes, and then reaſon concerning them after this manner: “all men “ have a power of beginning motion; all beaſts, birds, “ and inſects, have a power of beginning motion; all “ fiſhes have a power of beginning motion; therefore “ all animals have a power of beginning motion.” The argument is an induction. When the ſubdiviſions are juſt, ſo as to take in the whole general idea, and the enumeration is perfect, that is, extends to all and every of the inferior claſſes or parts; there the induction is complete, and the manner of reaſoning by induction is apparently concluſive.

10 The gr of arg mentat in a di ma.

XVII. The laſt ſpecies of ſyllogiſm we ſhall take notice of in this chapter is that commonly diſtinguiſhed by the name of a *dilemma*. A dilemma is an argument by which we endeavour to prove the abſurdity or falſehood of ſome aſſertion. In order to this, we aſſume a conditional propoſition, the antecedent of which is the aſſertion to be diſproved, and the conſequent a disjunctive propoſition, enumerating all the poſſible ſuppoſitions upon which that aſſertion can take place. If then it appears, that all theſe ſeveral ſuppoſitions ought to be rejected, it is plain, that the antecedent or aſſertion itſelf muſt be ſo too. When therefore ſuch a propoſition as that before mentioned is made the major of any ſyllogiſm; if the minor rejects all the ſuppoſitions contained in the conſequent, it follows neceſſarily, that the concluſion ought to reject the antecedent, which, as we have ſaid, is the very aſſertion to be diſproved. This particular way of arguing is that which logicians call a *dilemma*; and from the account here given of it, it appears that we may in the general define it to be a hypothetical ſyllogiſm, where the conſequent of the major is a disjunctive propoſition, which is wholly taken away or removed in the minor. Of this kind is the following:

“ If God did not create the world perfect in its
“ kind, it muſt either proceed from want of in-
“ clination, or from want of power.
“ But it could not proceed either from want of in-
“ clination, or from want of power.
“ Therefore he created the world perfect in its
“ kind.” Or, which is the ſame thing: “ It is
“ abſurd to ſay that he did not create the world
“ perfect in its kind.”

10 An uni ſal de tion of

XVIII. The nature then of a dilemma is univerſally this. The major is a conditional propoſition, whoſe conſequent contains all the ſeveral ſuppoſitions upon which the antecedent can take place. As therefore theſe ſuppoſitions are wholly removed in the minor, it is evident that the antecedent muſt be ſo too; inſomuch that we here always argue from the removal of the conſequent to the removal of the antecedent. That is, a dilemma is an argument in the *modus tollens* of hypothetical ſyllogiſms, as logicians love to ſpeak. Hence it is plain, that if the antecedent of the major is an affirmative propoſition, the concluſion of the dilemma will be negative; but if it is a negative propoſition, the concluſion will be affirmative.

Chap. V. *Of Demonſtration.*

I. Having diſpatched what ſeemed neceſſary to be ſaid with regard to the forms of ſyllogiſms, we now proceed

102 reaſon- by a catenati- of ſyllo- ns.

proceed to explain their uſe and application in reaſoning. We have ſeen, that in all the different appearances they put on, we ſtill arrive at a juſt and legitimate concluſion : now it often happens, that the concluſion of one ſyllogiſm becomes a previous propoſition in another ; by which means great numbers of them are ſometimes linked together in a ſeries, and truths are made to follow one another in train. And as in ſuch a concatenation of ſyllogiſms all the various ways of reaſoning that are truly concluſive may be with ſafety introduced ; hence it is plain, that in deducing any truth from its firſt principles, eſpecially where it lies at a conſiderable diſtance from them, we are at liberty to combine all the ſeveral kinds of arguments above explained, according as they are found beſt to ſuit the end and purpoſe of our inquiries. When a propoſition is thus by means of ſyllogiſms collected from others more evident and known, it is ſaid to be *proved* ; ſo that we may in the general define the proof of a propoſition to be a ſyllogiſm, or ſeries of ſyllogiſms, collecting that propoſition from known and evident truths. But more particularly, if the ſyllogiſms of which the proofs conſiſt admit of no premiſes but definitions, ſelf-evident truths, and propoſitions already eſtabliſhed, then is the argument ſo conſtituted called a *demonſtration* ; whereby it appears that demonſtrations are ultimately founded on definitions and ſelf-evident propoſitions.

03 Syllo- what- r re- le to irſt fi-

II. All ſyllogiſms whatſoever, whether compound, multiform, or defective, are reducible to plain ſimple ſyllogiſms in ſome one of the four figures. But this is not all. Syllogiſms of the firſt figure, in particular, admit of all poſſible concluſions : that is, any propoſitions whatſoever, whether an univerſal affirmative or univerſal negative, a particular affirmative or particular negative, which fourfold diviſion embraces all their varieties ; any one of theſe may be inferred by virtue of ſome ſyllogiſm in the firſt figure. By this means it happens that the ſyllogiſms of all the other figures are reducible alſo to ſyllogiſms of the firſt figure, and may be conſidered as ſtanding on the ſame foundation with them. We cannot here demonſtrate and explain the manner of this reduction, becauſe it would too much ſwell the bulk of this treatiſe. It is enough to take notice that the thing is univerſally known and allowed among logicians, to whoſe writings we refer ſuch as deſire farther ſatisfaction in this matter. This then being laid down, it is plain that any demonſtration whatſoever may be conſidered as compoſed of a ſeries of ſyllogiſms, all in the firſt figure. For, ſince all the ſyllogiſms that enter the demonſtration are reducible to ſyllogiſms of ſome one of the four figures ; and ſince the ſyllogiſms of all the other figures are farther reducible to ſyllogiſms of the firſt figure, it is evident, that the whole demonſtration may be reſolved into a ſeries of theſe laſt ſyllogiſms. Let us now, if poſſible, diſcover the ground upon which the concluſion reſts in ſyllogiſms of the firſt figure ; becauſe, by ſo doing, we ſhall come at an univerſal principle of certainty, whence the evidence of all demonſtrations in all their parts may be ultimately derived.

104 The ground of reaſoning in the firſt figure.

III. The rules then of the firſt figure are briefly theſe. The middle term is the ſubject of the major propoſition, and the predicate of the minor. The major is always an univerſal propoſition, and the minor always affirmative. Let us now ſee what effect theſe rules will have in reaſoning. The major is an univerſal propoſition, of which the middle term is the ſubject, and the predicate of the concluſion the predicate. Hence it appears, that in the major the predicate of the concluſion is always affirmed or denied univerſally of the middle term. Again, the minor is an affirmative propoſition, whereof the ſubject of the concluſion is the ſubject, and the middle term the predicate. Here then the middle term is affirmed of the ſubject of the concluſion ; that is, the ſubject of the concluſion is affirmed to be comprehended under, or to make a part of, the middle term. Thus then we ſee what is done in the premiſes of a ſyllogiſm of the firſt figure. The predicate of the concluſion is univerſally affirmed or denied of ſome idea. The ſubject of the concluſion is affirmed to be or to make a part of that idea. Hence it naturally and unavoidably follows, that the predicate of the concluſion ought to be affirmed or denied of the ſubject. To illuſtrate this by an example, we ſhall reſume one of the ſyllogiſms of the firſt chapter.

" Every creature poſſeſſed of reaſon and liberty is
" accountable for his actions.
" Man is a creature poſſeſſed of reaſon and liberty :
" Therefore man is accountable for his actions."

Here, in the firſt propoſition, the predicate of the concluſion *accountableneſs* is affirmed of all creatures that have reaſon and liberty. Again, in the ſecond propoſition, *man*, the ſubject of the concluſion, is affirmed to be or to make a part of this claſs of creatures. Hence the concluſion neceſſarily and unavoidably follows, *viz.* that man is accountable for his actions ; becauſe, if reaſon and liberty be that which conſtitutes a creature accountable, and man has reaſon and liberty, it is plain he has that which conſtitutes him accountable. In like manner, where the major is a negative propoſition, or denies the predicate of the concluſion univerſally of the middle term, as the minor always aſſerts the ſubject of the concluſion, to be or make a part of that middle term, it is no leſs evident that the predicate of the concluſion ought in this caſe to be denied of the ſubject. So that the ground of reaſoning, in all ſyllogiſms of the firſt figure, is manifeſtly this : " Whatever may be affirmed univerſally of any idea, may be affirmed of every or " any number of particulars comprehended under that " idea." And again : " Whatever may be denied " univerſally of any idea, may be in like manner de- " nied of every or any number of its individuals." Theſe two propoſitions are called by logicians the *dictum de omni*, and *dictum de nullo* ; and are indeed the great principles of ſyllogiſtic reaſoning, inaſmuch as all concluſions whatſoever either reſt immediately upon them, or upon propoſitions deduced from them. But what adds greatly to their value is, that they are really ſelf-evident truths, and ſuch as we cannot gainſay without running into an expreſs contradiction. To affirm, for inſtance, that *no man is perfect*, and yet argue that *ſome men are perfect* ; or to ſay that *all men are mortal*, and yet that *ſome men are not mortal*, is to aſſert a thing to be and not to be at the ſame time.

IV. And

105 Demonſtration, an infallible guide to truth and certainty.

IV. And now we may affirm, that, in all ſyllogiſms of the firſt figure, if the premiſes are true, the concluſion muſt needs be true. If it be true that the predicate of the concluſion, whether affirmative or negative, agrees univerſally to ſome idea; and if it be alſo true that the ſubject of the concluſion is a part of or comprehended under that idea; then it neceſſarily follows, that the predicate of the concluſion agrees alſo to the ſubject. For to aſſert the contrary, would be to run counter to ſome one of the two principles before eſtabliſhed; that is, it would be to maintain an evident contradiction. And thus we are come at laſt to the point we have been all along endeavouring to eſtabliſh; namely, that every propoſition which can be demonſtrated is neceſſarily true. For as every demonſtration may be reſolved into a ſeries of ſyllogiſms all in the firſt figure; and as in any one of theſe ſyllogiſms, if the premiſes are true, the concluſion muſt needs be ſo too; it evidently follows, that if all the ſeveral premiſes are true, all the ſeveral concluſions are ſo, and conſequently the concluſion alſo of the laſt ſyllogiſm, which is always the propoſition to be demonſtrated. Now that all the premiſes of a demonſtration are true, will eaſily appear from the very nature and definition of that form of reaſoning. A demonſtration, as we have ſaid, is a ſeries of ſyllogiſms, all whoſe premiſes are either definitions, ſelf-evident truths, or propoſitions already eſtabliſhed. Definitions are identical propoſitions, wherein we connect the deſcription of an idea with the name by which we chuſe to have that idea called, and therefore as to their truth there can be no diſpute. Self-evident propoſitions appear true of themſelves, and leave no doubt or uncertainty in the mind. Propoſitions, before eſtabliſhed, are no other than concluſions gained by one or more ſteps from definitions and ſelf-evident principles; that is, from true premiſes, and therefore muſt needs be true. Whence all the previous propoſitions of a demonſtration being, we ſee, manifeſtly true; the laſt concluſion, or propoſition to be demonſtrated, muſt be ſo too. So that demonſtration not only leads to certain truth, but we have here alſo a clear view of the ground and foundation of that certainty. For as, in demonſtrating, we may be ſaid to do nothing more than combine a ſeries of ſyllogiſms together, all reſting on the ſame bottom; it is plain that one uniform ground of certainty runs through the whole, and that the concluſions are every where built upon ſome one of the two principles before eſtabliſhed, as the foundation of all our reaſoning. Theſe two principles are eaſily reduced into one, and may be expreſſed thus: “Whatever predicate, whether affirmative or negative, agrees univerſally to any idea; the ſame muſt needs agree to every or any number of individuals comprehended under that idea.” And thus at length we have, according to our firſt deſign, reduced the certainty of demonſtration to one ſimple and univerſal principle; which carries its own evidence along with it, and which is indeed the ultimate foundation of all ſyllogiſtic reaſoning.

106 The rules of logic furniſh a ſufficient criterion for the diſtinguiſhing between truth and falſehood.

V. Demonſtration therefore ſerving as an infallible guide to truth, and ſtanding on ſo ſure and unalterable a baſis, we may now venture to aſſert, that the rules of logic furniſh a ſufficient criterion for the diſtinguiſhing between truth and falſehood. For ſince every propoſition that can be demonſtrated is neceſſarily true, he is able to diſtinguiſh truth from falſehood who can with certainty judge when a propoſition is truly demonſtrated. Now a demonſtration is, as we have ſaid, nothing more than a concatenation of ſyllogiſms, all whoſe premiſes are definitions, ſelf-evident truths, or propoſitions previouſly eſtabliſhed. To judge therefore of the validity of a demonſtration, we muſt be able to diſtinguiſh whether the definitions that enter it are genuine, and truly deſcriptive of the ideas they are meant to exhibit: whether the propoſitions aſſumed without proofs as intuitive truths have really that ſelf-evidence to which they lay claim: whether the ſyllogiſms are drawn up in due form, and agreeable to the laws of argumentation: in fine, whether they are combined together in a juſt and orderly manner, ſo that no demonſtrable propoſitions ſerve any where as premiſes unleſs they are concluſions of previous ſyllogiſms. Now it is the buſineſs of logic, in explaining the ſeveral operations of the mind, fully to inſtruct us in all theſe points. It teaches the nature and end of definitions, and lays down the rules by which they ought to be framed. It unfolds the ſeveral ſpecies of propoſitions, and diſtinguiſhes the ſelf-evident from the demonſtrable. It delineates alſo the different forms of ſyllogiſms, and explains the laws of argumentation proper to each. In fine, it deſcribes the manner of combining ſyllogiſms, ſo as that they may form a train of reaſoning, and lead to the ſucceſſive diſcovery of truth. The precepts of logic therefore, as they enable us to judge with certainty when a propoſition is duly demonſtrated, furniſh a ſure criterion for the diſtinguiſhing between truth and falſehood.

VI. Perhaps it may be objected, that demonſtration is a thing very rare and uncommon, as being the prerogative of but a few ſciences, and therefore the criterion here given can be of no great uſe. But wherever, by the bare contemplation of our ideas, truth is diſcoverable, there alſo demonſtration may be attained. Now that is an abundantly ſufficient criterion which enables us to judge with certainty in all caſes where the knowledge of truth comes within our reach; for with diſcoveries, that lie beyond the limits of the human mind, we have, properly, no buſineſs or concernment. When a propoſition is demonſtrated, we are certain of its truth. When, on the contrary, our ideas are ſuch as have no viſible connection or repugnance, and therefore furniſh not the proper means of tracing their agreement or diſagreement, there we are ſure that ſcientifical knowledge is not attainable. But where there is ſome foundation of reaſoning, which yet amounts not to the full evidence of demonſtration, there the precepts of logic, by teaching us to determine aright of the degree of proof, and of what is ſtill wanting to render it full and complete, enable us to make a due eſtimate of the meaſures of probability, and to proportion our aſſent to the grounds on which the propoſition ſtands. And this is all we can poſſibly arrive at, or even ſo much as hope for, in the exerciſe of faculties ſo imperfect and limited as ours.

VII. Before we conclude this chapter, it may not be improper to take notice of the diſtinction of it into *direct*

rect and *indirect*. A *direct demonſtration* is, when, beginning with definitions, ſelf-evident propoſitions, or known and allowed truths, we form a train of ſyllogiſms, and combine them in an orderly manner, continuing the ſeries through a variety of ſucceſſive ſteps, until at laſt we arrive at a ſyllogiſm whoſe concluſion is the propoſition to be demonſtrated. Proofs of this kind leave no doubt or uncertainty behind them; becauſe, all the ſeveral premiſes being true, the concluſions muſt be ſo too, and of courſe the very laſt concluſion or propoſition to be proved. The other ſpecies of demonſtration is the *indirect*, or, as it is ſometimes called, the *apogogical*. The manner of proceeding here is, by aſſuming a propoſition which directly contradicts that we mean to demonſtrate; and thence, by a continued train of reaſoning, in the way of a direct demonſtration, deducing ſome abſurdity or manifeſt untruth. For hereupon we conclude, that the propoſition aſſumed was falſe; and thence again, by an immediate conſequence, that the propoſition to be demonſtrated is true. Thus Euclid, in his third book, being to demonſtrate *that circles which touch one another inwardly have not the ſame centre*, aſſumes the direct contrary to this, viz. *that they have the ſame centre;* and thence, by an evident train of reaſoning, proves *that a part is equal to the whole*. The ſuppoſition therefore leading to this abſurdity he concludes to be falſe, viz. *that circles touching one another inwardly have the ſame centre;* and thence again immediately infers, *that they have not the ſame centre.*

109 und of oning in rect de- ſtra- s.

VIII. Now, becauſe this manner of demonſtration is accounted by ſome not altogether ſo clear and ſatisfactory; we ſhall therefore endeavour to ſhew, that it equally with the other leads to truth and certainty. Two propoſitions are ſaid to be *contradictory* one of another, when that which is aſſerted to be in the one is aſſerted not to be in the other. Thus the propoſitions, *Circles that touch one another inwardly have the ſame centre*, and *Circles that touch one another inwardly have not the ſame centre*, are *contradictories;* becauſe the ſecond aſſerts the direct contrary of what is aſſerted in the firſt. Now, in all contradictory propoſitions, this holds univerſally, That one of them is neceſſarily true, and the other neceſſarily falſe. For if it be true, that circles which touch one another inwardly have not the ſame centre; it is unavoidably falſe, that they have the ſame centre. On the other hand, if it be falſe that they have the ſame centre, it is neceſſarily true that they have not the ſame centre. Since therefore it is impoſſible for them to be both true or both falſe at the ſame time; it unavoidably follows, that one is neceſſarily true, and the other neceſſarily falſe. This then being allowed, which is indeed ſelf-evident, if any two contradictory propoſitions are aſſumed, and one of them can by a clear train of reaſoning be demonſtrated to be falſe; it neceſſarily follows, that the other is true. For as the one is neceſſarily true, and the other neceſſarily falſe; when we come to diſcover which is the falſe propoſition, we thereby alſo know the other to be true.

o ct de- ra- ſure to ty.

IX. Now this is preciſely the manner of an indirect demonſtration, as is evident from the account given of it above. For there we aſſume a propoſition which directly contradicts that we mean to demonſtrate; and, having by a continued ſeries of proofs ſhewn it to be falſe, thence infer, that its contradictory, or the propoſition to be demonſtrated, is true. As therefore this laſt concluſion is certain and unavoidable; let us next inquire after what manner we come to be ſatisfied of the falſehood of the aſſumed propoſition, that ſo no poſſible doubt may remain as to the force and validity of demonſtrations of this kind. The manner then is plainly this: Beginning with the aſſumed propoſition, we, by the help of definitions, ſelf-evident truths, or propoſitions already eſtabliſhed, continue a ſeries of reaſoning, in the way of a direct demonſtration, until at length we arrive at ſome abſurdity or known falſehood. Thus Euclid, in the example before-mentioned, from the ſuppoſition that circles touching one another inwardly have the ſame centre, deduces, *that a part is equal to the whole.* Since therefore, by a due and orderly proceſs of reaſoning, we come at laſt to a falſe concluſion; it is manifeſt, that all the premiſes cannot be true: for, were all the premiſſes true, the laſt concluſion muſt be ſo too, by what has been before demonſtrated. Now, as to all the other premiſes made uſe of in the courſe of reaſoning, they are manifeſt and known truths by ſuppoſition, as being either definitions, ſelf-evident propoſitions, or truths previouſly eſtabliſhed. The aſſumed propoſition is that only as to which any doubt or uncertainty remains. That alone therefore can be falſe; and indeed, from what has been already ſhewn, muſt unavoidably be ſo. And thus we ſee, that in indirect demonſtrations, two contradictory propoſitions being laid down, one of which is demonſtrated to be falſe, the other, which is always the propoſition to be proved, muſt neceſſarily be true; ſo that here, as well as in the direct way of proof, we arrive at a cleer and ſatisfactory knowledge of truth.

111 A particular caſe of indirect demonſtrations.

X. This is univerſally the method of reaſoning in all apogogical or indirect demonſtrations. But if any propoſition is aſſumed, from which, in a direct train of reaſoning, we can deduce its contradictory; the propoſition ſo aſſumed is falſe, and the contradictory one true. For if we ſuppoſe the aſſumed propoſition to be true, then, ſince all the other premiſes that enter the demonſtration are alſo true, we ſhall have a ſeries of reaſoning conſiſting wholly of true premiſes; whence the laſt concluſion or contradictory of the aſſumed propoſition muſt be true likewiſe: ſo that by this means we ſhould have two contradictory propoſitions both true at the ſame time, which is manifeſtly impoſſible. The aſſumed propoſition therefore, whence this abſurdity flows, muſt neceſſarily be falſe; and conſequently its contradictory, which is here the propoſition deduced from it, muſt be true. If then any propoſition is propoſed to be demonſtrated, and we *aſſume* the *contradictory* of that propoſition, and thence directly infer the propoſition to be demonſtrated; by this very means we know that the propoſition ſo inferred is true. For ſince from an aſſumed propoſition we have deduced its contradictory, we are thereby certain that the aſſumed propoſition is falſe; and if ſo, then its contradictory, or that deduced from it, which in this caſe is the ſame with the propoſition to be demonſtrated, muſt be true.

XI. We have a curious inſtance of this in the twelfth propoſition of the ninth book of the Elements. Euclid there propoſes to demonſtrate, *that in any ſeries*

112 A due knowledge of the principles of logic indiſpenſably neceſſary to make us proper judges of demonſtration.

of numbers, riſing from unity in geometrical progreſſion, all the prime numbers that meaſure the laſt term in the ſeries will alſo meaſure the next after unity. In order to this, he aſſumes the contradictory of the propoſition to be demonſtrated; namely, *that ſome prime number meaſuring the laſt term in the ſeries does not meaſure the next after unity:* and thence, by a continued train of reaſoning, proves that it actually does meaſure it. Hereupon he concludes the aſſumed propoſition to be falſe; and that which is deduced from it, or its contradictory, which is the very propoſition he propoſed to demonſtrate, to be true. Now that this is a juſt and concluſive way of reaſoning, is abundantly manifeſt from what we have ſo clearly eſtabliſhed above.

XI. Having thus ſufficiently evinced the certainty of demonſtration in all its branches, and ſhown the rules by which we ought to proceed, in order to arrive at a juſt concluſion, according to the various ways of arguing made uſe of; it is needleſs to enter upon a particular conſideration of thoſe ſeveral ſpecies of falſe reaſoning which logicians diſtinguiſh by the name of *ſophiſms*. He that thoroughly underſtands the form and ſtructure of a good argument, will of himſelf readily diſcern every deviation from it. And although *ſophiſms* have been divided into many claſſes, which are all called by ſounding names, that therefore carry in them much appearance of learning; yet are the errors themſelves ſo very palpable and obvious, that it would be loſt labour to write for a man capable of being miſled by them. Here therefore we chooſe to conclude this part of logick; and ſhall in the next give ſome account of *Method*: which, though inſeparable from reaſoning, is nevertheleſs always conſidered by logicians as a diſtinct operation of the mind; becauſe its influence is not confined to the mere exerciſe of the reaſoning faculty, but extends in ſome degree to all the tranſactions of the underſtanding.

113 And of ſelf ſufficient to guard u gainſt e and falſe reaſonin

PART IV.

OF METHOD.

114 The underſtanding ſometimes employed in putting together known truths.

WE have now done with the three firſt operations of the mind, whoſe office it is to ſearch after truth, and enlarge the bounds of human knowledge. There is yet a fourth, which regards the diſpoſal and arrangement of our thoughts, when we endeavour ſo to put them together as that their mutual connection and dependence may be clearly ſeen. This is what logicians call *Method*, and place always the laſt in order in explaining the powers of the underſtanding; becauſe it neceſſarily ſuppoſes a previous exerciſe of our other faculties, and ſome progreſs made in knowledge, before we can exert it in any extenſive degree.

115 Sometimes in the ſearch and diſcovery of ſuch as are unknown.

II. In this view, it is plain that we muſt be beforehand well acquainted with the truths we are to combine together; otherwiſe, how could we diſcern their ſeveral connections and relations, or ſo diſpoſe of them as their mutual dependence may require? But it often happens, that the underſtanding is employed, not in the arrangement and compoſition of known truths, but in the ſearch and diſcovery of ſuch as are unknown. And here the manner of proceeding is very different. We aſſemble at once our whole ſtock of knowledge relating to any ſubject, and, after a general ſurvey of things, begin with examining them ſeparately and by parts. Hence it comes to paſs, that whereas, at our firſt ſetting out, we were acquainted only with ſome of the grand ſtrokes and outlines of truth; by thus purſuing her through her ſeveral windings and receſſes, we gradually diſcover thoſe more inward and finer touches whence ſhe derives all her ſtrength, ſymmetry, and beauty. And here it is, that when, by a narrow ſcrutiny into things, we have unravelled any part of knowledge, and traced it to its firſt and original principles, inſomuch that the whole frame and contexture of it lies open to the view of the mind; here it is, that, taking it the contrary way, and beginning with theſe principles, we can ſo adjuſt and put together the parts as the order and method of ſcience requires.

III. But as theſe things are beſt underſtood when illuſtrated by examples; let us ſuppoſe any machine, for inſtance a watch, preſented to us, whoſe ſtructure and compoſition we are as yet unacquainted with, but want, if poſſible, to diſcover. The manner of proceeding, in this caſe, is, by taking the whole to pieces, and examining the parts ſeparately, one after another. When, by ſuch a ſcrutiny, we have thoroughly informed ourſelves of the frame and contexture of each, we then compare them together, in order to judge of their mutual action and influence. By this means we gradually trace out the inward make and compoſition of the whole, and come at length to diſcern how parts of ſuch a form, and ſo put together as we found in unravelling and taking them aſunder, conſtitute that particular machine called a *watch*, and contribute to all the ſeveral motions and phænomena obſervable in it. This diſcovery being made, we can take things the contrary way, and, beginning with the parts, ſo diſpoſe and connect them as their ſeveral uſes and ſtructures require, until at length we arrive at the whole itſelf, from the unravelling of which theſe parts reſulted.

116 Illuſtrat by the ſ litude watch.

117 Groun the ana and ſy ticmeth

IV. And as it is in tracing and examining the works of art; ſo is it, in a great meaſure, in unfolding any part of human knowledge: for the relations and mutual habitudes of things do not always immediately appear upon comparing them one with another. Hence we have recourſe to intermediate ideas; and, by means of them, are furniſhed with thoſe previous propoſitions that lead to the concluſion we are in queſt of. And if it ſo happen that the previous propoſitions themſelves are not ſufficiently evident, we endeavour, by new middle terms, to aſcertain their truth; ſtill tracing things backward, in a continual ſeries, until at length we arrive at ſome ſyllogiſm where the premiſes are firſt and ſelf-evident principles. This done, we become perfectly ſatisfied as to the truth of all the concluſions we have paſſed through, inaſmuch as they are now ſeen to ſtand upon the firm and immovable foundation of our intuitive perceptions. And as we arrived at this certainty by tracing things backward to the original principles whence they flow; ſo may we at any time renew it by a direct contrary proceſs, if, beginning with theſe principles, we carry the train of our thoughts forward until they lead us, by a connected chain of proofs, to the very laſt concluſion of the ſeries.

118 iviſion of ethod into alytic and nthetic.

V. Hence it appears, that, in diſpoſing and putting together our thoughts, either for our own uſe, that the diſcoveries we have made may at all times lie open to the review of the mind, or where we mean to communicate and unfold the diſcoveries to others, there are two ways of proceeding equally within our choice: for we may ſo propoſe the truths relating to any part of knowledge, as they preſented themſelves to the mind in the manner of inveſtigation; carrying on the ſeries of proofs, in a reverſe order, until they at laſt terminate in firſt principles: or, beginning with theſe principles, we may take the contrary way, and from them deduce, by a direct train of reaſoning, all the ſeveral propoſitions we want to eſtabliſh. This diverſity in the manner of arranging our thoughts gives riſe to the twofold diviſion of method eſtabliſhed among logicians: for method, according to their uſe of the word, is nothing elſe but the order and diſpoſition of our thoughts relating to any ſubject. When truths are ſo propoſed and put together as they were or might have been diſcovered, this is called the *analytic method*, or the *method of reſolution*; inaſmuch as it traces things backward to their ſource, and reſolves knowledge into its firſt and original principles. When, on the other hand, they are deduced from theſe principles, and connected according to their mutual dependence, inſomuch that the truths firſt in order tend always to the demonſtration of thoſe that follow; this conſtitutes what we call the *ſynthetic method*, or *method of compoſition*. For here we proceed by gathering together the ſeveral ſcattered parts of knowledge, and combining them into one whole or ſyſtem, in ſuch manner that the underſtanding is enabled diſtinctly to follow truth through all her different ſtages and gradations.

119 Called otherwiſe the method of invention, and the method of ſcience.

VI. There is this farther to be taken notice of, in relation to theſe two ſpecies of method; that the firſt has alſo obtained the name of the *method of invention*, becauſe it obſerves the order in which our thoughts ſucceed one another in the invention or diſcovery of truth. The other, again, is often denominated the *method of doctrine* or *inſtruction*; inaſmuch as, in laying our thoughts before others, we generally chooſe to proceed in the ſynthetic manner, deducing them from their firſt principles. For we are to obſerve, that although there is great pleaſure in purſuing truth in the method of inveſtigation, becauſe it places us in the condition of the inventor, and ſhews the particular train and proceſs of thinking by which he arrived at his diſcoveries; yet is it not ſo well accommodated to the purpoſes of evidence and conviction. For, at our firſt ſetting out, we are commonly unable to divine where the analyſis will lead us; inſomuch that our reſearches are for ſome time little better than a mere groping in the dark. And even after light begins to break in upon us, we are ſtill obliged to many reviews, and a frequent compariſon of the ſeveral ſteps of the inveſtigation among themſelves. Nay, when we have unravelled the whole, and reached the very foundation on which our diſcoveries ſtand, all our certainty, in regard to their truth, will be found in a great meaſure to ariſe from that connection we are now able to diſcern between them and firſt principles, taken in the order of compoſition. But in the ſynthetic manner of diſpoſing our thoughts, the caſe is quite different: for as we here begin with the intuitive truths, and advance by regular deductions from them, every ſtep of the procedure brings evidence and conviction along with it; ſo that, in our progreſs from one part of knowledge to another, we have always a clear perception of the ground on which our aſſent reſts. In communicating therefore our diſcoveries to others, this method is apparently to be choſen, as it wonderfully improves and enlightens the underſtanding, and leads to an immediate perception of truth.

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LOHOCH, or LOCH, in pharmacy, a compoſition of a middle conſiſtence between a ſoft electuary and a ſyrup, principally uſed in diſorders of the lungs.

LOINS, in anatomy, the two lateral parts of the umbilical region of the abdomen.

LOIRE, the largeſt river in France, riſes in the mountains of the Cevennes, and, after running a courſe of about 500 miles, falls into the bay of Biſcay.

LOLIUM, DARNELL-GRASS; a genus of the digynia order, belonging to the triandria claſs of plants. The moſt remarkable ſpecies are, 1. The perenne, red darnel, or rye-graſs. This is very common in roads and dry paſtures. It makes excellent hay upon dry, chalky, or ſandy ſoils. It is advantageouſly cultivated along with clover, and ſprings earlier than other graſſes; thereby ſupplying food for cattle at a time when it is moſt difficult to be obtained. Cows, horſes, and ſheep, eat it; goats are not fond of it. 2. The temulentum, or white darnel, grows ſpontaneouſly in ploughed fields. If the ſeeds of this ſpecies are malted with barley, the ale ſoon occaſions drunkenneſs; mixed with bread-corn, they produce but little effect unleſs the bread is eaten hot. Sheep are not fond of the plant.

Lokman.

LOKMAN *the* WISE, an eminent philoſopher among the Eaſterns. The Arabians ſay he was the ſon of Baura, the ſon or grandſon of a ſiſter or aunt of Job. He was an Ethiopian, and a ſlave for ſome time. It is related that he was born in the time of David, and lived till the age of the prophet Jonas. Some ſuppoſe him to have been the ſame with Æſop the mythologiſt: and indeed we find in the parables or apologues of Lokman in Arabic, many particulars that are ſeen in Æſop's fables; ſo that it is not eaſy to determine whether the Greek or the Arabian are the originals. He is ſaid to have been deformed in his perſon; but that this defect was ſufficiently made up by the perfections of his mind. Some pieces of his are extant; and he was looked upon as ſo excellent a perſon, that Mahomet has inſerted a chapter of the Koran, called after his name, in which he introduces God as ſaying, "We heretofore beſtowed wiſdom on Lokman."—It is related that he got his liberty on the following occaſion. His maſter having given him a bitter melon to eat, he eat it all. His maſter, ſurpriſed at his exact obedience, aſked, How it was poſſible for him to eat ſuch a nauſeous fruit? He anſwered, "I have received ſo many favours from you, that it is no wonder I ſhould once in my life eat a bitter melon from your hand." This generous anſwer of the ſlave ſtruck the maſter to ſuch a degree, that he immediately gave him his liberty. M. Galland tranſlated all the fables of Lokman, and Bidpai, or Pilpay, a bramin philoſopher; which were publiſhed at Paris in 1724.

LOLLARDS, a religious ſect which aroſe in Germany about the beginning of the 14th century; ſo called from its author Walter Lollard, who began to dogmatize in 1315.

Lollard, and his followers, rejected the ſacrifice of the maſs, extreme unction, and penances for ſin; arguing that Chriſt's ſufferings were ſufficient. He is likewiſe ſaid to have ſet aſide baptiſm, as a thing of no effect; and repentance, as not abſolutely neceſſary, &c. —Lollard was burnt alive at Cologne, in 1322. In England, the followers of Wickliff were called, by way of reproach, *Lollards*, from ſome affinity there was between ſome of their tenets; though others are of opinion, that the Engliſh *Lollards* came from Germany. See Wickliffite. They were ſolemnly condemned by the archbiſhop of Canterbury, and the council of Oxford.

LOMBARD (Lambert), an eminent painter, born at Liege in 1500; who, after a diligent ſtudy of the antique at Rome, introduced that ſtyle of painting among his countrymen, inſtead of the Gothic. He painted hiſtory, architecture, and perſpective; and though he could never altogether free himſelf from his national goût, he is ranked among the beſt painters of his time. He died in 1560.

Lombard (Peter), well known by the title of *Maſter of the Sentences*, was born at Novara in Lombardy; but being bred at Paris, he diſtinguiſhed himſelf ſo much at that univerſity, that he firſt had the canonry of Chartres conferred on him, was ſome time tutor to Philip ſon of Louis le Gros, and laſtly obtained the ſee of Paris. He died in 1064. His work of the *Sentences* is looked on as the ſource of the ſcholaſtic theology of the Latin church. He wrote alſo *Commentaries on the Pſalms*, and on *St Paul's Epiſtles*.

LOMBARDS, a Scandinavian nation, who formerly ſettled in Italy, and for ſome time made a conſiderable figure.

1
Etymology of the name.

Their name of *Lombards*, or *Longobards*, is by ſome derived from the word *lack*, or *lache*, ſignifying in the German tongue *water;* becauſe the Lombards, while in Scandinavia, lived in marſhes, or near the ſea. Others think that it comes from the two German words *langen barden*, or *helleborden*, that is, from the long halberts they were ſuppoſed to uſe in war. But Paulus Diaconus their hiſtorian, and who was himſelf a Lombard, tells us, that they were called *Longobards* from the length of their beards. A nation called the *Lombards* is mentioned by Tacitus, Strabo, and Ptolemy; but theſe are different from the Lombards who afterwards ſettled in Italy, and are reckoned to be the ſame with the Gepidæ, whom the Italian Lombards almoſt exterminated. The Lombards who ſettled in Italy are firſt mentioned by Proſper Aquitanus, biſhop of Rhegium in the year 379. That writer tells us, that about this time the Lombards, abandoning the moſt diſtant coaſts of the ocean, and their native country Scandinavia, and ſeeking for new ſettlements, as they were over-ſtocked with people at home, firſt attacked and overcame about this time the Vandals in Germany. They were then headed by two chiefs, Iboreus and Aion; who, dying about the year 389, were ſucceeded by Agilmund, who is commonly reckoned the firſt king of the Lombards.

2
Vandals
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the Lom
bards.

Before the time of Odoacer, the Lombard hiſtory affords nothing remarkable; in his time, however, they ſettled on the Danube, in the country of the Rugians, whom Odoacer had almoſt totally exterminated or carried into captivity. During their ſtay in this country, they rendered themſelves formidable to the neighbouring nations, and carried on ſucceſsful wars with the Heruli and Gepidæ. In 526, they were allowed by the emperor Juſtinian to ſettle in Pannonia; and here they made war a ſecond time with the Gepidæ. Alboinus, the Lombard king, killed the king of the Gepidæ with his own hand, put their army to the rout, and cut ſuch numbers of them in pieces, that they ceaſed from that time to be a nation. Having cauſed the deceaſed king's head to be cut off, he made a cup of his ſkull, called in the language of the Lombards *ſchala*, which he made uſe of in all public entertainments. However, having taken, among many other captives of great diſtinction, the late king's daughter, by name *Roſamunda*, he married her after the death of his former wife Clodiſvinta, the daughter of Clotaire king of France.

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in the co
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Rugians.

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Deſtroy
Gepidæ.

By this victory Alboinus gained ſuch reputation, that his friendſhip was courted by Juſtinian; and, in conſequence of the emperor's application, a body of 6000 Lombards were ſent to the aſſiſtance of Narſes againſt the Goths. The ſucceſs of the Romans in this expedition, the invaſion of Italy by the Lombards, and their ſucceſſes in that country, have been taken notice of under the article Italy, nº 28—32. At laſt, Alboinus, having made himſelf maſter of Venetia, Liguria, Æmilia, Hetruria, and Umbria, was ſlain by the treachery of his wife, in the year 575, the fourth of his reign. This princeſs was the daughter of the king of the Gepidæ, whom Alboinus had killed in battle, and made a cup of his ſkull, as above related. As he was one day feaſting at Verona with his chief favourites and principal officers, in the height of his mirth he ſent for the queen, and, filling the deteſted cup, commanded her to drink merrily with her father. Roſamund, ſtruck with horror, hurried out of the room; and, highly incenſed againſt her huſband for thus barbarouſly triumphing over the misfortunes of her family, reſolved, at all events, to make him pay dear for ſuch an inhuman and affronting conduct. Accordingly, ſhe diſcovered her intention to Helmichild the king's ſhield-bearer, a youth of great boldneſs and intrepidity. Helmichild peremptorily refuſed to imbrue his hands in the blood of his ſovereign, or to be any way acceſſory to his death; and in this reſolution he perſiſted till he was, by a ſhameful ſtratagem, forced by the queen to a compliance: for ſhe, knowing that he carried on an intrigue with one of her

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A'boin
king of
Lombar
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his wife

her ladies, placed herſelf one night in her bed, and receiving the youth, indulged him as if ſhe had been his own miſtreſs in his amorous deſires; which ſhe had no ſooner done, than, diſcovering herſelf to the deceived lover, ſhe told him that he muſt now either put the king to death, or be put to death by him. Helmichild, well appriſed, that, after what he had done, his ſafety depended upon the death of the king, engaged in the treaſon, which he otherwiſe abhorred. One day, therefore, while Alboinus was repoſing in his chamber after dinner, Helmichild, with ſome others whom he had made privy to his deſign, breaking in unexpectedly, fell upon the king with their daggers. Alboinus, ſtarting up at their firſt coming in, laid hold of his ſword, which he had always by him; but having in vain attempted to draw it, the queen having beforehand faſtened it in the ſcabbard, he defended himſelf for ſome time with a footſtool; but was in the end overpowered, and diſpatched with many wounds.

Roſamund had promiſed to Helmichild, that, as ſoon as he had diſpatched the king, ſhe would marry him, and, with her perſon, beſtow upon him the kingdom of the Lombards. The firſt part of her promiſe ſhe immediately performed; but was ſo far from being able to beſtow the crown upon him, that both of them were obliged to ſave themſelves by flight. They fled to Longinus the exarch of Ravenna, taking with them all the jewels and treaſure of the late king. Longinus received her with the greateſt marks of friendſhip and kindneſs, and aſſured her of his protection. She had not been long in Ravenna, however, before the exarch, judging that a favourable opportunity now offered of making himſelf king of Italy by her means, imparted his deſign to her, and declared his intention to marry her, provided, by ſome means or other, ſhe diſpatched Helmichild.—Roſamund, highly pleaſed with the propoſal, reſolved to ſatisfy her ambition by getting rid of the perſon whom ſhe had married in order to gratify her revenge. Accordingly, having prepared a ſtrong poiſon, ſhe mixed it with wine, and gave it to her huſband as he came out of the bath, and called for drink, according to his cuſtom. Helmichild had not half emptied the cup, when, by the ſudden and ſtrange operation which he felt in his bowels, he concluded what it was; and, with his ſword pointed at the queen's breaſt, compelled her to drink the reſt. The poiſon had the ſame effect on both; for they died in a few hours. Longinus, on the death of the queen, laid aſide all thoughts of making himſelf king of Italy, and ſent the king's treaſure to Conſtantinople, together with Albiſvinda the daughter of Alboinus by Roſamund, whom ſhe had brought along with her.

After the death of Alboinus, the Lombards choſe Clephis, one of the nobility, for their king. He was murdered after a ſhort reign of 18 months; upon which enſued an interregnum of 10 years, as related under the article ITALY, n° 32. During this time, they extended their conqueſts in that country; but at laſt the Romans, jealous of their progreſs, reſolved to put a ſtop to their victories, and, if poſſible, to drive them quite out. For this purpoſe, they deſigned not only to employ their own force, but entered into alliance with the Franks; which ſo alarmed the Lombards, that they re-eſtabliſhed the monarchical form of government among themſelves, and choſe Autharis the ſon of Clephis for their king. This monarch, conſidering that the power of the dukes, who had governed Lombardy for the ſpace of 10 years, was during that length of time very much eſtabliſhed, and that they would not probably be willing to part with the authority which they had ſo long enjoyed, allowed them to continue in their government; but obliged them to contribute one moiety of their revenues towards the maintenance and ſupport of his royal dignity, ſuffering them to diſpoſe of the other as they thought proper. He reſerved to himſelf the ſupreme dominion and authority; and took an oath of the dukes, that, in time of war, they would readily aſſiſt him to the utmoſt of their power. Though he could remove the dukes at pleaſure, yet he deprived none of them of their dukedoms, except in caſes of treaſon; nor gave them to others, except when their male-iſſue failed. Having ſettled matters in this manner with the dukes, he enacted ſeveral wholeſome laws againſt theft, rapine, murder, adultery, and other vices which prevailed among his ſubjects; and was the firſt of the Lombard kings who embraced Chriſtianity. Moſt of his ſubjects followed the example of their monarch: but, as they were all inſtructed by Arian biſhops, they continued long infected with that hereſy; which occaſioned great diſputes between them and the orthodox biſhops of the cities ſubject to them.

8
Reſtored.

9
Written laws when firſt introduced.

From the re-eſtabliſhment of the monarchy under Autharis, to the reign of Rotharis in 636, the hiſtory of the Lombards affords nothing memorable. This period is remarkable for the introduction of written laws among theſe people. Before his time they had been governed only by tradition; but Rotharis, in imitation of the Romans and Goths, undertook the publiſhing of written laws; and to thoſe which he enacted, many were added by the ſucceeding princes. Grotius prefers the method which the Lombards followed in making laws, to that which was practiſed by the Romans themſelves. Among the latter, the emperor was the ſole lawgiver; ſo that whatever pleaſed him had the force of a law. But the Lombard kings did not aſſume that power to themſelves, ſince their laws were enacted in public aſſemblies, convened for that purpoſe, after they had been maturely examined and approved of by all the lords of the kingdom. From theſe aſſemblies were excluded the eccleſiaſtic order, and the people; ſo that the legiſlative power was lodged in the king and nobles alone.

The reign of Rotharis is remarkable, not only for his introducing written laws among his ſubjects, but for the conqueſts he made, and the ſucceſsful wars carried on with the exarch of Ravenna, whom he totally defeated in ſeveral engagements, and made himſelf maſter of ſome part of his territories. This monarch died in 652; and the affairs of the Lombards went on proſperouſly, till the ambition of Luitprand laid the foundation of the total ruin of his kingdom. He aſcended the throne of Lombardy in 711, and watched all opportunities of enlarging his dominions at the expence of the emperors. Of this, a fair opportunity offered in 716: for the emperor Leo Iſauricus, who at that time reigned in the eaſt, having, by his famous edict, forbidden the worſhip of images, and ordered them to be every-where pulled down, the

10
Luitprand's ambition.

people were ſo provoked at that innovation, that, in ſeveral places, they openly revolted, and, falling upon the emperor's officers, drove them out of the cities. In the eaſt, Germanus patriarch of Conſtantinople oppoſed the emperor's deſign with great warmth; but Leo cauſed him to be depoſed, and Anaſtaſius to be raiſed to that ſee in his room, ordering at the ſame time all the images in the imperial city to be pulled down, and publicly burnt. He ſtrictly enjoined his officers in the weſt, eſpecially the exarch of Ravenna, to ſee his edict punctually obeyed in their reſpective governments. In compliance with theſe orders, Scholaſticus, then exarch, began to pull down the images in all the churches and public places in Ravenna; which incenſed the ſuperſtitious multitude to ſuch a degree, that, taking arms, they openly declared they would rather renounce their allegiance to the emperor, than the worſhip of images.

11
He beſieges and at laſt takes Ravenna.

Thus a kind of civil war being kindled in the city, Luitprand thought he had now a favourable opportunity of making himſelf maſter of the ſeat of the exarch, not doubting but the conqueſt of ſuch an important place would be followed by that of the whole exarchate. Having therefore drawn together all his forces, he unexpectedly appeared before Ravenna, and cloſely beſieged it. The exarch little expected ſuch a ſurpriſe, as a friendly correſpondence had been maintained for many years between the exarchs and the Lombard kings. However, he defended the place with ſuch courage and reſolution, that Luitprand, deſpairing of ſucceſs, broke up the ſiege, and led his army againſt Claſſis at a ſmall diſtance from Ravenna, which he took, plundered, and levelled with the ground. The loſs of this place, and the ſevere treatment the inhabitants met with from the king, threw the citizens of Ravenna into the utmoſt conſternation; which Luitprand being informed of, he reſolved to take advantage of their fears, and, returning before Ravenna while the inhabitants were thus diſheartened, to attempt once more the reduction of that place. Accordingly he led his whole army againſt it, and, by frequent attacks, tired the inhabitants and garriſon to ſuch a degree, that the exarch, finding they could hold out no longer, and deſpairing of relief, privately withdrew. Luitprand, informed of his retreat, attacked the town with more violence than ever; and, having carried it by ſtorm, gave it up to be plundered by his ſoldiers, who found in it an immenſe booty, as it had been for a long time the ſeat of the Roman emperors, of the Gothic kings, and the exarchs. The king ſtripped it of moſt of its valuable monuments of antiquity, and cauſed, among the reſt, an equeſtrian ſtatute of an emperor, of wonderful workmanſhip, to be conveyed to Pavia, where it is to be ſeen to this day. The reduction of Ravenna was followed by the ſurrender of ſeveral cities of the exarchate, which Luitprand reduced to a dukedom; appointing Hildebrand, his grandſon, to govern it with the title of duke; and giving him, as he was yet an infant, Peredeus duke of Vicenza for his guardian.

12
Reduces the exarchate to a dukedom.

The conqueſt of Ravenna and the greater part of the exarchate, did not a little alarm Gregory II. biſhop of Rome. He was then at variance with the emperor, whoſe edict againſt the worſhipping of images he had oppoſed with all his might, and by that means provoked Leo to ſuch a degree, that he had threatened to drive him from the ſee, and ſend him into exile. However, the pope, no leſs jealous of the power of the Lombards, than all his predeceſſors had been, reſolved, by ſome means or other, to put a ſtop to their conqueſts. The only prince in Italy to whom he could have recourſe, was Urſus duke of Venice, the Venetians making already no inconſiderable figure. To him accordingly he wrote a very preſſing letter; conjuring him to aſſiſt his worthy ſon the exarch, and, for the love of the holy faith, to attempt with him the recovery of the exarchate, which the wicked nation of the Lombards had unjuſtly taken from his ſons Leo and Conſtantine emperors. Urſus and the Venetians, moved with the pope's letter, and at the ſame time greatly alarmed at the growth of ſo powerful a neighbour, promiſed to aſſiſt the exarch with the whole ſtrength of their republic; and accordingly fitted out a conſiderable fleet, pretending it was deſigned for the ſervice of the emperor againſt the Saracens. At the ſame time the exarch, who had taken refuge in Venice, abandoning that place, as it were in deſpair of bringing the duke over to his party, raiſed, in the places ſtill ſubject to the emperor, what forces he was able; and, having got together a conſiderable body, he marched with them towards Imola, giving out that he deſigned to beſiege that city; but, turning on a ſudden towards Ravenna, as had been agreed on between him and the Venetians, he laid ſiege to it by land, while they inveſted it almoſt at the ſame inſtant by ſea. Peredeus defended the town for ſome time with great courage and reſolution; obliging all thoſe who were able to bear arms, to repair to the walls. But the Venetians having, in ſpite of all oppoſition, forced open one of the gates on the ſide of the ſea, the city was taken, and Peredeus ſlain, while he was attempting, at the head of a choice body, to drive the enemy from the poſts they had ſeized. As for Hildebrand, he fell into the hands of the Venetians; who, having thus recovered Ravenna to the emperor, returned home, leaving the exarch in poſſeſſion of the city. Luitprand was then at Pavia; but the town was taken before he could aſſemble his troops to relieve it.

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And now Gregory biſhop of Rome, to whom the recovery of Ravenna was chiefly owing, perſuading himſelf, that the emperor would, out of gratitude, give ear to his remonſtrances and admonitions, began to ſolicit him with more preſſing letters than ever to revoke his edict againſt the worſhip of images: but Leo, well appriſed, that the biſhop, in all the meaſures he had taken, had been more influenced by a regard to his own intereſt, than to that of the empire, inſtead of hearkening to his remonſtrances, was ſtill more provoked againſt him for thus obſtinately oppoſing the execution of his edict. Being therefore reſolved at all events to have it obſerved in Rome itſelf, and, on the other hand, not doubting but the pope would oppoſe it to the laſt with all his might; in order to remove all obſtacles, he ſent three officers to Rome, with private orders, either to diſpatch the pope, or to take him priſoner and convey him to Conſtantinople. At the ſame time he wrote to Mauritius duke of Rome, ſecretly enjoining him to aſſiſt his three officers in their undertaking: but no favourable opportunity offering to put their deſign in execution, the emperor, in the year 725, recalled Scholaſticus, and ſent Paul a patrician into Italy, to govern in his room, with private inſtructions to encourage the above-mentioned officers with the promiſe of great rewards, and to aſſure them of his protection.

But in the mean time the plot was diſcovered, and two of the conſpirators were apprehended by the citizens of Rome, and put to death; the third having eſcaped into a monaſtery, where he took the monaſtic habit, and ended his days. Hereupon the exarch, in compliance with the emperor's orders, reſolved to proceed no longer by ſecret plots, but by open force. Accordingly, he drew together a conſiderable body of troops, and ſet out at the head of them on his march to Rome, with a deſign to ſeize on the pope, and ſend him, as he had engaged to do, in chains to Conſtantinople. But, on this occaſion, Luitprand, though highly provoked againſt Gregory for having ſtirred up the Venetians againſt him, yet reſolved to aſſiſt him and the citizens of Rome againſt the exarch, in order to keep the balance even between them, and, by aſſiſting ſometimes the one and ſometimes the other, weaken both. Purſuant to this reſolution, he ordered the Lombards of Tuſcany, and thoſe of the dukedom of Spoleto, to join the pope and the inhabitants of Rome; who, being, by this reinforcement, far ſuperior in ſtrength and number to the exarch, obliged him to return to Ravenna, and give over all thoughts of any further attempt on the perſon of the pope.

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In the mean time, Leo, perſiſting in his former reſolution of ſuppreſſing throughout his dominions the worſhip of images, ſent freſh orders to the exarch Paul, ſtrictly enjoining him to cauſe his edict to be put in execution in all the cities of Italy under his empire, eſpecially in Rome. At the ſame time he wrote to the pope; promiſing him his favour and protection, if he complied with the edict; and declaring him, if he continued to oppoſe it, a rebel, and no longer veſted with the papal dignity. But Gregory was ſo far from yielding to the emperor's threats or promiſes, that, on the contrary, he ſolemnly excommunicated the exarch for attempting to put the imperial edict in execution; and at the ſame time wrote circular letters to the Venetians, to king Luitprand, to the Lombard dukes, and to all the chief cities of the empire, exhorting them to continue ſtedfaſt in the Catholic faith, and to oppoſe with all their might ſuch a deteſtable innovation. Theſe letters made ſuch an impreſſion on the minds of the people in Italy, that, though of different intereſts, and often at war with one another, they all united; proteſting they would defend the Catholic faith, and the life of the pope, in ſo glorious a cauſe, at the expence of their own: nay, the citizens of Rome, and the inhabitants of Pentapolis, now Marca d' Ancona, not contenting themſelves with ſuch a proteſtation, openly revolted from the emperor; and, pulling down his ſtatues, they elected, by their own authority, magiſtrates to govern them during the interregnum. We are even told, that, tranſported with a blind zeal, they were for chooſing a new emperor, and conducting him to Conſtantinople, not doubting but the people would every-where join them. But the pope, thinking this reſolution unſeaſonable, and not to be eaſily put in execution, oppoſed it; ſo that it did not take place.

16
A civil war in Ravenna.

In the mean time, the exarch Paul, having gained a conſiderable party in Ravenna, began, purſuant to the repeated orders from the emperor, to remove the images, as ſo many idols, out of the churches. Hereupon the adverſe party, ſupported and encouraged by the pope, flew to arms; and, falling upon the *iconoclaſts* or image-breakers, as they ſtyled them, gave riſe to a civil war within the walls of Ravenna. Great numbers were killed on both ſides: but thoſe who were for the worſhip of images prevailing in the end, a dreadful ſlaughter was made of the oppoſite party; and, among the reſt, the exarch himſelf was murdered. However, the city of Ravenna continued faithful to the emperor; but moſt of the cities of Romagna belonging to the exarchate, and all thoſe of Pentapolis or La Marca d'Ancona, abhorring the emperor as an heretic, ſubmitted to Luitprand king of the Lombards; who, pretending a zeal for the Catholic religion, took care to improve the diſcontent of the people to his advantage, by repreſenting to them, that they could never maintain their religious rights under a prince, who was not only an heretic, but a perſecutor of the orthodox.

In Naples, Exhilaratus, duke of that city, having received peremptory orders from the emperor to cauſe his edict to be put in execution, did all that lay in his power to perſuade the people to receive it; but finding all his endeavours thwarted by the biſhop of Rome, for whom the Neapolitans had a great veneration, he hired aſſaſſins to murder him. But the plot being diſcovered, though carried on with great ſecrecy, the Neapolitans, highly provoked againſt the duke, tore both him and his ſon to pieces, and likewiſe put to death one of his chief officers, who had compoſed a libel againſt the pope. Luitprand, and Gregory at that time duke of Benevento, laying hold of ſo favourable an opportunity to make themſelves maſters of the dukedom of Naples, did all that lay in their power to perſuade the Neapolitans to ſubmit to them. But the Neapolitans, bearing an irreconcileable hatred to the Lombards, with whom they had been conſtantly at variance, rejected every overture of that nature with the utmoſt indignation; and, continuing ſtedfaſt in their allegiance to Leo, received from Conſtantinople one Peter, who was ſent to govern them in the room of Exhilaratus. Some writers ſuppoſe the Neapolitans, in this general revolt of the cities of Italy, to have ſhaken off the yoke with the reſt, and to have appointed magiſtrates of their own election to govern them, in the room of the officers hitherto ſent from Conſtantinople, or named by the exarch: but they are certainly miſtaken; it being manifeſt from hiſtory, that Peter ſucceeded Exhilaratus in that dukedom, and that the Neapolitans continued to live under the emperors till they were conquered many years after by the Normans.

In the mean time, Leo hearing of the murder of the exarch, and the general revolt of the cities, and not doubting but the pope was the chief author of ſo much miſchief, ſent the eunuch Eutychius into Italy, with the title and authority of *exarch*, ſtrictly enjoining him to get the pope diſpatched by ſome means or other, ſince his death was abſolutely neceſſary for the tranquillity of Italy. The exarch ſpared no pains to get the pope into his power: but a meſſenger, whom he had ſent to Rome, being apprehended by the citizens, and an order from the emperor being found upon him to all his officers in that city, commanding them to put the pope to death at all events, the pope's friends thenceforth guarded him with ſuch care, that the exarch's emiſſaries could never afterwards find an opportunity of executing their deſign. As for the meſſenger, the Romans were for putting him to death; but the pope interpoſed, contenting himſelf with excommunicating the exarch.

17 The Romans revolt.

And now the Romans, provoked more than ever againſt Leo, and, on the other hand, unwilling to live under the Lombards, reſolved to revolt from the emperor, and appoint their own magiſtrates, keeping themſelves united under the pope, not yet as their prince, but only as their head. This they did accordingly; and from theſe ſlender beginnings the ſovereignty of the popes in Italy took its riſe, though they did not then, as is commonly ſuppoſed by hiſtorians, but many years after, become ſovereign lords of Rome.

Eutychius failed in his deſign upon the life of the pope; but, having brought with him from Conſtantinople a good number of troops, he eaſily quelled the rebellion in Ravenna, and ſeverely puniſhed the authors of the late diſturbances. As for the rebellious Romans, he was well appriſed he could never reduce them, ſo long as they were ſupported by the king of the Lombards; and therefore he employed all his art and policy to take off that prince from the party of the Romans, and bring him over to his own.

18 Luitprand concludes an alliance with the exarch.

Luitprand, for ſome time, withſtood all his offers; but Thraſimund duke of Spoleto revolting at this very juncture, the exarch, laying hold of that opportunity, offered to aſſiſt the king with all his ſtrength againſt the rebellious duke, provided he would, in like manner, aſſiſt him againſt the pope and the Romans. With this propoſal Luitprand readily cloſed; and a league being concluded upon theſe terms between him and the exarch, the two armies joined, and began their march towards Spoleto. At their approach, the duke, deſpairing of being able to reſiſt two ſuch powers, came out with a ſmall attendance to meet them, and, throwing himſelf at the king's feet, ſued, in that humble poſture, for pardon; which Luitprand not only granted him, but confirmed him in the dukedom, after he had obliged him to take a new oath of allegiance, and give hoſtages for his fidelity in time to come. From Spoleto the two armies marched, in purſuance of the treaty, to Rome; and encamped in the meadows of Nero, between the Tiber and the Vatican.

19 The pope ſubmits to Luitprand.

Gregory had cauſed the city of Rome to be fortified in the beſt manner he could: but, being ſenſible that the Romans alone could not long hold out againſt two ſuch armies, and reflecting on the kind treatment the duke of Spoleta had met with upon his ſubmitting to the king, he reſolved to follow his example; and accordingly, taking with him ſome of the clergy, and the principal inhabitants of the city, he went to wait on the king in his camp; and there, with a pathetic ſpeech, as he was a great maſter of eloquence, ſoftened Luitprand to ſuch a degree, that, throwing himſelf at his feet in the preſence of the whole army, he begged pardon for entering into an alliance againſt him: and, aſſuring him of his protection for the future, he went with him to the church of St Peter; and there, diſarming himſelf in the preſence of his chief officers, he laid his girdle, his ſword, and his gantlet, with his royal mantle, his crown of gold, and croſs of ſilver, on the apoſtle's ſepulchre. After this, he reconciled the pope with the exarch, who was thereupon received into the city, where he continued for ſome time, maintaining a friendly correſpondence with the pope. At this time an impoſtor, taking the name of *Tiberius*, and pretending to be deſcended from the emperors, ſeduced a great many people in Tuſcany, and was by them proclaimed emperor. The exarch reſolved to march againſt him; but, as he had not ſufficient forces to oppoſe the rebels, Gregory, who let no opportunity ſlip of obliging Leo, perſuaded the Romans to attend the exarch in this expedition; by which means the uſurper being taken in a caſtle, his head was ſent to the emperor, and the rebellion utterly ſuppreſſed. But, the emperor ſtill inſiſting upon his edict againſt the images being received in Rome, the Romans, at the inſtigation of the pope, publicly renounced their allegiance to Leo, paid him no more tribute, and withdrew for ever their obedience to the emperors of the eaſt.

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Leo, informed of this revolt, and not queſtioning but the pope was the author of it, immediately cauſed all the patrimonies of the church of Rome in Sicily, Calabria, and his other dominions, to be confiſcated. At the ſame time he ordered a powerful army to be raiſed, with a deſign to recover the towns that had revolted; to chaſtiſe the Romans for their rebellion; and, above all, to be revenged on the pope, who had raiſed all theſe diſturbances, by oppoſing himſelf, and perſuading others to oppoſe, the execution of his edict. Gregory, alarmed at the warlike preparations that were carrying on throughout the empire, and well appriſed that they were chiefly deſigned againſt him and the Romans, reſolved to recur to the protection of the French, the only nation at that time capable of coping with the emperor, and on whom, on account of their zeal for religion, he thought he might depend. The Lombards were then very powerful; but, as they wanted to be maſters of Rome, he did not think it adviſeable to truſt them. The Venetians, though zealous in the defence of the pope, were not yet in a condition to withſtand the power of the emperor; and, beſides, were jealous of the Lombards, who watched all opportunities of enlarging their dominions at the expence of their neighbours. As for Spain, it was then in a moſt deplorable condition, being over-run, and almoſt wholly ruined, by the Saracens.

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French

The French nation was at this time governed by the celebrated Charles Martel, who had diſtinguiſhed himſelf in a moſt eminent manner in the wars of France and Germany; and had, not long before, gained a ſignal victory over the Saracens in the neighbourhood of Tours; whence he was generally reputed the beſt commander, and the greateſt hero, of his time. To him therefore Gregory ſent a ſolemn embaſſy, with a great number of relicks, earneſtly intreating him to take the Romans, and the church, under

der his protection, and defend them againſt the attempts of Leo. The embaſſadors were received with extraordinary marks of honour; and a treaty was ſoon concluded between them and Charles, who engaged to march into Italy in perſon, at the head of a powerful army, in defence of the Romans and the church, if they ſhould be attacked either by the emperor or the Lombards. On the other hand, the Romans were to acknowledge him for their protector, and confer on him the honour of the conſulſhip, as it had been formerly conferred on Clovis by the emperor Anaſtaſius, after that prince had defeated the Viſigoths. The embaſſadors returned from France loaded with rich preſents. But Gregory did not long enjoy the fruit of their negotiations; for he died the ſame year 731, and was ſucceeded by Gregory III. in whoſe time ſome place the above-mentioned embaſſy.

The French nation was at this time juſt recovered from its diſtreſſed ſituation under the deſcendants of Clovis; and, by the bravery and conduct of Charles Martel, had become the moſt powerful kingdom in the weſt. His ſucceſſor Pepin, was no leſs wiſe and powerful than his father had been; and as the ambition of the Lombard princes would be ſatisfied with nothing leſs than the entire conqueſt of Italy, the French monarch, Charlemagne, under colour of aſſiſting the pope, at laſt put an end to the empire of Lombardy, as related under the article **FRANCE**, n° 21, 22.

The Lombards were at firſt a cruel and barbarous nation; but, diveſting themſelves by degrees of their native fierceneſs and barbarity, eſpecially after they had embraced the Chriſtian religion, they governed with ſuch equity and moderation, that moſt other nations envied the happineſs of thoſe who lived under them. Under the government of the Lombards, ſays Paulus Diaconus, no violence was commited, no one unjuſtly diſpoſſeſſed of his property, none oppreſſed with taxes; theft, robberies, murder, and adultery, were ſeldom heard of: every one went, without the leaſt apprehenſion, wherever he pleaſed. Their laws were ſo juſt and equitable, that they were retained in Italy, and obſerved there, ſome ages after their kingdom was at an end.—According to Paulus Diaconus, alſo, their dreſs was looſe, and for the moſt part of linen, ſuch as the Anglo-Saxons wore, being interwoven with various colours; that their ſhoes were open to the end of their foot, and that they uſed to button or lace them. From ſome ancient paintings, it appears, that they ſhaved the back part of their heads; but that their hair was long before; their locks being parted, and laid on each ſide their foreheads.

LOMENTACEÆ, in botany, (from *lomentum*, a colour uſed by painters), the name of the 33d order in Linnæus's fragments of a natural method, conſiſting of the following genera, many of which furniſh beautiful tinctures that are uſed in dyeing, viz. adenanthera, bauhinia, cæſalpina, caſſia, ceratonia, cercis, gleditſia, guilandina, hæmatoxylon, hymenæa, mimoſa, parkinſonia, poinciana, polygama. See **BOTANY**, p. 1311.

LOCH LOMOND, a large lake of Dunbarton or Lennox ſhire in Scotland, of which Mr Pennant gives the following deſcription. "Loch-lomond, the laſt, the moſt beautiful of the Caledonian lakes. The firſt view of it from Tarbat preſents an extenſive ſerpentine winding amidſt lofty hills; on the north, barren, black, and rocky, which darkens with their ſhade that contracted part of the water. On the weſt ſide, the mountains are cloathed near the bottoms with woods of oak quite to the water-edge; their ſummits lofty, naked, and craggy. On the eaſt ſide, the mountains are equally high; but the tops form a more even ridge parallel to the lake, except where Ben-lomond, like Saul amidſt his companions, overtops the reſt. The upper parts were black and barren; the lower had great marks of fertility, or at leaſt of induſtry, for the yellow corn was finely contraſted with the verdure of the groves intermixed with it.

Loch-Lomond.

"This eaſtern boundary is part of the Grampian hills, which extend from hence through the counties of Perth, Angus, Mearns, and Aberdeen. The road runs ſometimes through woods, at others is expoſed and naked; in ſome, ſo ſteep as to require the ſupport of a wall; the whole the work of the ſoldiery: bleſſed exchange of inſtruments of deſtruction for thoſe that give ſafety to the traveller, and a poliſh to the once inacceſſible native!—Two great head-lands covered with trees ſeparate the firſt ſcene from one totally different; the laſt is called the *Point of Firkin*. On paſſing this cape an expanſe of water burſts at once on your eye, varied with all the ſofter beauties of nature. Immediately beneath is a flat covered with wood and corn: beyond, the headlands ſtretch far into the water, and conſiſt of gentle riſings; many have their ſurfaces covered with wood, others adorned with trees looſely ſcattered either over a fine verdure, or the purple bloom of the heath. Numbers of iſlands are diſperſed over the lake, of the ſame elevated form as the little capes, and wooded in the ſame manner; others juſt peep above the ſurface, and are tufted with trees; and numbers are ſo diſpoſed as to form magnificent viſtos between.

"Oppoſite Luſs, at a ſmall diſtance from ſhore, is a mountainous iſle almoſt covered with wood; is near half a mile long, and has a moſt fine effect. I could not count the number of iſlands, but was told there are twenty-eight; the largeſt two miles long, and ſtocked with deer.

"The length of this charming lake is 24 Scotch miles; its greateſt breadth, eight; its greateſt depth, which is between the point of Firkin and Benlomond, is 120 fathoms. Beſides the fiſh common to the lochs are guiniads, called here *poans*.

"The ſurface of Loch-lomond has for ſeveral years paſt been obſerved gradually to increaſe, and invade the adjacent ſhore: and there is reaſon to ſuppoſe that churches, houſes, and other buildings, have been loſt in the water. Near Luſs is a large heap of ſtones at a diſtance from the ſhore, known by the name of the old church; and about a mile to the ſouth of that, in the middle of a large bay, between Camſtraddan and the iſle Inch-lavanack, is another heap, ſaid to have been the ruins of a houſe. To confirm this, it is evident by a paſſage in Cambden's Atlas Britannica, that an iſland, exiſting in his time, is now loſt; for he ſpeaks of the iſle of Camſtraddan, placed between the lands of the ſame name and Inch-lavanak, in which, adds he, was an houſe and orchard. Beſides this proof, large trees with their branches ſtill adhering are frequently found in the mud near the ſhore, overwhelmed in former times by the increaſe of water. This is ſuppoſed to be occaſioned by the vaſt quantities of ſtone and gravel that is continually brought down by the mountain rivers, and by the falls of the banks of the Leven; the firſt filling the bed of the lake, the laſt impeding its diſcharge through the bed of the river.

"Mr Golborne, at the requeſt of the ſeveral proprietors, has made a voyage and ſurvey of the lake, in order to plan ſome relief from the incroachment of the water. He propoſes to form a conſtant navigation down the Leven, by deepening the channel, and cutting through the neck of two great curvatures: which will not only enable the inhabitants of the invirons of Loch-lomond to convey their ſlate, timber, bark, &c. to the market; but alſo, by lowering the ſurface of the lake, recover ſome thouſands of acres now covered with water."

LONDON, a large city of Middleſex in England, the metropolis of Great Britain, and one of the moſt wealthy and populous places in the world, is ſituated on the river Thames, in Long. 000. N. Lat. 51. 32.

1
Its different names.

The moſt ancient name of this city is *Londinium*, or *Lundinium*, according to Ammianus. It was then changed into *Auguſta*; in honour, as ſome ſay, of Helena Auguſta, the mother of Conſtantine the Great; while others think it more probable that it had this name from the ſecond legion, whoſe peculiar title was *Auguſta*; and ſome imagine that the honourable appellation of *Auguſta*, was conferred upon this city by the Romans, as upon other principal cities of their empire, on account of its being grown up to be the capital of their Britiſh province. How long the name of *Auguſta* prevailed is not now certainly known; but after the eſtabliſhment of the Saxons we find no more mention of Auguſta. It was then called *Caer Lundain*, *Lundoun Byrig*, *Lunden Ceaſter*, *Lunden-wye*, *Lundenne*, *Lunden-berh*, or *Lundenburg*; and ſince the conqueſt the records call it *Londonia*, *Lundonia*, *Londine*, *Londres*, and, for ſeveral ages paſt, *London*, a manifeſt corruption from Tacitus's *Londinium*. The moſt probable derivation of theſe names, according to Mr Entick, is from the Britiſh words *lhong*, "a ſhip," and *dinas*, "a city;" i. e. a city or harbour for ſhips; for which, it appears from Tacitus, to have been famous from its firſt foundation.

2
When founded.

The city of London cannot be reckoned more ancient than the time of Julius Cæſar. Geoffrey of Monmouth indeed relates, that, before the Roman invaſion, London was a town encompaſſed with walls, and fortified with innumerable towers: but herein he deſerves no credit; for Cæſar informs us, that in his time the Britons had no other towns than thick woods ſurrounded with a ditch, and fortified with a rampart. The foundation of the town is with the greateſt probability aſcribed to Oſtorius Scapula, about the year 49, for the ſecurity of the Roman allies, who were before too much expoſed to the incurſions of the Britons. It is indeed conjectured, and that not without a great degree of probability, that at this time the river Thames, by reaſon of the great ſpreading of its waters, was fordable at the place where London now ſtands, and that London was built particularly with a view to ſecure and command this ford. The embanking of the river, and the ſtoppage of the tide at London bridge, have greatly increaſed the depth of the water ſince that time, ſo that it is now very far from being fordable there.

3
Burnt
the Bri

At firſt, London had no walls or other fortifications to defend it, and was therefore expoſed to the attacks of every enemy: and thus it ſuffered ſeverely about the year 64, being burnt by the Britons under Boadicea, and all the inhabitants maſſacred. Soon after this, however, it was reſtored by the Romans, and increaſed ſo much, that in the reign of the emperor Severus it is called by Herodian, a *great and wealthy city*. About the ſame time it was made a Roman prefecture, in imitation of Rome itſelf; whoſe prefect was ſent annually to do juſtice, and to act in all public matters, ſuch as taxes, tributes, impoſts, and military affairs, as directed by the Roman ſenate. It continued in a defenceleſs ſtate till the year 296, or 298, when walls were built round it on the following occaſion. The province of Britain had for ſome time been diſmembered from the empire by Carauſius, who revolted from the emperors Diocleſian and Maximian; but he being murdered by one Caius Alectus, a Roman army was diſpatched againſt this new uſurper. Alectus called in the Franks to ſupport him; but being defeated and killed, his allies determined to plunder the city of London: but while they were buſy in ſo doing, the Romans arrived, and cut them all in pieces. To prevent diſaſters of a ſimilar kind for the future, a wall of hewn ſtone and Britiſh bricks was erected round the city. It was three miles and 165 feet in circumference; the figure quadrangular, but not equilateral, the ſides being longer from eaſt to weſt than from north to ſouth. The veſtiges of this wall are ſtill to be ſeen. In the Saxon times, and probably from its firſt foundation, it extended along the ſide of the river; and if it is not at preſent poſſible to trace the foundations along the riverſide, this may juſtly be ſuppoſed owing to the many and great encroachments made by wharfs, which are continually gaining upon it, ſo that now they advance as far as the fourth pier of London bridge.

4
Surro
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Dr W
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Dr Woodward, in his Roman Antiquities and Preſent State of London, informs us, that he had an opportunity of examining the fabric and compoſition or materials of which theſe walls were built, from digging at Biſhop's-gate for the foundation of certain houſes to be erected in 1707. He writes, that the ſaid wall, from the foundation, eight feet below the preſent ſurface, quite up to the top, which was in all ten feet more, was compiled alternately of layers of broad ſlate, bricks, and of rag-ſtones. The bricks lay in double ranges; and each brick being but one inch and three tenths in thickneſs, the whole layer, with the mortar interpoſed, exceeded not three inches. The layers of ſtone were not quite two feet thick of our meaſure. This was the height of the Roman work; and theſe were the remains of the ancient Roman wall ſuppoſed to be built by Conſtantine the Great. It was here very obſervable, that the mortar was, (as uſual in the Roman work), ſo very firm and hard, that the ſtone itſelf as eaſily broke, and gave way as ſoon as it. Thus far from the foundation upwards, it was nine feet in thickneſs: the broad thin bricks were all of Roman make, and of the very ſort, as we learn from Pliny, that were in common uſe among that people; being in length a foot and an half of their ſtandard, and in breadth a foot. Dr Woodward found them 17 inches four-tenths in length, 11 inches ſix-tenths in breadth, and one inch three-tenths in thickneſs. On the landſide the city-wall was ſtrengthened and embelliſhed with ſtately towers; the remains of 15 of which are ſtill to be ſeen. Dr Woodward diſcovered one built in the ſame manner and of the ſame materials as the wall, 26 feet high, in three ſtories, behind a houſe facing Gravel-lane in Houndſditch; but much decayed. In ſearching for this tower, Mr Entick and Mr Maitland found out another, about 80 yards nearer Aldgate, of the ſame Roman conſtruction, 21 feet high, perfectly ſound, and much more beautiful: the bricks were as ſound as when new laid; but moſt of the ſtones were decaying, having lain, according to the moſt probable computation, 1459 years.

The wall of London was finiſhed about the year 306, and about the ſame time alſo it is very probable that a bridge was erected at the place where London-bridge ſtands; for it is not to be ſuppoſed that the city had no commerce with the country ſouth of the river, and a ferry could not by any means be thought adequate to the buſineſs. Till the year 457, nothing remarkable happened to the city of London. It was then forced to ſubmit to the Saxons, and became the chief city of the kingdom of Eſſex; and though it ſuffered much in the wars carried on between the Britons and Saxons, it ſoon recovered, ſo that Bede calls it a *princely marttown*, under the government of a chief magiſtrate, whoſe title of *portgrave*, or *portreve*, (for we find him called by both names), conveys a grand idea of the mercantile ſtate of London in thoſe early ages, that required a governor or guardian of the port. During the civil wars of the Saxons with each other, the Londoners had always the addreſs to keep themſelves neuter; and about the year 819, when all the ſeven Saxon kingdoms fell under the power of Egbert, London became the metropolis of England, which it has ever ſince continued.

During the invaſions of the Danes, London ſuffered greatly. In 849, theſe invaders entered the Thames with 250 ſhips, plundered and burnt the city, and maſſacred the inhabitants; and two years after they returned with a fleet of 350 ſail, fully determined to deſtroy every thing that had eſcaped their barbarity in the former expedition. At this time, however, they were diſappointed; moſt of their troops being cut in pieces by king Ethelwolf and his ſon Athelbald; yet ſuch was the deſtruction made by thoſe barbarians at London, that it ſuffered more from theſe two incurſions than ever it had done before.

In the reign of king Alfred the Great, London began to recover from its former ruinous ſtate. He rebuilt its walls, drove out the Daniſh inhabitants who had ſettled there, reſtored the city to its former liberties and beauty, and committed the care of it to his ſon-in-law, Ethelred duke of Mercia, in hopes that this might always be a place of ſecure retreat within its ſtrong walls, whatever might happen from a foreign or domeſtic enemy. In 893, however, he had the mortification to ſee his capital totally reduced to aſhes by an accidental fire, which could not be extinguiſhed, as the houſes at that time were all built of wood. The walls, however, being conſtructed of incombuſtible materials, continued to afford the ſame protection as before; the houſes were quickly rebuilt, and the city divided into wards and precincts for its better order and government. This king alſo inſtituted the office of ſheriff, the nature of which office made it neceſſary to have it alſo in London: ſo that here we have the glimmerings of the order of magiſtrates afterwards ſettled in the city of London; in the perſon of the portreve, or portgrave, or governor of the city, as ſupreme magiſtrate; in the ſheriff, and in the officer or ſubordinate magiſtrate by what name ſoever then diſtinguiſhed, which, being placed at the head of each ward or precinct, were analogous to the more modern title of *aldermen* and *common-council men*.

10
Its government ſettled.

11
Brick and ſtone houſes firſt erected.

Alfred having ſettled the affairs of England in the moſt prudent manner, directed his attention to the ornamenting, as much as poſſible, the city of London. For this purpoſe, he ſpirited up the Engliſh to an emulation in building their houſes of ſtronger and more durable materials than formerly. At that time their houſes were moſtly of wood; and an houſe built of any other materials was looked upon as a kind of wonder. But Alfred having begun to raiſe his palaces of ſtone and brick, the opulent Londoners, and the nobility reſident in and about London followed the example, though the cuſtom did not come into general uſe till ſome ages after.

12
Beſieged by Canute.

In 1015, a foreign enemy again appeared before London. Canute king of Denmark having invaded and plundered the counties of Dorſet, Somerſet, and Wilts, ſailed up the Thames with 200 ſhips, and laid ſiege to the city. The citizens continued faithful, notwithſtanding the defection of the greateſt part of the kingdom; and made ſuch a brave reſiſtance, that Canute thought fit to withdraw his army, leaving only his fleet to blockade the city by water, that when he found a fair opportunity he might renew the ſiege with better ſucceſs. At laſt, however, being defeated in ſeveral battles by Edmund Ironſide, he was obliged to call off his ſhips to cover his own army in caſe of neceſſity. In the compromiſe, however, which was afterwards made between Edmund and Canute, the city of London was given to the latter, and owned him for its lawful ſovereign. We have a ſtrong proof of the opulence of London even at this time, from the tax laid upon it by Canute in order to pay his army; this being no leſs than 10,500l. while the reſt of the nation was at the ſame time taxed only at 72,000l.

13
Sends repreſentatives to parliament.

In 1046, we have the firſt inſtance of the Londoners ſending repreſentatives to parliament. This happened on ſettling the ſucceſſion to the throne after Canute's death. The Engliſh in general declared for Edward ſon of king Ethelred, or, if that could not be carried, for Hardicanute, ſon of Canute by queen Emma, and then abſent on a tour to Denmark. The city of London eſpouſed the claim and intereſt of Harold Harefoot, ſon alſo of Canute by queen Elgiva of Northampton. Edward's party ſoon declined; and the Londoners agreed, for the peace of the realm, that the two brothers ſhould divide the kingdom between them; but as Hardicanute did not return in proper time to England, a *wittenage-mote* was held at Oxford, where earl Leofric, and moſt of the thanes on the north of the Thames, with the pilots of London, choſe Harold for their king. Here, by *pilots* we are to underſtand the directors, magiſtrates, or leading men of the city: and this manifeſtly ſhews, that London was then of ſuch conſequence, that no important national affair was tranſacted without the conſent of the inhabitants; for the Saxon annals aſſure us, that none were admitted into this aſſembly of election but the nobility and the pilots of London.

On the invaſion of the Normans under William I. London ſubmitted as well as the reſt of the kingdom; and received two charters from that prince, confirming all the privileges they had under the Saxon kings, and adding ſeveral new ones. But while the citizens were promiſing themſelves all manner of ſecurity and tranquillity under the new government, it was almoſt entirely reduced to aſhes by an accidental fire in 1077. It had ſcarcely recovered from this calamity, when it was viſited by another of the ſame kind in 1086, which began at Ludgate, and deſtroyed the beſt and moſt opulent part of the city; conſuming, among other buildings, the cathedral of St Paul's; which, however, was ſoon rebuilt more magnificently than before. Under the reign of William Rufus, London ſuffered conſiderably by fires, hurricanes, and inundations, and ſeems to have been depreſſed by the tyranny of that prince; but Henry I. granted large immunities to the city, which again revived its trade, and was favourable to the progreſs of the arts. The king, however, ſtill retained the privilege of appointing the portreve, or chief magiſtrate; but the immunities granted to the Londoners ſecured their affections, and tended much to ſecure him on the throne. At the ſame time there was ſuch a plenty of all kinds of proviſions, that as much corn was ſold for 1 s. as would ſuffice 100 people for a day; 4d. would purchaſe as much hay and corn as would maintain 20 horſes for a day; and a ſheep could be bought for a groat.

14
Suffers greatly by fires, hurricanes, &c.

15
Monſtrous licentiouſneſs of the Normans.

Henry thought proper alſo to check the licentious behaviour of the Normans, which, by the favour ſhewed them under the two Williams, had carried them into the moſt barbarous practices. Thoſe who followed William Rufus in his excurſions, haraſſed and plundered the country at diſcretion. Many of them were ſo extravagant in their barbarity, that what they could not eat or drink in their quarters, they either obliged the people to carry to market and ſell for their uſe, or elſe they would throw it into the fire: and, at their going off, they frequently waſhed their horſes heels with the drink, and ſtaved the caſks containing the remainder. King Henry reſolved to put a ſtop to theſe exceſſes and ſavage cuſtoms; and therefore publiſhed a proclamation at London, commanding that thenceforward all perſons who ſhould be convicted of ſuch barbarities ſhould have their eyes pulled out, or their hands or feet cut off, as the miniſters of juſtice ſhould think fit. This effectually checked the inſolence of the Normans, and the city continued to flouriſh throughout the reigns of Henry I and Stephen. The attachment of the citizens to Stephen, however, was a crime which never could be forgiven by Henry II. and of conſequence he made them ſenſible of his diſpleaſure by making frequent demands of money from them. About this time, indeed, the Londoners were arrived at ſuch a pitch of licentiouſneſs, that their proſperity ſeemed a curſe rather than a bleſſing. The ſons of the moſt eminent and wealthy citizens entered into a confederacy to commit burglaries, and to rob and murder all that came in their way in the night-time. The king took an opportunity from theſe irregularities to enrich himſelf. He demanded ſeveral loans and free gifts; till at laſt the Londoners, to prevent further inquiries into their conduct, paid into the exchequer 5000 l. in three years. Theſe diſorders, however, were at laſt ſtopped by the execution of John Senex; who, though a very rich and reputable citizen, had engaged in theſe enterprizes. He offered 500 lb. weight of ſilver, a prodigious ſum in thoſe days, for his pardon, but was refuſed. The king, however, ſtill continued to drain the citizens of their money by free gifts; and at laſt fined every ſeparate guild, fraternity, or company, that had preſumed to act as bodies corporate without the royal letters-patent.

16
Of the Londoners.

On the death of Henry II. the title of the firſt magiſtrate of London was changed from *portgreve* to that of *bailiff;* and in 1189 claimed and acted in the office of the *chief butler* at the coronation of Richard I. In 1191 this monarch permitted the bailiff, named *Henry Fitz Alwine*, to aſſume the title of *mayor*. For, in 1192, we find certain orders of the mayor and aldermen to prevent fires; whereby it was ordained, that "all houſes thereafter to be erected in London and the liberties thereof, ſhould be built of ſtone, with party-walls of the ſame; and covered either with ſlates or tiles, to prevent thoſe dreadful calamities by fire, which were frequently and chiefly occaſioned by houſes built of wood, and thatched with ſtraw or reeds." And for this purpoſe it was alſo provided by the diſcreeter men of the city, "that 12 aldermen of the city ſhould be choſen in full huſtings, and there ſworn to aſſiſt the mayor in appeaſing contentions that might ariſe among neighbours in the city upon incloſure betwixt land and land, and to regulate the dimenſions of party-walls, which were to be of ſtone, 16 feet high, and three feet thick; and to give directions about girders, windows, gutters, and wells." Such confidence alſo did Richard put in the wiſdom and faithfulneſs of the city of London, that when it was reſolved to fix a ſtandard for weights and meaſures for the whole realm, his majeſty committed the execution thereof to the ſheriffs of London and Middleſex, whom he commanded to provide meaſures, gallons, iron rods, and weights for ſtandards, to be ſent to the ſeveral counties of England. This happened in 1198, at which time corn was advanced to the enormous price of 18. 4d. per quarter.

The city of London was much favoured by king John, who granted them three charters ſoon after his acceſſion. The firſt was a recital and confirmation of thoſe granted by Henry I. and II. with the farther privilege of being free from toll and every other duty or cuſtom in his majeſty's foreign dominions; for which they paid the ſum of 3000 merks. The ſecond was a confirmation of one granted by king Richard. By this the citizens of London had the juriſdiction and conſervancy of the river Thames; with a clauſe to extend that juriſdiction, and the powers therewith granted, to the river Medway; and with another clauſe to enable the ſaid city, as conſervators of the rivers Thames and Medway, to inflict a penalty of 10l. upon any perſon that ſhould preſume to erect a wear in either of theſe rivers. The third charter contains a fee-farm-rent of the ſheriffwicks of London and

Middleſex at the ancient rent, of which they had been deprived by queen Maud; granting them alſo the additional power of chooſing their own ſheriffs. This charter was given by way of conveyance from the crown to the citizens for a valuable conſideration, by which the ſheriffwick became their freehold; and this is the firſt covenant or conveyance we find on record with the legal terms of *to have and to hold*, which are at this time accounted an eſſential part in all conveyances of property.

19 don op ſſed by ry III.

During the reign of Henry III. the city of London was oppreſſed in many different ways. In 1218, he exacted a fine of 40 marks for ſelling a ſort of cloth not two yards within the liſts; and a 15th of the citizens perſonal eſtates for the enjoyment of their ancient rights and privileges. In 1221, he commanded by proclamation all the foreign merchants to depart the city; which drew 30 marks from the Anſeatic company of the *Steelyard*, to have ſeiſin of their guild or hall in Thames-ſtreet. But it was the wreſtling-match at St Giles's in the fields that brought on their greateſt burden. In the year 1221, on St James's day, the citizens of London having carried off the victory from the people of Weſtminſter and other neighbouring villages, the ſteward of the abbot of Weſtminſter, meditating revenge againſt the Londoners, propoſed another wreſtling-match with them, and gave a ram for the prize. The citizens reſorted to the place at the time appointed; but were unexpectedly aſſaulted by a great number of armed men, who killed and wounded many, and diſperſed the reſt. This raiſed a great commotion in the city. The populace breathed revenge; and, by the inſtigation of Conſtantine Fitz-Arnulph, a great favourer of the French party during the troubles in king John's reign, they proceeded to Weſtminſter, and pulled down the houſes both of the the ſteward and abbot. Hearing afterwards that the abbot was come into the city with his complaint to Philip Daubney the king's counſel, they purſued him, beat his ſervants cruelly, took away 12 of his horſes, and would have murdered himſelf, had he not eſcaped by a back-door. Upon this tumult, Hubert de Bury, then chief juſticiary, ſummoned the mayor and many of the principal citizens to attend him in the tower of London; and inquiring for the authors of the riot, Conſtantine, the ringleader, boldly anſwered, that "he was one; that they had done no more than they ought; and that they were reſolved to avow what they had done, let the conſequence be what it would." In this he was ſeconded by his nephew and one Geoffery; but the juſticiary, having diſmiſſed all the reſt, detained theſe three, and ordered them to be hanged next morning, though Conſtantine offered 15,000 marks for his pardon. Hubert then coming into the city with a ſtrong guard, cauſed the hands and feet of moſt of the principal rioters he could ſeize to be cut off; all which was executed without any legal proceedings or form of trial. After theſe arbitrary cruelties, he degraded the mayor and all the magiſtrates; placed a *cuſtos* over the city, and obliged 30 perſons of his own chooſing to become ſecurities for the good behaviour of the whole city. Several thouſand marks were alſo exacted by the king, before he would conſent to a reconciliation.

This arbitrary behaviour alarmed the whole nation. The parliament of 1224 began to be uneaſy for themſelves, and addreſſed his majeſty that he would be pleaſed to confirm the charter of liberties which he had ſworn to obſerve; and the conſequence of this application was a confirmation of the magna charta in the full parliament at Weſtminſter in the year 1225. At this time alſo all the rights and privileges of the citizens were confirmed. They were exempted from proſecutions for burels, *i. e.* liſted-cloth; and were granted the right of having a common ſeal. The neceſſitous circumſtances of this monarch, however, made him often exact money arbitrarily as long as he lived.

20 Dreadful plague in 1665.

Under the ſucceeding reigns, as the liberty of the people in general was augmented, ſo the liberty, opulence, and power of the citizens of London increaſed, until they became a kind of balance to the power of the crown itſelf, which in ſome meaſure they ſtill continue to be. Riots indeed, for which they generally ſuffered, were by no means unfrequent; the city often ſuffered by fires, and plagues. Nothing, however, happened which materially affected the welfare of the city, till the reign of Charles II. in 1665.—This year London was ravaged by the moſt violent plague ever known in Britain. The whole ſummer had been remarkably ſtill and warm, ſo that the weather was ſometimes ſuffocating even to people in perfect health; and by this unuſual heat and ſultry atmoſphere, people were undoubtedly prepared for receiving the infection, which appeared with violence in the months of July, Auguſt, and September. A violent plague had raged in Holland in the year 1663; on which account the importation of merchandiſe from that country was prohibited by the Britiſh legiſlature in 1664. Notwithſtanding this prohibition, however, it ſeems the plague had actually been imported; for in the cloſe of the year 1664, two or three perſons died ſuddenly in Weſtminſter, with marks of the plague on their bodies. Some of their neighbours, terrified at the thoughts of their danger, removed into the city; but their removal proved too late for themſelves, and fatal to thoſe among whom they came to reſide. They ſoon died of the plague; and communicated the infection to ſo many others, that it became impoſſible to extinguiſh the ſeeds of it by ſeparating thoſe that were infected from ſuch as were not. It was confined, however, through a hard froſty winter, till the middle of February, when it again appeared in the pariſh of St Giles's, to which it had been originally brought; and after another long reſt till April, ſhewed its malignant force afreſh, as ſoon as the warmth of the ſpring gave it opportunity.—At firſt it took off one here and there, without any certain proof of their having infected each other, and houſes began to be ſhut up, with a deſign to prevent its ſpreading. But it was now too late; the infection gained ground every day, and the ſhutting up of houſes only made the diſeaſes ſpread wider. People, afraid of being ſhut up, and ſequeſtered from all communication with ſociety, concealed their illneſs, or found means to eſcape from their places of confinement; while numbers expired in the greateſt torments, deſtitute of every aſſiſtance; and many died both of the plague, and other diſeaſes, who would in all probability have recovered, had they been allowed their liberty, with proper exerciſe and air.—A houſe was ſhut up on account of a maid-ſervant, who had only

ſpots,

London.

ſpots, and not the gangrenous plague-blotches, upon her, ſo that her diſtemper was probably a petechial fever. She recovered; but the people of the houſe obained no liberty to ſtir, either for air or exerciſe, for 40 days. The bad air, fear, anger, and vexation, attending this injurious treatment, caſt the miſtreſs of the family into a fever. The viſitors appointed to ſearch the houſes, ſaid it was the plague, though the phyſicians were of a different opinion: the family, however, were obliged to begin their quarantine anew, though it had been almoſt expired before; and this ſecond confinement affected them ſo much, that moſt of the family fell ſick, ſome of one diſtemper, and ſome of another. Every illneſs that appeared in the family produced a freſh prolongation of their confinement; till at laſt the plague was actually brought in by ſome of thoſe who came to inquire into the health of the family, and almoſt every perſon in the houſe died.—Many examples of a ſimilar kind happened, and this was one of the worſt conſequences of ſhutting up houſes. All means of putting a ſtop to the infection were evidently ineffectual. Multitudes fled into the country; many merchants, owners of ſhips, &c. ſhut themſelves up, on board their veſſels, being ſupplied with proviſions from Greenwich, Woolwich, and ſingle farm-houſes on the Kentiſh ſide. Here, however, they were ſafe; for the infection never reached below Deptford, though the people went frequently on ſhore to the country-towns, villages, and farm-houſes, to buy freſh proviſions. As the violence of the plague increaſed, the ſhips, which had families on board, removed farther off; ſome went quite out to ſea, and then put into ſuch harbours and roads as they could beſt get at.

In the mean time the diſtemper made the moſt rapid advances within the city. In the laſt week of July, the number of burials amounted to 2010; but the firſt week of Auguſt it roſe to 3817; thence to 3880; then to 4237; the next week, to 6102; and at laſt to 7000 and 8000 weekly. In the laſt week of September, however, the fury of the diſeaſe began to abate; though vaſt numbers were ſick, yet the number of burials decreaſed from 7155 to 5538; the next week there was a farther decreaſe to 4929, then to 4327, next to 2665, then to 1421, and the next week to 1031.

All this while, the poor people had been reduced to the greateſt diſtreſſes, by reaſon of the ſtagnation of trade, and the ſickneſſes to which they were peculiarly liable on account of their manner of living. The rich, however, contributed to their ſubſiſtence in a moſt liberal manner. The ſums collected on this occaſion are, indeed, almoſt incredible; being ſaid to amount to 100,000 l. per week. The king is reported to have contributed 1000 l. weekly; and in the pariſh of Cripplegate alone 17,000 l. was diſtributed weekly among the poor inhabitants.—By the vigilance alſo of the magiſtrates, proviſions continued remarkably cheap throughout the whole time of this dreadful calamity, ſo that all riots and tumults on that account were prevented; and at laſt, on the ceſſation of the diſeaſe in the winter of 1665, the inhabitants who had fled returned to their habitations, and London to appearance become as populous as ever, though it was computed that 100,000 perſons had been carried off by the plague.

The city was ſcarcely recovered from the deſolation occaſioned by the plague, when it was almoſt totally laid in aſhes by a moſt dreadful fire. This broke out in a baker's ſhop in Pudding-lane, on Saturday-night, September 2. 1666. In a few hours Billingſgate ward was entirely burnt down; and before morning the fire had croſſed Thames-Street, and deſtroyed the church of St Magnus. From thence it proceeded to the bridge, and conſumed a great pile of buildings there; but was ſtopped by the want of any thing more to deſtroy. The flames, however, being ſcattered by a ſtrong eaſt wind, continued their devaſtation in other quarters. All efforts to ſtop it proved unſucceſsful throughout the Sunday. That day it proceeded up as far as Garlick-hithe; and deſtroying Canon-ſtreet, invaded Cornhill and the exchange. On Monday, the flames having proceeded eaſtward againſt the wind through Thames-ſtreet, invaded Tower-ſtreet, Grace-church-ſtreet, Fenchurch-ſtreet, Dowgate, Old-fiſh-ſtreet, Watling-ſtreet, Thread-needle-ſtreet, and ſeveral others, from all which it broke at once into Cheapſide. In a few hours Cheapſide was all in flames, the fire having reached it from ſo many places at once. The fire then continuing its courſe from the river on one ſide, and from Cheapſide on the other, ſurrounded the cathedral of St Paul's. This building ſtood by itſelf at ſome diſtance from any houſes; yet ſuch was the violence of the flames, and the heat of the atmoſphere occaſioned by them, that the cathedral took fire at top. The great beams and maſſy ſtones broke through into Faith-church underneath, which was quickly ſet on fire; after which, the flames invaded Pater-noſter-row, Newgate-ſtreet, the Old Bailey, Ludgate-hill, Fleet-ſtreet, Iron-monger-lane, Old-Jury, Laurence-lane, Milk ſtreet, Wood-ſtreet, Gutter-lane, Foſter-lane, Lothbury, Cateaton-ſtreet; and, having deſtroyed Chriſt-church, burnt furiouſly thro' St Martin's Le Grand towards Alderſgate.

The fire had now attained its greateſt extent, and was ſeveral miles in compaſs. The vaſt clouds of ſmoke obſcured the ſun ſo, that he either could not be ſeen at all, or appeared through it as red as blood. The flames reached an immenſe way up into the air, and their reflection from the ſmoke, which in the night-time ſeemed alſo like flame, made the appearance ſtill more terrible. The atmoſphere was illuminated to a great extent, and this illumination is ſaid to have been viſible as far as Jedburgh in Scotland. Some of the light aſhes alſo are ſaid to have been carried to the diſtance of 16 miles. Guildhall exhibited a ſingular appearance. The oak with which it was built was ſo ſolid that it would not flame, but burnt like charcoal, ſo that the building appeared for ſeveral hours like an enchanted palace of gold or burniſhed braſs.

At laſt, on Wedneſday morning, when every one expected that the ſuburbs as well as the city were to have been burnt, the fire began of itſelf to abate by reaſon of the wind having ceaſed, and ſome other changes no doubt taken place in the atmoſphere. It was checked by the great building in Leaden-hall-ſtreet, and in other ſtreets, by the blowing up ſeveral houſes with gun-powder; and on Thurſday the flames were quite extinguiſhed.—The following is a calculation of the damage done by this extraordinary con-

London. conflagration.

22 lculation the da- ge done.

	L.	*s.*	*d.*
Thirteen thouſand two hundred houſes, at 12 years purchaſe, ſuppoſing the rent of each 25 l. Sterling,	3,960,000	0	0
Eighty-ſeven pariſh-churches, at 8000 l.	696,000	0	0
Six conſecrated chapels, at 2000l.	12,000	0	0
The royal exchange	50,000	0	0
The cuſtom-houſe	10.000	0	0
Fifty-two halls of companies, at 1500 l. each	78,000	0	0
Three city-gates at 3000l. each	9000	0	0
Jail of Newgate	15,000	0	0
Four ſtone-bridges	6000	0	0
Seſſions-houſe	7000	0	0
Guildhall, with the courts and offices belonging to it	40,000	0	0
Blackwell-hall	3000	0	0
Bridewell	5000	0	0
Poultry Compter	5000	0	0
Woodſtreet Compter	3000	0	0
St Paul's church	2,000,000	0	0
Wares, houſehold-ſtuff, money, and moveable-goods loſt or ſpoiled	2,000,000	0	0
Hire of porters, carts, waggons, barges, boats, &c. for removing goods	200,000		
Printed books and paper in ſhops and warehouſes	150,000	0	0
Wine, tobacco, ſugar, &c. of which the town was at that time very full	1,500,000	0	0
	10,689,000	0	0

It was never certainly known whether this fire was accidental or deſigned. A ſuſpicion fell upon the Papiſts; and this gained ſuch general credit, that it is aſſerted for a truth on the monument which is erected in memory of the conflagration. Of the truth of this aſſertion, however, though there was not ſufficient proof, it had the effect of making the Papiſts moſt violently ſuſpected and abhorred by the Proteſtants, which ſome time after proved very prejudicial to the city itſelf.

23 eſign t it re n.

From this calamity, great as it was, London ſoon recovered itſelf, and became much more magnificent than before; the ſtreets, which were formerly crooked and narrow, being now built wide and ſpacious; and the induſtry of its inhabitants repaired the loſſes they had ſuſtained. In 1679, the city was again alarmed by the diſcovery of a deſign to deſtroy it by fire a ſecond time. Elizabeth Oxly, ſervant to one Rind in Fetter-lane, having ſet her maſter's houſe on fire, was apprehended on ſuſpicion, and confeſſed, that ſhe had been hired to do it by one Stubbs a Papiſt, for a reward of 5 l. Stubbs being taken into cuſtody, acknowledged that he had perſuaded her to it; and that he himſelf had been prevailed upon by one father Gifford his confeſſor, who had aſſured him, that by burning the houſes of heretics he would do a great ſervice to the church. He alſo owned that he had ſeveral conferences with Gifford and two Iriſhmen on the affair. The maid and Stubbs alſo agreed in declaring, that the Papiſts intended to riſe in London, expecting to be powerfully ſupported by a French army. In conſequence of this diſcovery, the Papiſts were baniſhed from the city and ten miles round, and five jeſuits were hanged for the abovementioned plot.

24 Which gives occaſion to a quarrel with the court.

The Papiſts thought to revenge themſelves, by forging what was called the *meal-tub plot*, in which the Preſbyterians were ſuppoſed to hatch treacherous deſigns againſt the life of the king. Sir Edmondbury Godfrey alſo, who had been very active in his proceedings againſt the Papiſts, was murdered by ſome unknown perſons; and this murder, together with their diſcovering the falſehood of the meal-tub plot, ſo exaſperated the Londoners, that they reſolved to ſhew their deteſtation of Popery by an extraordinary exhibition on the 17th of November, queen Elizabeth's acceſſion to the throne, on which day they had uſually burnt the pope in effigy. The proceſſion began with a perſon on horſeback perſonating Sir Edmondbury Godfrey, attended by a bell-man proclaiming his execrable murder. He was followed by a perſon carrying a large ſilver-croſs, with prieſts in copes, Carmelites, and Gray-friars, followed by ſix jeſuits: then proceeded divers waiters, and after them ſome biſhops with lawn-ſleeves, and others with copes and mitres. Six cardinals preceded the pope, enthroned in a ſtately pageant, attended by divers boys with pots of incenſe, and the devil whiſpering in his ear. In this order they marched from Biſhopſgate to Fleet-ſtreet; and there, amidſt a great multitude of ſpectators, committed his holineſs to the flames.

This proceſſion gave great offence to the court, at which the duke of York, afterwards James II. had a great influence. The breach was farther widened by the choice of ſheriffs for that year. The candidates ſet up by the court were rejected by a majority of almoſt two to one; but this did not deter their party from demanding a poll in their behalf, upon which a tumult enſued. This was repreſented by the Popiſh party in ſuch colours to the king, that he iſſued out a commiſſion that ſame evening for trying the rioters; which, however, was ſo far from intimidating the reſt, that they grew more and more determined, not only to oppoſe the Popiſh party, but to exclude the duke of York from his ſucceſſion to the crown.

In the mean time, the king prorogued the parliament, to prevent them from proceeding in their inquiry concerning the Popiſh plot, and the excluſion-bill. Upon this the lord-mayor, aldermen, and common-council, preſented a petition to his majeſty, in which they requeſted, that he would permit the parliament to ſit in order to complete their ſalutary meaſures and councils. This petition was highly reſented by the king; who, inſtead of granting it, diſſolved the parliament, and could never afterwards be reconciled to the city. From this time it was determined to ſeize their charter; and freſh provocations having been given about the election of ſheriffs, a *quo warranto* was at laſt produced by the attorney-general, in order to overthrow their charter, and thereby to deprive the citizens of the power to chooſe ſheriffs. This information ſet forth, That "the mayor and commonalty and citizens of the city of London, by the ſpace of a month then laſt paſt and more, uſed, and yet do claim to have and uſe, without any lawful warrant or regal grant, within the city of London aforeſaid;

25 A *Quo Warranto* granted againſt the city.

ſaid, and the liberties and privileges of the ſame city, the liberties and privileges following, viz.

"1. To be of themſelves a body corporate and politic, by the name of *mayor and commonalty and citizens of the city of London.*

"2. To have ſheriffs *civitat. et com. London. & com. Middleſex*, and to name, make, elect, and conſtitute them.

"3. That the mayor and aldermen of the ſaid city ſhould be juſtices of the peace, and hold ſeſſions of the peace.

All which liberties, privileges, and franchiſes, the ſaid mayor and commonalty, and citizens of London, upon the king did by the ſpace aforeſaid uſurp, and yet do uſurp."

Though nothing could be more unjuſt than this proſecution, the miniſtry were determined at all events to cruſh the Londoners; rightly judging, that it would be an eaſy matter to make all other corporations ſurrender their charters into the king's hands, and that they had no other body in the nation to fear. Accordingly they diſplaced ſuch judges as would not approve of their proceedings; and, on the 12th of June 1683, Juſtice Jones pronounced the following ſentence: "That a city might forfeit its charter; that the malverſations of the common-council were acts of the whole city; and that the points ſet forth in the pleadings were juſt grounds for the forfeiting of a charter."

Notwithſtanding this ſentence, however, the attorney-general, contrary to the uſual cuſtom in ſuch caſes, was directed to move that the judgment might not be recorded; being afraid of the conſequences. Yet it was judged that the king might ſeize the liberties of the city. A common-council was immediately ſummoned to deliberate on this exigency. The country party moved to have the judgment entered; but they were over-ruled by the court-party, who inſiſted upon an abſolute ſubmiſſion to the king before judgment was entered: and though this was in effect a voluntary ſurrender of the city-liberties, and depriving themſelves of the means of getting the judgment reverſed, the act of ſubmiſſion was carried by a great majority: and in a petition from the lord-mayor, aldermen, and common-council, they "acknowledged their own miſgovernment, and his majeſty's lenity; begged his pardon, and promiſed conſtant loyalty and obedience; and humbly begged his majeſty's commands and directions." To this his majeſty anſwered, that he would not reject their ſuit, if they would agree upon the following particulars.

25 Conditions of reconciliation between the king and city.

1. That no lord-mayor, ſheriff, recorder, common ſerjeant, town-clerk, or coroner, of the city of London, or ſteward of the borough of Southwark, ſhall be capable of, or admitted to, the exerciſe of their reſpective offices before his majeſty ſhall have approved of them under his ſign manual.

2. That if his majeſty ſhall diſapprove the choice of any perſon to be lord mayor, and ſignify the ſame under his ſign manual to the lord mayor, or, in default of a lord mayor, to the recorder or ſenior alderman, the citizens ſhall, within one week, proceed to a new choice: and if his majeſty ſhall in like manner diſapprove the ſecond choice, his majeſty may, if he pleaſes, nominate a perſon to be lord-mayor for the year enſuing.

3. If his majeſty ſhall, in like manner, diſapprove the perſons choſen to be ſheriffs, or either of them, his majeſty may appoint ſheriffs for the year enſuing.

4. That the lord-mayor and court of aldermen may, with the leave of his majeſty, diſplace any alderman, recorder, &c.

5. Upon the election of an alderman, if the court of aldermen ſhall judge and declare the perſon preſent to be unfit, the ward ſhall chooſe again; and upon a diſapproval of a ſecond choice, the court may appoint another in his room.

6. That the juſtices of the peace ſhould be by the king's commiſſion; and the ſettling of thoſe matters to be left to his majeſty's attorney-general, and council learned in the law.

To theſe the lord keeper added in the king's name, "That theſe regulations being made, his majeſty would not only pardon this proſecution, but would confirm their charter in ſuch a manner as ſhould be conſiſtent with them;" concluding thus: "My lord mayor, the term draws towards an end, and midſummer-day is at hand, when ſome of the officers uſed to be choſen; whereof his majeſty will reſerve the approbation. Therefore, it is his majeſty's pleaſure, that you return to the city, and conſult the common-council, that he may ſpeedily know your reſolutions thereupon, and accordingly give his directions. That you may ſee the king is in earneſt, and the matter is not capable of delay, I am commanded to let you know he hath given orders to his attorney-general to enter upon judgment on Saturday next; unleſs you prevent it by your compliance in all theſe particulars."

A common-council was ſummoned, when the friends of liberty treated thoſe ſlaviſh conditions as they deſerved; and even declared, that they were ready to ſacrifice all that was near or dear to them, rather than ſubmit to ſuch arbitrary impoſitions: but when it was put tot he vote, there appeared a majority of 18 for ſubmiſſion.

26 The ki breaks promi

Thus the king got the government of the city into his own hands, though he and his brother entirely loſt the affections of the Londoners. But, not content with their ſubmiſſion, his majeſty departed from his promiſe; commanded the judgment upon the *quo warranto* to be entered; and commiſſioned Sir William Pritchard, the lord mayor, to hold the ſame office during his majeſty's pleaſure. In the ſame manner he appointed or diſplaced the other magiſtrates as he thought proper; after which the miniſtry, having nothing to fear, proceeded in the moſt arbitrary manner.

27 Privi of the reſtore

In this ſubjection to the will of the court, the city of London continued till the revolution: but, in 1689, the immediate reſtoration of the Londoners to their franchiſes was ordered; and in ſuch a manner and form, as to put it out of the powers of an arbitrary miniſtry and a corrupt judge and jury to deprive them of their chartered liberties for the time to come. Accordingly a bill was brought into parliament, and paſſed, for reverſing the judgment of the *quo warranto* againſt the city of London, and for reſtoring the ſame to its ancient rights and privileges. Since that time the city of London hath enjoyed tranquillity; its commerce hath been carried to the higheſt pitch; and for the politeneſs, riches, and number of its inhabitants, as well as its extent and the magnificence of its buildings, is inferior to no city in Europe.

London ſtands on a ſpot where the Thames is formed into a half-moon, and at the diſtance of 60 miles by water from the mouth of the river, but where the flux and reflux of the tide is very perceptible. But the part particularly diſtinguiſhed by the name of the *city of London*, ſtands on the north ſhore from the Tower to the Temple, and is covered from the cold north winds by the hills of Hampſtead and Highgate. In its preſent extent, it has included one city, one borough, and 49 villages. For within it we find the city of Weſtminſter, the borough of South-wark and the villages of Mora, Finſbury, Wenlexbarn, Clerkenwell, Iſlington, Hoxton, Shoreditch, Norton-falgate, the Spital, Whitechapel, Mile-end new town, Mile-end old town, Bethnal Green, Stepney, Bow, Bromley, Blackwall, Poplar, Limehouſe, Ratcliff, Shadwell, Wapping-Stepney, Wapping, Eaſt-Smithfield, Hermitage, St Catherine's, the Minories, St Clement's Danes, the Strand, Charing-croſs, St James's, Knightſbridge, Marybone, Soho, St Giles's in the fields, St Martins in the fields, Bloomſbury, Port-pool, Saffron-hill, Holborn. And on the ſouth-ſide of the Thames are Vauxhall, Lambeth, Lambeth-marſh, Kennington, Newington-Butts, Bermondſey, the Grange, Horſley Down, and Rotherhithe; beyond which, a very little to the eaſtward, ſtand the two villages of Deptford and Greenwich, the former of which contains between 1800 and 1900 houſes, and the latter between 1300 and 1400, each of them excelling the capitals of three or four foreign princes put together, both in number of houſes, inhabitants, and riches. The length of the ground on which all theſe buildings ſtand is ſeven miles and a half and 176 yards, its breadth three miles 170 yards and an half.

By the *city of London*, we are to underſtand no more than that part formerly encompaſſed by the wall, which in circumference meaſures only three miles and 165 feet. In this wall there were eight gates: but the wall hath long ſince been pulled down to make way for new buildings in ſeveral places; and there is now left ſtanding only one of the city-gates called *New-gate*, the others being removed to widen the ſtreets, and to make the avenues to the city more commodious and airy. The liberties, or thoſe parts of this great city which are ſubject to its juriſdiction, and lie without the walls of London, are bounded on the eaſt, in White-chapel, the Minories, and Biſhopſgate, by bars, which were formerly poſts and chains, that were frequently taken away by arbitrary power, when it was thought proper to ſeize the franchiſes of the city of London: on the north, they are bounded in the ſame manner in Pick-ax ſtreet, at the end of Fan-alley, and in St John's ſtreet: on the weſt, by bars in Holborn: at the eaſt end of Middle Row, and at the weſt end of Fleet-ſtreet, by the gate called *Temple-bar*: on the ſouth, we may include the juriſdiction which the city holds on the river Thames, and over the borough of Southwark, to which the city of London has an undoubted right by charter, and for which they paid a valuable conſideration to king Edward VI. and which was confirmed to them by the 2d of William & Mary, c. 8.—The city is at preſent divided into 26 wards.

1. *Alderſgate ward* takes its name from a city-gate which lately ſtood in the neighbourhood. It is bounded on the eaſt by Cripplegate ward; on the weſt, by Farringdon ward within and without; and on the ſouth, by Farringdon ward within. It is very large, and is divided into Alderſgate-within and Alderſgate-without. Each of theſe diviſions conſiſts of four precincts, under one alderman, eight common-council men, of whom two are the alderman's deputies, eight conſtables, fourteen inqueſt-men, eight ſcavengers, and a beadle; excluſive of the officers belonging to the liberty of St Martin's le Grand, which contains 168 houſes.

2. *Aldgate* takes its name alſo from a gate, which was of great antiquity, being mentioned in king Edgar's charter to the knights of the Knighton guild about the year 967; and was probably of a much more ancient foundation, for it was the gate through which the Roman Vicinal way lay to the ferry at Oldford. It was pulled down ſome years ago by parliamentary authority, at the petition of the corporation.—The ward of Aldgate is bounded on the eaſt by the city-wall, which divides it from Portſoken-ward; on the north, by Biſhopſgate ward; on the weſt, by Lime-ſtreet and Langborn wards; and on the ſouth, by Tower-ſtreet ward. It is governed by an alderman, ſix common-council men, ſix conſtables, twenty inqueſt-men, ſeven ſcavengers, and a beadle; beſides the officers belonging to St James's, Duke's Place.—It is divided into ſeven precincts.

3 *Baſſiſhaw* or *Baſinghall ward*, is bounded on the eaſt and ſouth by Coleman-ſtreet ward, on the north by part of Cripplegate, and on the weſt by part of the wards of Cheap and Cripplegate. On the ſouth, it begins at Blackwell-hall; and runs northward to London-wall, pulled down ſome time ago to make way for new buildings in *Fore-ſtreet*, and ſpreads 88 feet eaſt, and 54 feet weſt againſt the place where that wall ſtood. This is a very ſmall ward, and conſiſts only of two precincts: the upper precinct contains no more than 66, and the lower only 76 houſes. It is governed by an alderman, four common-council men, of whom one is the alderman's deputy, three conſtables, ſeventeen inqueſt-men, three ſcavengers, and a beadle. It has its name from Baſinghall the manſion-houſe of the family of *Baſings*, which was the principal houſe in it, and ſtood in the place of Blackwell-hall.

4. *Billingſgate ward* is bounded on the eaſt by Tower-ſtreet ward; on the north, by Langbourn ward; on the weſt, by the ward of Bridge-within; and on the ſouth, by the river Thames. It is divided into 12 precincts; and is governed by an alderman, 10 common-councilmen, one of whom is the alderman's deputy, 11 conſtables, 14 inqueſt-men, ſix ſcavengers, and a beadle. The origin of its name is unknown. Its ſituation on the river gives it great advantages with reſpect to trade and merchandize; ſo that it is well inhabited, and is in a continual hurry of buſineſs at the ſeveral wharfs or quays.

5. *Biſhopſgate ward* is bounded on the eaſt by Aldgate ward, Portſoken ward, and part of the Tower-liberty, or Norton-falgate; on the weſt, by Broad-ſtreet ward and Moorfields; and on the ſouth, by Langbourn ward. It is very large, and divided into Biſhopſgate-

London,

within, and Biſhopſgate-without. The firſt contains all that part of the ward within the city-wall and gate, and is divided into five precincts; the ſecond lies without the wall, and is divided into four precincts. This ward is governed by an alderman, two deputies, one within and the other without, 12 common-council men, ſeven conſtables, 13 inqueſt-men, nine ſcavengers, and two beadles. It took its name from the gate, which has been pulled down to make that part of the city more airy and commodious.

6. *Bread-ſtreet ward* is encompaſſed on the north and north-weſt, by the ward of Farringdon-within; on the eaſt, by Cordwainer's ward; on the ſouth by Queenhithe ward; and on the weſt, by Caſtle-Baynard ward. It is divided into 13 precincts; and is governed by an alderman, 12 common-council men, of whom one is the alderman's deputy, 13 conſtables, 13 inqueſt-men, 13 ſcavengers, and a beadle; and yet contains no more than 331 houſes. It takes its name from the ancient bread-market, which was kept in the place now called *Bread-ſtreet;* the bakers being obliged to ſell their bread only in the open market, and not in ſhops.

7. *Bridge-ward within* is bounded on the ſouth by the river Thames and Southwark; on the north, by Langbourn and Biſhopſgate ward; on the eaſt, by Billingſgate; and on the weſt, by Candlewick and Dowgate wards. It is divided into 14 precincts, three of which were on London-bridge; and is governed by an alderman, 15 common-council men, one of whom is the alderman's deputy, 14 conſtables, 15 inqueſt-men, 14 ſcavengers, and a beadle. It takes its name from its connection with London-bridge.

8. *Broad-ſtreet ward* is bounded on the north and eaſt, by Biſhopſgate ward; on the ſouth, by Cornhill and Wallbrook ward; and on the weſt by Coleman-ſtreet ward. It is divided into 10 precincts; and governed by an alderman, 10 common-council men, one of whom is the alderman's deputy, 10 conſtables, 13 inqueſt-men, eight ſcavengers, and a beadle. It has its name from that part of it now diſtinguiſhed by the name of *Old Broad-ſtreet;* and which, before the fire of 1666, was accounted one of the broadeſt ſtreets in London.

9. *Candlewick-ward, Candlewick-ſtreet*, or *Candlewright-ſtreet ward*, as it is called in ſome ancient records, is bounded on the eaſt by Bridge ward; on the ſouth, by Dowgate, and part of Bridge ward; on the weſt, by Dowgate and Wallbrook; and on the north, by Langbourn ward. It is but a ſmall ward, conſiſting of about 286 houſes; yet is divided into ſeven precincts. It is governed by an alderman, eight common-council men, of whom one is the alderman's deputy, ſeven conſtables, 13 inqueſt-men, ſeven ſcavengers, and a beadle. It has its name from a ſtreet formerly inhabited chiefly by candle-wrights or candle-makers, both in tallow and wax; a very profitable buſineſs in the times of Popery, when incredible quantities of wax-candles were conſumed in the churches. That ſtreet, however, or at leaſt its name, *Candlewick*, is loſt ſince the great conflagration, for which the name *Canon-ſtreet* is ſubſtituted, the candle-wrights being at that time burnt out and diſperſed through the city.

10. *Caſtle-Baynard ward* is bounded by Queenhithe and Bread-ſtreet wards on the eaſt; on the ſouth, by the Thames; and on the weſt and north, by the ward of Farringdon-within. It is divided into 10 precincts, under the government of an alderman, 10 common-council men, one of whom is the alderman's deputy, nine conſtables, 14 inqueſt-men, ſeven ſcavengers, and a beadle. It takes its name from a caſtle built on the bank of the river by one Baynard, a ſoldier of fortune, who came in with William the Conqueror, and was by that monarch raiſed to great honours and authority.

11. *Cheap ward* is bounded on the eaſt by Broad-ſtreet and Wallbrook wards; on the north, by Coleman-ſtreet, Baſſiſhaw, and Cripplegate; and on the ſouth, by Cordwainer's ward. It is divided into nine precincts; and is governed by an alderman, 12 common-council men, of whom one is the alderman's deputy, 11 conſtables, 13 inqueſt-men, nine ſcavengers, and a beadle. It has its name from the Saxon word *chepe*, which ſignifies a market, kept in this diviſion of the city, now called *Cheapſide;* but then known by the name of *Weſtcheap*, to diſtinguiſh it from the market then alſo kept in Eaſtcheap, between Canon or Candlewick ſtreet and Tower-ſtreet.

12. *Coleman ſtreet ward* is bounded on the eaſt by Biſhopſgate, Broadſtreet, and Cheap wards; on the north, by Cripple-gate ward, Middle Moorfields, and Biſhopſgate; on the ſouth, by Cheap ward; and on the weſt, by Baſſiſhaw ward. It is divided into ſix precincts; and is governed by an alderman, ſix common-council men, one of whom is the alderman's deputy, ſix conſtables, 13 inqueſt-men, ſix ſcavengers, and a beadle. The origin of the name is not certainly known.

13. *Cordwainer's ward* is bounded on the eaſt by Wall-brook, on the ſouth by Vintry ward, on the weſt by Bread-ſtreet, and on the north by Cheap ward. It is divided into eight precincts; and is governed by an alderman, eight common-council men, one of whom is the alderman's deputy, eight conſtables, 14 inqueſt men, eight ſcavengers, and a beadle. Its proper name is *Cordwainers-ſtreet ward;* which it has from Cordwainers-ſtreet, now Bow-lane, formerly occupied chiefly by ſhoemakers and others that dealt or worked in leather.

14. *Cornhill ward* is but of ſmall extent. It is bounded on the eaſt by Biſhopſgate, on the north by Broadſtreet, on the weſt by Cheap ward, and on the ſouth by Langbourn ward. It is divided into four precincts, which are governed by one alderman, ſix common-council men, of whom one is the alderman's deputy, four conſtables, 16 inqueſt-men, four ſcavengers, and a beadle. It takes its name from the principal ſtreet in it, known from the earlieſt ages by the name of *Cornhill*, becauſe the corn-market was kept there.

15. *Cripple-gate ward* is bounded on the eaſt by Moorfields, Coleman-ſtreet ward, Baſſiſhaw ward, and Cheap-ward; on the north, by the pariſh of St Luke's, Old-ſtreet; on the weſt, by Alderſgate ward; and on the ſouth, by Cheap ward. It is divided into 13 precincts, nine within and four without the wall; and is governed by an alderman, 12 common-council men, of whom two are the alderman's deputies, 13 conſtables, 34 inqueſt-men, 16 ſcavengers, and three beadles. It

takes its name from *Cripplegate*, which ſtood on the north-weſt part of the city-wall. It was an old plain ſtructure, void of all ornament, with one poſtern; but had more the appearance of a fortification than any of the other gates. It was removed in order to widen the entrance into Wood-ſtreet, which, by the narrowneſs of the gateway was too much contracted and rendered dangerous for paſſengers and great waggons.

16. *Dowgate ward* is bounded on the eaſt by Candlewick and Bridge wards, on the north by Wallbrook ward, on the weſt by Vintry ward, and on the ſouth by the Thames. It is divided into eight precincts, under the government of an alderman, eight common-council men, of whom one is the alderman's deputy, eight conſtables, 15 inqueſt-men, five ſcavengers, and a beadle. It has its name from the ancient water-gate, called *Dourgate*, which was made in the original wall that ran along the north-ſide of the Thames, for the ſecurity of the city againſt all attempts to invade it by water.

17. *Farringdon-ward within* is bounded on the eaſt by Cheap ward and Baynard-caſtle ward; on the north, by Alderſgate and Cripplegate wards, and the liberty of St Martin's le Grand; on the weſt, by Farringdon-without; and on the ſouth, by Baynard-caſtle ward, and the river Thames. It is divided into 18 precincts; and governed by one alderman, 17 common-council men, of whom one is the alderman's deputy, 19 conſtables, 17 inqueſt-men, 19 ſcavengers, and two beadles. It takes its name from William Farringdon citizen and goldſmith of London, who, in 1279, purchaſed all the aldermanry with the appurtenances, within the city of London and ſuburbs of the ſame, between Ludgate and Newgate, and alſo *without* theſe gates.

18. *Farringdon-ward without* is bounded on the eaſt by *Farringdon-within*, the precinct of the late priory of St Bartholomew near Smithfield, and the ward of Alderſgate; on the north, by the charter-houſe, the pariſh of St John's Clerkenwell, and part of St Andrew's pariſh without the freedom; on the weſt, by High Holborn, and St Clement's pariſh in the Strand; and on the ſouth, by the river Thames. It is governed by one alderman, 16 common-council-men, of whom two are the alderman's deputies, 23 conſtables, 48 inqueſt-men; 24 ſcavengers; and four beadles. It takes its name from the ſame goldſmith who gave name to Farringdon-within.

19. *Langborn ward* is bounded on the eaſt by Aldgate ward; on the north, by part of the ſame, and Limeſtreet ward; on the ſouth, by Tower-ſtreet, Billingſgate, Bridge, and Candlewick wards; and on the weſt by Wall-brook. It is divided into 12 precincts. It had its name from a rivulet or long bourn of freſh-water, which anciently flowed from a ſpring near Magpye alley adjoining to St Catherine Coleman's church.

20. *Limeſtreet ward* is bounded on the eaſt and north by *Aldgate ward*, on the weſt by Biſhopſgate; and on the ſouth by Langbourn ward. It is divided into four precincts; and governed by an alderman, four common-councilmen, one of whom is the alderman's deputy, four conſtables, 13 inqueſt men, four ſcavengers, and a beadle. It is very ſmall; and has its name from ſome lime-kilns that were formerly built in or near Lime-ſtreet.

21. *Portſoken ward* is bounded on the eaſt by the pariſhes of Spitalfields, Stepney, and St George's in the eaſt; on the ſouth, by Tower-hill; on the north, by Biſhopſgate ward, and on the weſt by Aldgate ward. It is divided into five precincts; and is governed by an alderman, five common-council men, one of whom is the alderman's deputy, five conſtables, 19 inqueſt-men, five ſcavengers, and a beadle. Its name ſignifies *the franchiſe of the liberty-gate*. This Portſoken was for ſome time a guild; and had its beginning in king Edgar, when 13 knights, "well-beloved of the king and realm, for ſervices by them done," requeſted to have a certain portion of land on the eaſt part of the city, left deſolate and forſaken of the inhabitants by reaſon of too much ſervitude. They beſought the king to have this land, with the liberty of a guild for ever. The king granted their requeſt on the following conditions, viz. that each of them ſhould victoriouſly accompliſh three combats, one above the ground, one under ground, and the third in the water: and after this, at a certain day, in Eaſt Smithfield, they ſhould run with ſpears againſt all comers. All this was gloriouſly performed; upon which the king named it *Knighten Guild*, and extended it from Aldgate to the places where the bars now are on the eaſt, and to the Thames on the ſouth, and as far into the water as an horſeman could ride at low water and throw his ſpear.

22. *Queen-hithe ward* is bounded on the eaſt by Dowgate, on the north by Bread-ſtreet and Cordwainer's wards, on the ſouth by the Thames, and on the weſt by Caſtle-Baynard ward. It is divided into nine precincts; and is governed by one alderman, ſix common-councilmen, one of whom is the alderman's deputy, and nine conſtables. It has its name from the *hithe*, or harbour for large boats, barges, and lighters; for which, and even for ſhips, it was the anchoring place, and the key for lading and unloading veſſels almoſt of any burden uſed in ancient times. It has the name of *queen*, becauſe the queens of England uſually poſſeſſed the tolls and cuſtoms of veſſels that unloaded goods at this *hithe*, which were very conſiderable.

23. *Tower ward*, or *Tower-ſtreet ward*, is bounded on the ſouth by the river Thames, on the eaſt by Tower-hill and Aldgate ward, on the north by Langbourn ward, and on the weſt by Billingſgate ward. It is governed by one alderman, 12 common-council men, of whom one is the alderman's deputy, 12 conſtables, 13 inqueſt-men, 12 ſcavengers, and one beadle. It takes its name from *Tower-ſtreet*, ſo called becauſe it leads out of the city in a direct line to the principal entrance of the Tower of London.

24. *Vintry ward* is bounded on the eaſt by Dowgate, on the ſouth by the Thames, on the weſt by Queen-hithe ward, and on the north by Cordwainers ward. It is a ſmall ward, containing only 418 houſes; but is divided into nine precincts, and governed by an alderman, nine common-council men, one of whom is the alderman's deputy, nine conſtables, 13 inqueſt-men, three ſcavengers, and a beadle. It takes its name from the vintners or wine-merchants of Bourdeaux, who formerly dwelt in this part of the city, were obliged to land their wines on this ſpot, and to ſell them in 40 days, till the 28th of Edward I.

25. *Wall-brook ward* is bounded on the eaſt by Langbourn, on the ſouth by Dowgate ward, on the weſt by Cordwainers ward, and on the north by Cheap ward. It is ſmall, containing only 306 houſes; but is divided into ſeven precincts, and governed by an alderman, eight common-council men, of whom one is the alderman's deputy, ſeven conſtables, 13 inqueſt-men, ſix ſcavengers, and a beadle. It has its name from the rivulet *Wall-brook*, that ran down the ſtreet of this name into the river Thames near Dowgate; but in proceſs of time it was ſo loſt by covering it with bridges, and buildings upon thoſe bridges, that its channel became a common ſewer.

26. The ward of *Bridge-without* includes the borough of Southwark, and the pariſhes of Rotherhithe, Newington, and Lambeth. It has its name from London-bridge, with the addition of the word *without*, becauſe the bridge muſt be paſſed in order to come at it. This borough was incorporated in 1327. At this time, the citizens finding themſelves greatly infeſted by felons, thieves, and diſturbers of the peace, who eſcaped to and took ſhelter in Southwark, petitioned king Edward III. and his parliament for a grant of juriſdiction over the ſaid village of Southwark: and their petition appeared ſo juſt, that his majeſty, with conſent of his parliament, granted to the ſaid citizens, for himſelf and his heirs, the ſaid village of Southwark, with the appurtenances, to have and to hold, to them and their heirs and ſucceſſors, citizens of the ſaid city, of the crown *for ever*, paying at the exchequer the farms due and accuſtomed. This ward is governed in a manner ſimilar to the others. However, the magiſtracy of London ſeem to have adopted this ward only as a *ſinecure* for the ſenior alderman for the time being; and thus neglecting the intereſts of Southwark, the juſtices of the county of Surry at laſt encroached ſo far upon the rights of the city of London as to contend with the citizens concerning their juriſdiction within the borough.

29 Public buildings.

Of the many public buildings worthy of notice about London, the following are ſelected as the moſt remarkable.

1. *The Tower.* This building was at firſt deſigned as a fortreſs, and moſt probably erected in the time of the Romans. It was enlarged and ſtrengthened by William the Conqueror, who garriſoned it with ſome of his beſt Norman troops, in order to keep the city in awe. In 1079, he built an addition to it, called the *White Tower*, on account of the colour of the ſtones with which it was conſtructed: and this being much damaged by an hurricane in 1093, repairs became neceſſary; at which time a new foundation was laid for a caſtle under the ſouth ſide of the white tower, which was caſtellated round at a great expence, but not finiſhed till the reign of Henry I. It is indeed perhaps the beſt choſen ſituation for a fortreſs of any in the world. It lies to the eaſtward of the city, but ſufficiently near to preſerve it from any invaſion by water; being only 800 yards from the bridge; and to the north of the river Thames, from which it is parted by a narrow ditch and a convenient wharf. With the latter it communicates by a draw-bridge, for the readier iſſuing and receiving ammunition and military ſtores. On this wharf there is a long and beautiful platform, on which are planted 61 pieces of cannon, mounted on new and very elegant iron-carriages. They are chiefly uſed on days of ſtate and for proclaiming any good news to the public. Parallel to the wharf, within the walls, is a platform 70 yards in length, called the *Ladies Line*, becauſe much frequented by the ladies in the ſummer; it being ſhaded in the inſide with a row of lofty trees, and without it is a delightful proſpect of the ſhipping with boats paſſing and repaſſing on the river Thames. You aſcend this line by ſtone ſteps, and being once upon it you may walk almoſt round the walls of the tower without interruption.

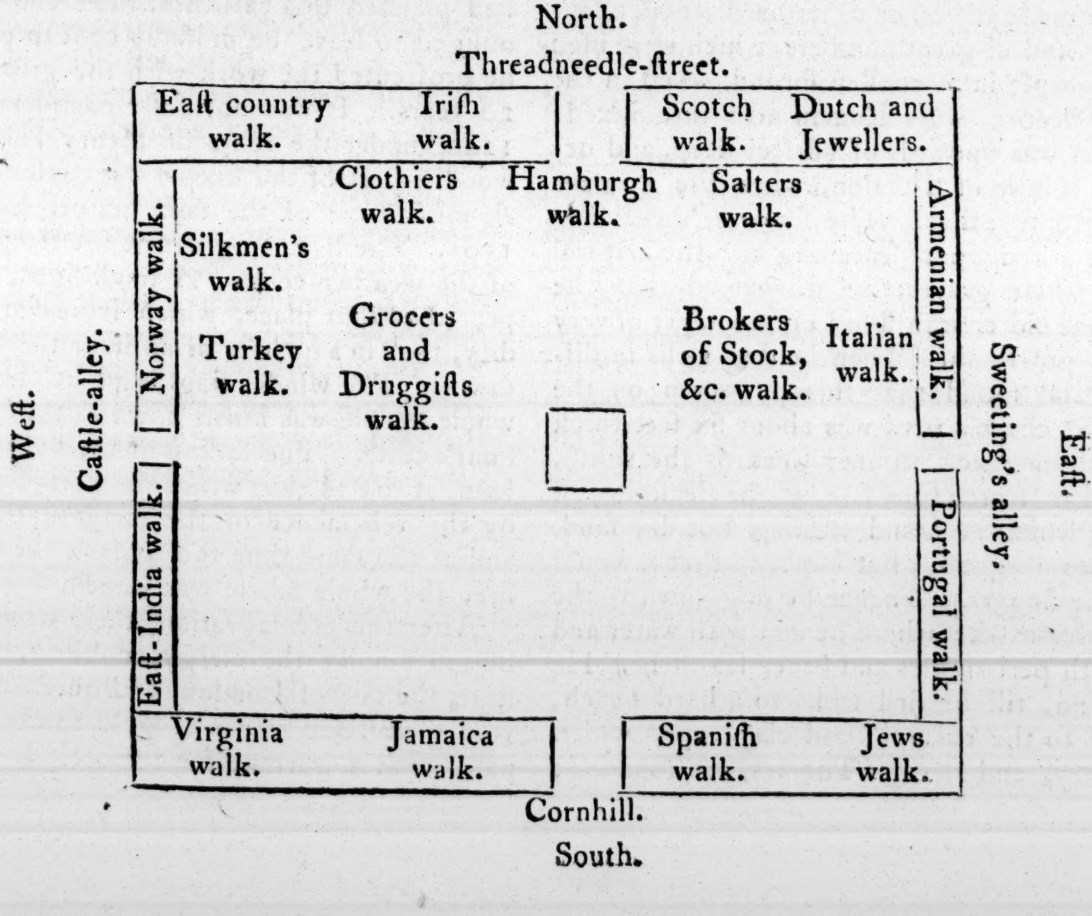
The principal entrance into the tower is by a gate to the weſt, large enough to admit coaches and heavy carriages; but theſe are firſt admitted through an outward gate, ſituated without the ditch upon the hill, and muſt paſs a ſtout ſtone bridge built over the ditch before they can approach the main entrance. There is, beſides, an entrance near the very ſouth-weſt corner of the Tower outward wall, for perſons on foot, over the draw-bridge already mentioned, to the wharf. There is alſo a water-gate, commonly called *Traitor's gate*, through which it has been cuſtomary to convey traitors and other ſtate-priſoners to or from the Tower, and which is ſeldom opened on any other occaſion; but the lords committed to the Tower in 1746 were publicly admitted at the main entrance. Over this gate is a regular building, terminated at each end by two round towers, on which are embraſures for pointing cannon. In this building there are the infirmary, the mill, and the water-works that ſupply the tower with water.

The white tower is a large ſquare irregular building, ſituated almoſt in the centre, no one ſide anſwering to another; nor are any of its watch-towers, of which there are four that ornament the top, built alike: one of theſe towers is now converted into an obſervatory, and ſeems very well ſituated for the purpoſe. The building itſelf conſiſts of three very lofty ſtories; under which are moſt ſpacious and commodious vaults, chiefly filled with ſalt-petre. It is covered at top with flat leads, from whence there is an extenſive and delightful proſpect. For a more particular deſcription of the tower and the curioſities contained in it, ſee the article TOWER *of London*.

2. *The Royal Exchange* was founded in the year 1566. Sir Thomas Greſham, merchant in London, made an offer to the lord mayor and citizens, to build at his own expence, a commodious edifice for merchants to meet and tranſact buſineſs, provided the city would find him a convenient ſituation for the ſame. The citizens accordingly purchaſed, for the ſum of 3532 l. 80 houſes in the two alleys called *New St Chriſtophers*, and *Swan-alley*, leading out of Cornhill into Threadneedle ſtreet. The materials of thoſe houſes were ſold for 478 l. and the ground, when cleared, was conveyed to Sir Thomas Greſham, who, accompanied by ſeveral aldermen, laid the firſt brick of the new building on the 7th of June that year. Each alderman alſo laid his brick, and left a piece of gold for the workmen; who ſet about it with ſuch aſſiduity and reſolution, that the whole fabric was roofed by the month of November 1567, and was ſoon after completed under the name of the *Burſe*. Sir Thomas, by his will dated the 26th of November 1579, deviſed this ſtately fabric to the mayor and citizens of London and the company of mercers, to be equally enjoyed and poſſeſſed by them, with all its appurtenances and the profits ariſing thereby,

by, on condition that the citizens out of their moiety ſhould pay a ſalary of 50 l. per annum each to four lectures, to read lectures in divinity, aſtronomy, muſic, and geometry, in his manſion-houſe, *viz.* Greſham-college: and to pay 6 l. 13 s. 4 d. per annum each, to eight alms-people, ſituate behind the ſaid college, in Broadſtreet; and 10 l. yearly to each of the priſons of Newgate, Ludgate, King's-bench, Marſhalſea, and Woodſtreet Compter: And that the mercers out of their moiety ſhould pay 50 l. each per annum, to three lecturers to read lectures in law, phyſic, and rhetoric, in his manſion-houſe; and 100 l. per annum for four quarterly dinners at their own hall, for the entertainment of the whole company; and 10 l. yearly to Chriſt's, St Bartholomew's, Bethlehem, and St Thomas's hoſpitals. The ſame ſum was alſo to be paid annually to the Spital, and to the Poultry Compter. This building was totally deſtroyed by the fire in 1666; and in its place the preſent magnificent ſtructure was erected at the expence of 80,000 l. which ſtands upon a plat of ground 203 feet in length and 171 in breadth, containing an area in the middle, of 61 ſquare perches, ſurrounded with a ſubſtantial and regular ſtone building, wrought in ruſtic. It has two fronts, north and ſouth, each of which is a piazza; and in the centre are the grand entrances into the area, under a very lofty and noble arch. The ſouth front in Cornhill is the principal; on each ſide of which are Corinthian demi-columns, ſupporting a compaſs pediment; and, in the intercolumniation on each ſide, in the front next the ſtreet, is a niche, with the ſtatues of king Charles I. and II. in Roman habits, and well executed. Over the aperture, on the cornice between the two pediments, are the king's arms in relievo: on each ſide of this entrance is a range of windows placed between demi-columns, and pilaſters of the compoſite order, above which runs a baluſtrade. This building is 56 feet high: and from the centre, in this front, riſes a lanthorn and turret 178 feet high, on the top of which is a fane of gilt braſs made in the ſhape of a graſshopper, the creſt of Sir Thomas Greſham's arms. The north front in Threadneedle-ſtreet is adorned with pilaſters of the compoſite order; but has neither columns nor ſtatues on the outſide; and has a triangular, inſtead of compaſs, pediments. The inſide of the area is alſo ſurrounded with piazzas, forming ambulatories for merchants, &c. to ſhelter themſelves from the weather, when met there upon buſineſs. Above the arches of this piazza is an entablature with curious ornaments; and on the cornice a range of pilaſters with an entablature extending round, and a compaſs pediment in the middle of the cornice of each of the four ſides. Under the pediment on the north ſide are the king's arms; on the ſouth, the city's arms; on the eaſt, Sir Thomas Greſham's arms; and on the weſt, the mercer's arms, with their reſpective enrichments. In theſe intercolumns are 24 niches, 20 of which are filled with the ſtatues of the kings and queens of England. Under theſe piazzas, within the area, are 28 niches, all vacant but that in which Sir Thomas Greſham's ſtatue is placed in the north-weſt angle, and that in the ſouth-weſt, where the ſtatute of Sir John Barnard was placed in his lifetime by his fellow-citizens to expreſs their ſenſe of his merit. The centre of this area alſo is ornamented with a ſtatute of king Charles II. in a Roman habit, ſtanding upon a marble pedeſtal about eight feet high, and encompaſſed with iron rails; which pedeſtal is enriched on the ſouth ſide with an imperial crown, a ſceptre, ſword, palm-branches, and other decorations, with a very flattering inſcription to the king. On the weſt ſide is a cupid cut in relievo, reſting his right hand on a ſhield with the arms of France and England quartered, and holding a roſe in his left hand. On the north ſide is another cupid ſupporting a ſhield with the arms of Ireland; and on the eaſt-ſide are the arms of Scotland, with a cupid holding a thiſtle; all done in relievo: the whole executed by that able ſtatuary Mr Gibbon.

In this area, merchants, and ſuch as have buſineſs with them, meet every day between twelve at noon and three in the afternoon: and for the more regular and readier diſpatch of buſineſs, they diſpoſe of themſelves into ſeparate walks, according to the following plan.



In building this expenſive ſtructure there was an eye not only to magnificence, and to accommodate the merchants, but alſo to reimburſe the expence. For this reaſon a gallery was built over the four ſides of the royal exchange. This was divided into 200 ſhops, which were let out to haberdaſhers, milliners, &c. and which for ſeveral years were well occupied. But theſe ſhops have now for a long time been deſerted, and the galleries are let out to the Royal-Exchange aſſurance office, the merchant-ſeamens office, the Marine ſociety, and to auctioneers, &c. Under the whole area there are the fineſt dry vaults that can be found any where, which are let out to the Eaſt India company to depoſit their pepper. In the turret is a good clock with four dials, which is well regulated every day, ſo that it becomes a ſtandard of time to all the mercantile part of the town; and it goes with chimes at three, ſix, nine, and twelve o'clock, playing upon twelve bells. The outſide of this grand fabric ſuffers very much in its elegance from the ſhops that ſurround it, and are built within its walls; and which are occupied by bookſellers, toymen, cutlers, hoſiers, watchmakers, &c.

3. *St Paul's cathedral* is ſaid by ſome to have been founded on that very ſpot where formerly ſtood a temple dedicated to the heathen goddeſs Diana. This, however, is refuted by Mr Entick, "Becauſe (ſays he) there muſt have been found ox-ſkulls, horns of ſtags, and tuſks of boars, uſed in ſacrifices to that goddeſs, in the earth about her temple. But Sir Chriſtopher Wren, who had more opportunity than any other perſon to diſcover the bowels of the earth, in digging the foundation of St Paul's as it now ſtands, declares that he found no indications to ſupport ſuch a tradition: but adds, that it was manifeſt the north ſide of this ground had been anciently a great burying-place; becauſe he found, under the graves of the latter ages, in a row below them, the burial-places of the Saxon people, who were accuſtomed to line their graves with chalk-ſtones, or to be buried in coffins hewn out of the ſolid ſtone: and, in a row below the Saxons, he met with Britiſh graves. In theſe laſt were found ivory and wooden pins, the latter made of box or other hard wood, about ſix inches long, and in great numbers, which were uſed to pin up the corpſe in a woollen ſhroud. And in the ſame row, but deeper, were Roman urns intermixed: this burial-place was upwards of 18 feet deep, and belonged to the colony of London, when the Romans and Britons lived together. The ſurveyor's curioſity led him deeper; and upon ſearching for the natural ground below theſe graves, he diſcovered that the foundation of the old church ſtood upon a layer of very cloſe and hard pot-earth. Then he dug wells in different places; and found that this pot-earth on the north-ſide of the church-yard was about ſix feet thick or more, but thinner and thinner towards the ſouth, till it decreaſed to ſcarce four feet at the declining of the hill, under which he found nothing but dry ſand, mixed ſometimes unequally, but looſe, ſo that it would run through the fingers. Thence he dug down to the level of low-water-mark; where he met with water and ſand, mixed with periwinkles and other ſea-ſhells. He continued boring, till he firſt came to a hard beach, and under that to the natural hard clay, upon which the city, country, and river of Thames, are founded: whence he drew this inference, That the ſea, or current of the river, had been where now the hill is, on which the cathedral of St Paul's ſtands. For which Sir Chriſtopher accounted in this manner: 'The whole country between Camberwell-hill and the hills of Eſſex, (ſays he), might have been a great frith or ſinus of the ſea, and much wider near the mouth of the Thames; which made a large plain of ſand at low-water, through which the river found its way: but at low-water, in the ſummer-ſeaſon, when the ſun dried the ſurface of the ſand, and ſtrong wind happened at the ſame time, before the flood came on, the ſands would dry with the winds, and raiſe heaps, which in time increaſed to large and lofty ſand-hills, ſuch as thoſe raiſed in the ſame manner on the coaſts of France and Flanders. For ſands are known, upon a conjuncture of ſunſhine and wind, to drive into viſible clouds; and this might be the effect many ages before hiſtory, without having recourſe to the flood. The ſand hill at St Paul's,in the time of the Roman colony, was about 12 feet lower than the preſent ſurface thereof; and the river-ſand, eaſily driven with the wind, lay uppermoſt, and the hard coat of the earth might be thus made. For, pot-earth diſſolved in water, and viewed by a microſcope, is but impalpable ſand, which with the fire will vitrefy."

The cathedral was finiſhed in a very magnificent manner about the year 610, in the reign of Ethelbert king of Kent. It is, however, ſuppoſed to have been at firſt built only of wood; for it was accidentally burnt in 961, and re-built again the ſame year. A ſimilar diſaſter befel it in the year 1086, when a conſiderable part of the city ſhared the ſame fate. However, ſuch was the activity of Maurice biſhop of London, and ſuch the devotion of the people to the apoſtle Paul, that the cathedral was rebuilt in a much more magnificent manner than any ſtructure applied to the purpoſes of devotion had ever been in England before. Maurice obtained a grant of the materials found in the ruins of a tower, called the *great palatine tower*, near Fleet-ditch, which had been burnt down at the ſame time, to help forward St Paul's. But the good biſhop had planned this cathedral ſo extenſively, that he was obliged to leave the finiſhing of it to poſterity; though he proſecuted the work with the greateſt diligence for 20 years. It was not fully compleated till the year 1240, under the reign of Henry III. In 1444, the wooden part of the ſteeple was conſumed by lightning. A misfortune of the ſame nature happened to it in 1561. The lightning ſtruck the ſteeple within a yard of the weather-cock. A ſmall light, like a torch, appeared at that place, which increaſed with ſuch rapidity, that in a quarter of an hour the weather-cock fell down. The wind riſing high at the ſame time, the whole ſteeple was burnt down to the battlements in an hour's time. The falling of the burning timber-work ſoon ſet fire to that which ſupported the bells, which by the vehemence of the conflagration were melted, and at the ſame time the roofs of the cathedral taking fire, the whole fabric was ruined.

After this conflagration, there was a general contribution among the clergy, nobility, great officers of ſtate, the city of London, and queen Elizabeth herſelf, who gave 1000 merks of gold towards its ſpeedy repair, with a warrant for 1000 loads of timber to be cut

London. cut in any of her woods: and the zeal ſhewn on this occaſion, by perſons of all ranks, had ſo good an effect, that in five years time, the timber roofs (the two largeſt whereof were framed in Yorkſhire and brought from thence by ſea) were entirely finiſhed and covered with lead. But ſome difference in opinion ariſing about the model of the ſteeple, that part of the work was left unattempted, and never afterwards rebuilt: for, upon raiſing the roofs, the walls, by the corroding quality of the coal-ſmoke, were found to be ſo much decayed, that a general repair of the whole building was judged abſolutely neceſſary; and though this was delayed from time to time, yet by the indefatigable application of Henry Farley, a private gentleman, king James came to this reſolution, to undertake the arduous taſk of repairing the cathedral. For this purpoſe it was agreed to iſſue a proclamation under the great ſeal, empowering ſeveral principal perſonages, or any ſix of them, to inquire into the true ſtate of the decays, with the cauſe thereof, and to conſider of the neceſſary repairs, and the means of raiſing money for carrying them into execution. But it being afterwards found, that the ruin of the biſhop, and of the principal dignitaries of the cathedral, was chiefly aimed at by the commiſſioners, the whole matter came at laſt to nothing. In the time of Charles I. however, between the years 1631 and 1643, no leſs than 101,330l. 4s. 8d. was laid out in repairing this cathedral. In 1643, the money, goods, and materials, bought or given for the repair of this cathedral, were ſeized by order of the parliament, and the body of the church was afterwards converted into horſe-quarters for ſoldiers; a part of the building towards the eaſt being partitioned off by a brick-wall, in the year 1649, for a preaching-place. In 1660, this was made the choir, and the other parts of the church were repaired, when the whole was deſtroyed by the great fire in 1666. So vehement was the heat at that time, that the ſtones of the walls were ſplintered, and came off in great flakes; ſo that, inſtead of being repaired, this magnificent cathedral now required to be rebuilt from the foundation. Immediate attention was paid to this by the king and parliament; a tax was laid upon coals for the purpoſe; and it was rebuilt in ſuch a manner, as to be excelled for its architecture by no ſtructure in the world.

The old church was 690 feet long, and 130 broad; the height of the roof of the weſt part from the floor being 102 feet, that of the eaſt only 88, and that of the body 150 feet. The height of the tower was 260 feet; from whence roſe a wooden ſpire, covered with lead, 274 feet in height. On the top of this was a ball capable of holding ten buſhels of corn; and upon that ball was a croſs 15 feet high, whoſe traverſe meaſured ſix feet. This fabric covered three acres and a half, one rood and a half, and ſix perches, of ground. Its ornaments exceeded thoſe of every church in the kindom. The chapels, chantries, monuments, inſcriptions, anniverſaries, and all other ſtructures in and about the old church, are largely treated of in Dugdale's hiſtory of this cathedral.

It being reſolved to erect a new cathedral, which ſhould equal, if not excell the magnificence of the old fabric, letters patent were iſſued under the great ſeal, authoriſing commiſſioners to give directions, and to manage that work; and appointing Sir Chriſtopher Wren, ſurveyor-general of all his majeſty's works, to prepare a ſuitable deſign for the fabric; and king Charles II. was graciouſly pleaſed to give 1000l. per annum out of his privy purſe, for carrying it on. Sir Chriſtopher endeavoured to gratify the connoiſſeurs with a deſign antique and well-ſtudied, comformable to the beſt ſtyle of the Greek and Roman architecture. Of this deſign he cauſed a curious large model to be made of wood, accurately wrought, with all its proper ornaments, and preſented it to his mageſty: but, the biſhops not approving it, as not being enough of a cathedral faſhion, the ſurveyor was ordered to amend it; and at length produced the ſcheme of the preſent ſtructure, which was honoured with his majeſty's approbation. The ſurveyor, however, ſet a higher value on the firſt deſign than on any other he ever drew. It was only of one order, viz. the *Corinthian*, like St Peter's at Rome; and the author of his life aſſures us, that he would have put it in execution with more cheerfulneſs than that which was afterwards erected.—This original model is ſtill preſerved in the cathedral, and may be ſeen at a ſmall expence.

London.

The work was begun in 1675, and finiſhed in 1710, at the expence of 736,752l. 2s. 3d. according to Mr Entick; of 800,000l. according to others; and of more than a million, according to Smollet. It hath three grand porticoes, ſupported by ſtately columns, on the north, ſouth, and weſt ſides; the nave and choir are paved with marble, and the altar with porphyry finely poliſhed. The dome is painted by Sir James Thornhill, with the hiſtory of St Paul's converſion; and has on its vertex a neat balcony; and above that a beautiful ſtone lanthorn near 70 feet high, with a ball and fine gilt croſs at top. The church is built of Portland ſtone, in form of a croſs, in imitation of St Peter's at Rome.

The length of the cathedral from eaſt to weſt is 500 feet within the walls; the breadth, from north to ſouth within the doors of the porticoes, 223 feet; at the entrance, 100 feet; its circuit, 2292 feet; its height within, 110 feet; to the gallery of the dome, 208 feet; to the upper gallery 276; the diameter of the dome 108 feet; from thence to the top of the croſs, 64 feet; of the croſs from the ball, 30 feet; the diameter of the ball, ſix feet; the diameter of the columns of the porticoes four feet; their height 48 feet; to the top of the weſt pediment under the figure of St Paul, 120 feet; of the towers at the weſt front 280 feet; and the extent of the ground-plot whereon it ſtands, two acres, 16 perches, 23 yards, one foot. This vaſt fabric is ſurrounded at a proper diſtance with ſtrong iron paliſadoes, in number about 2500; and in the area of the grand weſt front, on a pedeſtal of excellent workmanſhip, ſtands a ſtatue of queen Anne, with proper decorations. The figures on the baſe repreſent Britannia with her ſpear, Gallia with a crown in her lap, Hibernia with her harp, and America with her bow; all the workmanſhip of the ſame ingenious artiſt. The following are the dimenſions of the old cathedral compared with the new and with the church of St Peter's at Rome.

London.

	Old St Paul's. Feet.	New St Paul's. Feet.	St Peter's. Feet.
Length within	690	500	669
Breadth at the entrance		100	226
Front without		180	395
Broad at the croſs	130	223	442
Cupola clear		108	139
Height from the level of the ground - -	520	440	578
Height of the churches	150	110	146
Height of cupola and lanthorn - -		330	432

The cathedral of St Paul's is governed by a biſhop, a dean, a precentor, chancellor, treaſurer, five archdeacons, 30 prebendaries, 12 petty canons or minor canons, ſix vicars coral, and ſeveral other inferior officers. All the prebends or canonries are in the collation of the biſhop of the dioceſe; and out of theſe 30 canons there are three reſidentaries, beſides the dean; ſo called from their continual reſidence in the church, to tranſact the buſineſs of the church in the chapter, and take care of her daily concerns.

4. *Weſtminſter abbey* was founded in 610, but ſoon after ruined by the Danes. It was rebuilt in 1053 by the recommendation of a religious hermit, who pretended to bring a commiſſion for that purpoſe from God himſelf. It was endowed with great privileges by king Edward the Confeſſor; who had them confirmed by a bull from pope Nicholas. The king alſo thought proper to inſert that bull of confirmation in the charter granted by himſelf; in which bull and charter there is a remarkable clauſe, ſetting forth, "That the place where the ſaid church and monaſtery were built, was anciently the ſeat of kings: therefore, ſays the pope, by the authority of God and his holy apoſtles and this Roman ſee, and our own, we grant, permit, and moſt ſolidly confirm, that hereafter for ever, it be the place of the king's conſtitution or coronation, and conſecration; the repoſitory of the royal crown and enſigns of majeſty; and a perpetual habitation of monks, who ſhall be ſubject to no other perſon at all, but only to the king himſelf."

Weſtminſter abbey is at preſent a collegiate church; and the dean and 12 prebendaries were incorporated by the name of the *dean and chapter of the collegiate church of St Peter, Weſtminſter*, by queen Elizabeth, who alſo placed therein a ſchool. The church is a magnificent pile of Gothic building, and has been adorned on the outſide with the ſtatues and figures of all the princes that have contributed towards the finiſhing of it. But this abbey ſuffered ſo much at the diſſolution of the monaſtery, and during the civil commotions in the time of Charles I. that it gradually decayed almoſt to the preſent time, when the parliament ordered a thorough reparation at the national expence. In conſequence of this interpoſition, the whole fabric has been new-coated, except that part called *king Henry VII.'s chapel*, and the weſt end has been made more magnificent by the addition of two towers rebuilt in as maſterly a manner as any other part of the abbey, but the beautiful carving and the ſtatues with which it was once adorned are now loſt.

The extent of this building is 360 feet within the walls, 72 feet broad at the nave, and 195 at the croſs. The Gothic arches and ſide ailes are ſupported by 48 pillars of grey marble, each compoſed of cluſters of very ſlender ones, and covered with ornaments. The grand entrance into the choir is by a pair of fine iron gates, on each ſide of which is a very magnificent tomb. The floor is paved with the handſomeſt blue and white marble. The ſtalls are covered with Gothic acute arches, ſupported by ſmall iron pillars, and painted purple. At the eaſt end is the altar, made of a beautiful piece of marble, the gift of queen Anne, incloſed by a curious baluſtrade, and upon a pavement of porphyry, jaſper, Lydian, and ſerpentine ſtones, laid in the Moſaic ſtile, at the expence of abbot Ware, A. D. 1272; and is ſaid to be one of the moſt beautiful of its kind in the world.

On each ſide of this altar a door opens into St Edward's chapel; round which are ten other chapels, ranging from the north to the ſouth croſs ailes, and are dedicated, 1. To St Andrew. 2. To St Michael. 3. To St John Evangeliſt. 4. Iſlip's chapel. 5. To St John Baptiſt. 6. To St Paul. 7. Henry V.'s chapel. 8. To St Nicholas. 9. To St Edmund. 10. To St Benedict.

In St Edward's chapel are ſtill to be ſeen the remains of his ſhrine; which, though now in obſcurity, and robbed of all its riches and luſtre, was once eſteemed the glory of England, ſo far as art and riches could make it. Here are the tombs of king Edward I. and ſeveral other kings and queens of England; and here alſo is ſhown the famous chair in which the kings of Scotland uſed to be crowned at Scoon. Henry V.'s chapel is divided from St Edward's by an iron ſcreen, on each ſide of which are ſtatues as big as life.—St Andrew's chapel, which is next the north croſs, and the others which ſurround the choir, are crowded with the monuments of noble perſonages, worth the attention of the curious.—At the corner of St Benedict's chapel, an iron gate opens into the ſouth croſs aile; which from the number of monuments erected therein to celebrated Engliſh poets, has obtained the name of the *poets corner:* though here we find a moſt magnificent monument erected at the ſouth end in memory of the late John duke of Argyle and Greenwich; another to William Camden the antiquarian; and others to the celebrated divine Dr Iſaac Barrow, to Thomas Parr who died at the age of 152 years, &c.

The ſouth aiſle is adorned with 19 curious monuments of the pious, the brave, and the learned. Amongſt whom, next the entrance at the weſt end, is a noble monument, erected by order of parliament, in honour of the brave captain Cornwall. And turning northward from the weſt door, we view 48 more monuments worthy of notice.

On the eaſt of the abbey, and which, though ſeparate from the other chapels in the choir, ſeems to be one and the ſame building with the abbey, ſtands the chapel of king Henry VII. which that king founded in the year 1502, and was at that time ſtyled the *wonder of the world*, and is now one of the moſt expenſive remains of the ancient Engliſh taſte and magnificence. There is no looking upon it without admiration: it conveys an idea of the fine taſte of Gothic architecture in that age: and the inſide is ſo noble, majeſtic, and of ſuch curious workmanſhip, that it would take a volume to deſcribe each part with juſtice and propriety.

don.

Its original intention was to be a dormitory for the royal blood: and ſo far the will of the founder has been obſerved, that none have been interred therein, but ſuch as have traced their deſcent from ancient kings. The tomb of king Henry VII. is moſt magnificent, incloſed with a ſcreen of caſt braſs, moſt admirably deſigned, and as well executed. Within the rails are the figures of that king and his royal conſort, in their robes of ſtate, on a tomb of black marble: and at the head of this tomb lie the remains of Edward VI. In different parts of this chapel are the monuments of Lewis Stuart duke of Richmond, George Villars duke of Buckingham, John Sheffield duke of Buckingham, Charles Montague marquis of Halifax, Edward V. and his brother Richard; the vault of James I. and his queen Anne, and daughter Mary, on which is a ſmall tomb adorned with the figure of a child; a lofty monument of queen Elizabeth, and another of Mary queen of Scots; the monuments for Margaret Douglas, daughter of Margaret queen of Scots, Margaret counteſs of Richmond mother to Henry VII. the vault of king Charles II. and William III. queen Mary his conſort, queen Anne and prince George. Over theſe royal perſonages are their effigies (except that of prince George) in wainſcot preſſes, made of wax to reſemble life, and dreſſed in their coronation robes. And at the corner of the great eaſt window, in another wainſcot preſs, ſtands the effigy of Mary ducheſs of Richmond, daughter to James duke of Richmond and Lenox, dreſſed in the very robes ſhe wore at the coronation of queen Anne. On leaving the aiſle, you are ſhewn another preſs, containing the effigy of general Monk, who, on account of his loyalty, and part he took in the reſtoration of king Charles II. had a vault appropriated to him and his family, amongſt the royal blood. It only remains to obſerve, that the royal family of the houſe of Hanover are interred in a vault under the centre of this chapel; without any monumental inſcription or ornaments.

5. *Weſtminſter-hall*, built by William Rufus, as an addition to the palace of Weſtminſter, was rebuilt, A.D. 1397, by king Richard II. with additional apartments on the eaſt and weſt ſides, and called the *new palace*, to diſtinguiſh it from the old palace, where the houſe of lords and commons now aſſemble. The front of this hall is narrow, built with ſtone in the Gothic taſte, with a tower on each ſide the entrance, adorned with much carved work. The part called the *hall*, is ſuppoſed to be the largeſt room in Europe not ſupported by pillars, being 270 feet long, and 74 broad. It is a regular Gothic ſtructure. In this hall we find the high courts of equity and juſtice; the high court of chancery at the north-weſt corner, and the court of king's bench at the ſouth-weſt corner: about the middle on the north-ſide is the court of common-pleas; and at the north-eaſt corner is his majeſty's court of exchequer.

In the ſouth-weſt angle of new palace-yard ſtands the exchequer, or the office of the receipt of his majeſty's exchequer: a plain old building of wood and plaſter, where the king's revenue is received and diſburſed: and to which belong the ſeveral offices called the *pipe-office* in Gray's inn, *foreign oppoſers office* and *king's remembrancer's office* in the Temple; *clerk of the pleas office*, in Lincoln's-inn, &c.

London.

Behind, to the weſtward of Weſtminſter-hall and the exchequer, we come to the ſeat of judicature, the houſe of commons and the houſe of lords.

The houſe of commons, compoſed of the repreſentatives of the people, and elected by them for counties, cities, and boroughs, ſit upon national affairs in St Stephen's chapel, at the ſouth-weſt angle of Weſtminſter-hall, built originally by king Stephen; and has been appropriated to its preſent uſe ever ſince the reign of king Edward VI. and now called the *houſe of commons*; to which there is a communication and an aſcent from Weſtminſter-hall, by a dark entry and a grand flight of ſtone ſtairs.

From hence paſſing through a kind of hall paved with ſtone, called the *court of requeſts*, uſed chiefly by thoſe who attend the parliament to walk in, we come, on the left hand, into the houſe of Lords, a ſpacious lofty room, well diſpoſed for the conveniency of the peers of the realm, who ſit there upon national affairs, and concur with the commons in making laws to be ſigned by the ſovereign upon the throne, and hung with tapeſtry repreſenting the defeat of the Spaniſh armada.

6. *Guild-hall* ſtands at the north end of King-ſtreet. In it the nine courts of the city are kept, viz. 1. The court of common-council. 2. The court of the lord-mayor, and his brethren the aldermen. 3. The court of huſtings. 4. The court of orphans. 5. The two courts of the ſheriffs. 6. The court of the wardmote. 7. The court of hallmote. 8. The court of requeſts, commonly called the *court of conſcience*. 9. The chamberlain's court for binding apprentices, and making them free.

The guildhall ſtood formerly in or near Aldermanbury, or Aldermens-court, from which ſituation of this hall the ſtreet is ſaid to take its denomination, and conſequently the hall muſt have been founded before the year 1189; for then we find this ſtreet to have had that name. And it is not unlikely that Edward the Confeſſor, who began to reign in 1042, had a conſiderable ſhare in the firſt foundation, his arms being in ſeveral places of this preſent hall: "Which (Robert Fabian ſaith) was begun to be new-built in the year 1411, the 12th of Henry IV. by Thomas Knowles, then mayor, and by his brethren the aldermen. The ſame was made, of a little cottage, a large and great houſe, as it now ſtands. Towards the charge whereof the companies gave great benevolences. Alſo offences of men were pardoned for ſums of money towards this work; and extraordinary fees were raiſed, fines, amerciaments, and other things employed, during ſeven years, and a continuation thereof three years more; all to be employed to this building."

This ſtately hall being much damaged by the unhappy conflagration of the city in the year 1666, was reſtored anno 1679, and extremely well beautified and repaired both in and out-ſide, which coſt about 2500l. The portico is adorned with a ſtately Gothic frontiſpiece, enriched with the king's arms under a cornice, pediment, and vaſe, and between two cartouches and the city-ſupporters, on acroters, and theſe between two other vaſes, under which are niches; and in the middle of this front are depenciled in gold theſe words:

Reparata & ornata Thoma Ralinſon, *milit. Majore*,
An. Dom. MDCCVI.

London.

Above the balcony are the figures of Moſes and Aaron; on the ſides beneath, are the four cardinal virtues, over the aperture; and below the balcony are depicted the arms of the 24 companies.

The roof of the inſide is flat, divided into pannels; the walls on the north and ſouth ſides are adorned with four Gothic demi-pillars, painted white, and veined with blue, and the capitals gilt with gold, upon which are the royal arms, and thoſe of Edward the Confeſſor. Going up nine or ten ſteps to the mayor's court, on each ſide, at ſome height, are two giants of an enormous ſize, the one holding a pole ax, the other an halbert; ſuppoſed by Mr Strype to be an ancient Briton and a Saxon.

Between theſe, and over the ſteps and aperture leading to the mayor's court, is a balcony, ſupported at each end by four iron pillars in the form of palm trees, which compoſe ſomething like two arbours: under theſe are the following large capital letters, S. P. Q. L. i. e. *Senatus Populuſque Londinenſis.*

Round the hall, on 14 demi pillars above the capitals, are the king's arms on the north-eaſtward, and the arms of London on the ſouth-eaſtward pillar; and weſtward from thence are the arms of the 12 companies; at the eaſt end are the king's arms between the portraitures, finely painted, of their late majeſties king George II. and queen Caroline: cloſe by the firſt is the picture of queen Anne, at the foot of an anabathrum, under a rich canopy; by the latter, his late majeſty king George I. and at the ſame end of the hall, but on the north and ſouth ſides, the pictures of king William III. and queen Mary, fronting each other. The intercolumns are painted in imitation of porphyry, and embelliſhed with the pictures, in full proportion, of 18 judges, which were there put up by the city in gratitude for their ſignal ſervices done in determining differences between landlord and tenant (without the expence of law-ſuits), in rebuilding the city, purſuant to an act of parliament, after the fire in 1666.

This hall is in length 153 feet, breadth 48, and altitude within 55. It is uſed by the city for the ſeſſion of the ſeveral courts of judicature before named; for feaſting our kings, queens, and other potentates, foreign miniſters, &c.; and laſtly, for chooſing the lord-mayors, ſheriffs, members of parliament, &c. it being capacious enough to contain 7000 perſons.

7. The *college of phyſicians* ſtands on the weſt ſide of Warwick-lane in Farringdon-ward without. It is a moſt noble edifice of brick and ſtone. The entrance is grand, under an octogonal theatre, finiſhing in a dome, with a cone at the top making a lanthorn to it. The inſide is elegant, finely enlightened, and very capacious; deſigned by Sir Chriſtopher Wren. The central building, which contains the library and other rooms of ſtate and convenience, was the deſign of Inigo Jones. The aſcent to the door is by a flight of ſteps, and in the under part is a caſement ſtory. On one ſide, over the door-caſe, is the ſtatue of king Charles II. in a niche; on the other ſide, the ſtatue of Sir John Cutler. The whole front is decorated with pilaſters of the Ionic and Corinthian orders. The buildings at the two ſides of the court are uniform, with window-caſes handſomely ornamented. Within is a great hall for the quarterly meetings of the doctors, adorned with pictures and ſculpture; a theatre for anatomical diſſection; a preparing room, where there are 13 tables, containing all the muſcles, &c. of the human body; a library well furniſhed with books; a committee-room; a hall in which the phyſicians ſit to give advice gratis to the poor; beſides the different apartments for the ſervants, officers, &c.

The phyſicians were incorporated in the 10th of Henry VIII. An account of their conſtitution and and privileges is given under the article COLLEGE.

8. The *Britiſh Muſeum*, a magnificent building ſituated in Ruſſel-Street, and containing an amazing number of curioſities, is deſcribed under the article MUSEUM.

9. *Ranelagh Gardens* are one of thoſe public places of pleaſure about this metropolis, which are not to be equalled in any part of Europe. The gardens themſelves are very beautiful; but the amphitheatre is much more to be admired. It is a circular building, whoſe external diameter is 185 feet. Round the whole is an arcade; over that, a gallery and balluſtrade, (to admit the company into the upper-boxes,) except where the entrances break the continuity; and over this are the windows and roof. The internal diameter is 150 feet; and the architecture of the inſide correſponds with the outſide, except that over every column, between the windows, termini ſupport the roof. In the middle of the area is a chimney with four faces, which makes it warm and comfortable in cold weather. The orcheſtra fills up the place which was originally one of the entrances. The orcheſtra then ſtood on the centre, where the chimney is at preſent. The entertainment conſiſts of a fine band of muſic, with an organ, and ſome of the beſt voices: and the regale is tea and coffee, included in the money paid for entrance.

10. *Vauxhall Gardens*, which take their name from the village of Vauxhall, about two miles from London bridge, in the pariſh of Lambeth and county of Surry, are alſo celebrated all over Europe for the entertainment they afford. A noble gravel-walk, of about 900 feet in length, planted on each ſide with very lofty trees, which form a fine viſta, leads from the great gate, and is terminated by a landſcape of the country, a beautiful lawn of meadow-ground, and a grand Gothic obeliſk. At the corners of the obeliſk are painted a number of ſlaves chained, and over them this inſcription:

SPECTATOR
FASTIDIOSUS
SIBI MOLESTUS.

To the right of this walk, and a few ſteps within the garden, is a ſquare, which, from the number of trees planted in it, is called the *grove;* in the middle of it is a magnificent orcheſtra of Gothic conſtruction, ornamented with carvings and niches, the dome of which is ſurmounted with a plume of feathers, the creſt of the prince of Wales. In fine weather, the muſical entertainments are performed here. At the upper extremity of this orcheſtra a very fine organ is erected; and at the foot of it are the ſeats and deſks for the muſicians, placed in a ſemicircular form, leaving a vacancy at the front for the vocal performers. The concert is opened with inſtrumental muſic at ſix o'clock; which having continued about half an hour, the company are entertained with a ſong; and in this manner ſeveral other ſongs are performed, with ſonatas and concertos between each, till the cloſe of the entertainment, which is generally about 10 o'clock. A curious piece of machinery is exhibited about 9 o'clock, in a hollow on the left hand, about half-way up the walk already deſcribed, repreſenting a beautiful landſcape in perſpective, with a miller's houſe, a water-mill, and a caſcade. The grove is illuminated in the evening with about 1500 glaſs lamps; in the front of the orcheſtra they are contrived to form three triumphal arches, and are all lighted, as it were, in a moment. In cold or rainy weather, the muſical performance is in a rotunda 70 feet in diameter, on the left ſide of the entrance into the gardens, nearly oppoſite to the orcheſtra. Along the front, next the grove, is a piazza formed by a range of pillars, under which is the entrance from the grove. The front of the ceiling is ſupported by four columns of the Ionic order, embelliſhed with foliage from the baſe a conſiderable way upwards; and the remaining part of the ſhaft, to the capital, is finely wreathed with a Gothic balluſtrade, where boys are repreſented aſcending it. In the centre hangs a magnificent chandelier, 11 feet in diameter, containing 72 lamps in three rows. The top is a dome, ſlated on the outſide, and painted within like a ſhell. The roof is ſo contrived, that ſounds never vibrate under it. A part of the rotunda is laid open for receiving a ſaloon; and its entrance here is formed and decorated with columns like thoſe in the front of the orcheſtra. In the roof, which is arched and elliptic, are two little cupolas in a peculiar taſte, and adorned with painting; and in the ſummit of each is a ſky-light, divided into 10 compartments, with frames in the Gothic ſtyle. Above each cupola is an arch divided into compartments; from the centre of each of which, depends a large chandelier, in the form of a baſket of flowers. Adjoining to the walls are 10 three-quarter columns. Between theſe columns are four paintings by Hayman, on ſubjects of Britiſh glory.

The entrance into this ſaloon from the gardens is through a Gothic portal. The pavilions or alcoves are ornamented with paintings from the deſigns of Mr Hayman and Mr Hogarth, on ſubjects adapted to the place; and each pavilion has a table in it large enough for ſix or eight perſons. The pavilions continue in a ſweep, which leads to a beautiful piazza, and a colonnade 500 feet in length, in the form of a ſemicircle, of Gothic architecture, embelliſhed with rays. This ſemicircle leads to a ſweep of pavilions that terminate in the great walk. Near the centre of the gardens is a croſs gravel-walk formed by ſtately trees on each ſide. On the right hand, it is terminated by the trees which ſhade the lover's walk; and at the extremity on the left, is a beautiful landſcape painting of ruins and running water. At each end of another walk is a beautiful painting: one is a building, with a ſcaffold and a ladder before it, which has often deceived the eye; the other is a view in a Chineſe garden. The principal part of all thoſe walks forms the boundaries of wilderneſſes compoſed of trees which ſhoot to a great height, and are all incloſed with an eſpalier in the Chineſe taſte.

11. *The Monument* is a great fluted pillar, of the Doric order, erected in memory of the conflagration in 1666. It is ſituated on the eaſt ſide of Fiſh-ſtreet hill, facing Crooked-lane. It was begun by Sir Chriſtopher Wren in 1671, and finiſhed by him in 1677. Its height from the pavement is 202 feet; the diameter of the ſhaft, or body of the column, is 15 feet; the ground-plinth, or loweſt part of the pedeſtal, is 28 feet ſquare; and the pedeſtal is 40 feet high. Over the capital is an iron balcony encompaſſing a cone 32 feet high, which ſupports a blazing urn of gilt braſs. Within is a large ſtair-caſe of black marble, containing 345 ſteps, each 10 inches and a half broad, and ſix inches thick. The weſt ſide is adorned with a curious emblem in alt-relief, denoting the deſtruction and reſtoration of the city. The firſt female figure repreſents London ſitting in ruins, in a languiſhing poſture, with her head dejected, her hair diſhevelled, and her hand careleſly lying on her ſword. Behind is *Time*, gradually raiſing her up: at her ſide is a woman touching her with one hand, whilſt a winged ſceptre in the other directs her to regard the goddeſſes in the clouds; one with a cornucopia, denoting *Plenty*; the other with a palm branch, the emblem of *Peace*. At her feet is a bee-hive, ſhewing, that by induſtry and application the greateſt miſfortunes are to be overcome. Behind the figure of *Time* are citizens exulting at his endeavours to reſtore her; and beneath, in the midſt of the ruins, is a dragon, who, as the ſupporter of the city-arms, with his paw endeavours to preſerve the ſame. Oppoſite to the city, on an elevated pavement, ſtands the king, in a Roman habit, with a laurel on his head, and a truncheon in his hand; and approaching her, commands three of his attendants to deſcend to her relief. The firſt repreſents the *Sciences*, with a winged head, and circle of naked boys dancing thereon; and holding *Nature* in her hand, with her numerous breaſts, ready to give aſſiſtance to all. The ſecond is *Architecture*, with a plan in one hand, and a ſquare and pair of compaſſes in the other; and the third is *Liberty*, waving a hat in the air, ſhewing her joy at the pleaſing proſpect of the city's ſpeedy recovery. Behind the king ſtands his brother the duke of York, with a garland in one hand to crown the riſing city, and a ſword in the other for her defence. The two figures behind are *Juſtice* and *Fortitude*; the former with a coronet, and the latter with a reined lion; and under the royal pavement lies *Envy*, gnawing a heart, and inceſſantly emitting peſtiferous fumes from her mouth. On the plinth the reconſtruction of the city is repreſented by builders and labourers at work upon houſes. On the north, ſouth, and eaſt ſides, are inſcriptions relating the deſtruction occaſioned by the conflagration, the regulations about rebuilding the city, and erecting the monument; and round it is the following one:—"This pillar was ſet up in perpetual remembrance of the moſt dreadful burning of this Proteſtant city, begun and carried on by the treachery and malice of the Popiſh faction, in the beginning of September, in the year of our Lord 1666, in order to their carrying on their horrid plot for extirpating the Proteſtant religion and *old Engliſh* liberty, and introducing Popery and ſlavery."

30 Government of the city.

The city and liberties of London are under a civil, eccleſiaſtical, and military government.

The *civil* divides divides it into wards and precincts, under a lord-mayor, aldermen, and common-council; the

London. the *eccleſiaſtical* into pariſhes, under a biſhop, archdeacon, and miniſters or paſtors; and the *military* is the militia, under the power of a lord-lieutenant, which is lodged in the mayor and aldermen, and ſome of the principal citizens, the city being erected by charter a county-corporate, and a lieutenancy by itſelf.

The civil government of this city, in its preſent form, may be ſaid, in every reſpect, to reſemble the legiſlative power of the nation; the mayor, aldermen, and common-council men, making laws and governing the city of London, as the king, lords, and commons, preſide over, govern, and make laws for the whole nation.

31 Lord-mayor. The mayor, or lord-mayor, is the ſupreme magiſtrate of London, choſen annually by the citizens, purſuant to a charter of king John. The preſent manner of electing a lord-mayor is by the liverymen of the ſeveral companies, aſſembled in Guildhall annually on Michaelmas-day, according to an act of common-council, A. D. 1476, where, and when, the livery-men chooſe, or rather nominate, two aldermen below the chair, who have ſerved the office of ſheriff, to be returned to the court of aldermen, who may chooſe either of the two; but generally declare the ſenior of the two, ſo returned, to be lord-mayor elect. The election being over, the lord-mayor elect, accompanied by the recorder and divers aldermen, is ſoon after preſented to the lord-chancellor (as his majeſty's repreſentative in the city of London) for his approbation; and on the 9th of November following is ſworn into the office of mayor, at Guildhall; and, on the day after, before the barons of the exchequer at Weſtminſter; the proceſſion on which occaſion is exceedingly grand and magnificent.

The lord-mayor ſits every morning at the manſion-houſe, or place where he keeps his mayoralty, to determine any difference that may happen among the citizens, and to do other buſineſs incident to the office of a chief magiſtrate. Once in ſix weeks, or eight times in the year, he ſits as chief judge of Oyer and Terminer, or gaol-delivery of Newgate for London and the county of Middleſex. His juriſdiction extends all over the city and ſuburbs, except ſome places that are exempt. It extends alſo from Colneyditch, above Staines bridge in the weſt, to Yeudale, or Yenflete, and the mouth of the river Medway, and up that river to Upnor caſtle, in the eaſt: by which he exerciſes the power of puniſhing or correcting all perſons that ſhall annoy the ſtreams, banks, or fiſh. For which purpoſe his lordſhip holds ſeveral *courts of conſervacy* in the countries adjacent to the ſaid river, for its conſervation, and for the puniſhment of offenders.

32 Aldermen. The title of dignity, *alderman*, is of Saxon original, and of the greateſt honour, anſwering to that of earl; though now it is nowhere to be found but in chartered ſocieties. And from hence we may account for the reaſon why the aldermen and commonalty of London were called *barons* after the conqueſt. Theſe magiſtrates are properly the ſubordinate governors of their reſpective wards under the lord-mayor's juriſdiction: and they originally held their aldermanries either by inheritance or purchaſe; at which time the aldermanries or wards changed their names as often as their governors or aldermen. The oppreſſions, to which the citizens were ſubject from ſuch a government, put them upon means to aboliſh the perpetuity of that office; and they brought it to an annual election. But that manner of election being attended with many inconveniences, and becoming a continual bone of contention amongſt the citizens, the parliament, 17 Richard II. A.D. 1394, enacted, That the aldermen of London ſhould continue in their ſeveral offices during life or good behaviour. And ſo it ſtill continues: though the manner of electing has ſeveral times varied. At preſent it is regulated by an act of parliament, paſſed in the year 1724-5; and the perſon ſo elected is to be returned by the lord-mayor (or other returning officer in his ſtead, duly qualified to hold a court of wardmote) to the court of lord mayor and aldermen, by whom the perſon ſo returned muſt be admitted and ſworn into the office of aldermen before he can act. If the perſon choſen refuſeth to ſerve the office of alderman, he is finable 500 l.

Theſe high officers conſtitute a ſecond part of the city legiſlature when aſſembled in a corporate capacity, and exerciſe an executive power in their reſpective wards. The aldermen who have paſſed the chair, or ſerved the high office of lord mayor, are juſtices of the quorum; and all the other aldermen are not only juſtices of the peace, but by the ſtatute of 43 Eliz. intitled, *An act for the relief of the poor*, "every alderman of the city of London, within his ward, ſhall and may do and execute, in every reſpect, ſo much as is appointed and allowed by the ſaid act to be done or executed by one or *two* juſtices of peace of any county within this realm." They every one keep their *wardmote*, or *court*, for chooſing ward-officers and ſettling the affairs of the ward, to redreſs grievances, and to preſent all defaults found within their reſpective wards.

The next branch of the legiſlative power in this city is the *common-council*. The many inconveniences that attended popular aſſemblies, which were called *folkmote*, determined the commonalty of London to chooſe repreſentatives to act in their name and for their intereſt, with the lord-mayor and aldermen, in all affairs relating to the city. At firſt theſe repreſentatives were choſen out of the ſeveral companies: but that not being found ſatiſfactory, nor properly the repreſentatives of the whole body of the inhabitants, it was agreed to chooſe a certain number of diſcreet men out of each ward: which number has from time to time increaſed according to the dimenſions of each ward: and at preſent the 25 wards, into which London is divided, being ſubdivided into 236 precincts, each precinct ſends a repreſentative to the common-council, who are elected after the ſame manner as an alderman, only with this difference, that as the lord-mayor preſides in the wardmote, and is judge of the poll at the election of an alderman, ſo the alderman of each ward is judge of the poll at the election of a common-council man.

Thus the lord-mayor, aldermen, and common-council, when aſſembled, may be deemed the city parliament, reſembling the great council of the nation. For it conſiſts of two houſes; one for the lord-mayor and aldermen, or the upper-houſe; another for the commoners or repreſentatives of the people, commonly called the *common-council men*. And they have power in their incorporate capacity to make and repeal bye-laws; and the citizens are bound to obey or ſubmit to thoſe laws. When they meet in their incorporate capacity, they wear deep-blue ſilk gowns: and their aſſemblies are called the *court of common-council*, and their ordinances *acts of common-council*. No act can be performed in the name of the city of London without their concurrence. But they cannot aſſemble without a ſummons from the lord-mayor: who, nevertheleſs, is obliged to call a common-council, whenever it ſhall be demanded, upon extraordinary occaſions, by ſix reputable citizens and members of that court.

34 iffs, re- er, &c. This corporation is aſſiſted by two ſheriffs and a recorder. The ſheriffs are chartered officers, to perform certain ſuits and ſervices, in the king's name, within the city of London and county of Middleſex, choſen by the liverymen of the ſeveral companies on Midſummer-day. Their office, according to Camden, in general, is to collect the public revenues within their ſeveral juriſdictions; to gather into the exchequer all fines belonging to the crown; to ſerve the king's writs of proceſs; to attend the judges, and execute their orders; to impannel juries; to compel headſtrong and obſtinate men by the *poſſe comitatus* to ſubmit to the deciſions of the law; and to take care that all condemned criminals be duly puniſhed and executed. In particular, in London, they are to execute the orders of the common-council, when they have reſolved to addreſs his majeſty, or to petition parliament.

The ſheriffs, by virtue of their office, hold a court at Guildhall every Wedneſday and Friday, for actions entered at Wood-ſtreet Compter; and on Thurſdays, and Saturdays for thoſe entered at the Poultry Compter: of which the ſheriffs being judges, each has his aſſiſtant, or deputy, who are called the judges of thoſe courts; before whom are tried actions of debt, treſpaſs, covenant, &c. and where the teſtimony of any abſent witneſs in writing is allowed to be good evidence. To each of theſe courts belong four attornies, who, upon their being admitted by the court of aldermen, have an oath adminiſtered to them.

To each of theſe courts likewiſe belong a ſecondary, a clerk of the papers, a prothonotary, and four clerks-ſitters. The ſecondary's office is to allow and return all writs brought to remove clerks out of the ſaid courts; the clerk of the papers files and copies all declarations upon actions; the prothonotary draws and ingroſſes all declarations; the clerks-ſitters enter actions and attachments, and take bail and verdicts. To each of the compters, or priſons belonging to theſe courts, appertain 16 ſerjeants at mace, with a yeoman to each, beſides inferior officers, and the priſon-keeper.

In the ſheriffs court may be tried actions of debt, caſe, treſpaſs, account, covenant, and all perſonal actions, attachments, and ſequeſtrations. When an erroneous judgment is given in either of the ſheriffs courts of the city, the writ of error to reverſe this judgment muſt be brought in the court of huſtings before the lord-mayor; for that is the ſuperior court. The ſheriffs of London may make arreſts and ſerve executions on the river Thames.

We do not read of a recorder till the year 1304, who, by the nature of his office, ſeems to have been intended as an aſſiſtant to, or aſſeſſor with, the lord mayor, in the execution of his high office, in matters of juſtice and law. He is choſen by the lord-mayor and aldermen only; and takes place in all courts, and in the common-council, before any one that hath not been mayor. Of whom we have the following deſcription in one of the books of the chamber. "He ſhall be, and is wont to be, one of the moſt ſkilful and virtuous apprentices of the law of the whole kingdom; whoſe office is always to ſit on the right hand of the mayor, in recording pleas, and paſſing judgments; and by whom records and proceſſes, had before the lord-mayor and aldermen at Great St Martin's, ought to be recorded by word of mouth before the judges aſſigned there to correct errors. The mayor and aldermen have therefore uſed commonly to ſet forth all other buſineſſes, touching the city, before the king and his council, as alſo in certain of the king's courts, by Mr Recorder, as a chief man, endued with wiſdom, and eminent for eloquence."

Mr recorder is looked upon to be the mouth of the city, to deliver all addreſſes to the king, &c. from the corporation; and he is the firſt officer in order of precedence that is paid a ſalary, which originally was no more than 10 l. Sterling *per annum*, with ſome few perquiſites; but it has from time to time been augmented to 280 l. *per annum*, and become the road to preferment in the law. This office has ſometimes been executed by a deputy.

The next chartered officer of this corporation is the chamberlain; an office of great repute and truſt, and is in the choice of the livery annually. This officer, though choſen annually on Midſummer-day, is never diſplaced during his life, except ſome very great crime can be made out againſt him. He has the keeping of the moneys, lands, and goods, of the city-orphans, or takes good ſecurity for the payment thereof when the parties come to age. And to that end he is deemed in the law a ſole corporation, to him and his ſucceſſors, for orphans; and therefore a bond or a recognizance made to him and his ſucceſſors, is recoverable by his ſucceſſors. This officer hath a court peculiarly belonging to him. His office may be termed a public treaſury, collecting the cuſtoms, moneys, and yearly revenues, and all other payments belonging to the corporation of the city. It has been generally cuſtomary for the government to appoint the chamberlain receiver of the land-tax.

The other officers under the lord-mayor are, 1. The common ſerjeant. He is to attend the lord-mayor and court of aldermen on court-days, and to be in council with them on all occaſions, within or without the precincts or liberties of the city. He is to take care of orphans eſtates, either by taking account of them, or to ſign their indentures, before their paſſing the lord-mayor and court of aldermen. And likewiſe he is to let, ſet, and manage the orphan's eſtates, according to his judgment, to the beſt advantage. 35 Other officers.

2. The town-clerk; who keeps the original charter of the city, the books, rolls, and other records, wherein are regiſtered the acts and proceedings of the city; ſo that he may not be improperly termed the city-regiſter: he is to attend the lord-mayor and aldermen at their courts, and ſigns all public inſtruments.

3. The city-remembrancer; who is to attend the lord mayor on certain days, his buſineſs being to put his

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his lordſhip in mind of the ſelect days he is to go abroad with the aldermen, &c. He is to attend daily at the parliament-houſe, during the ſeſſions, and to report to the lord-mayor their tranſactions.

4. The ſword-bearer; who is to attend the lord-mayor at his going abroad, and to carry the ſword before him, being the emblem of juſtice. This is an ancient and honourable office, repreſenting the ſtate and princely office of the king's moſt excellent majeſty, in his repreſentative the lord-mayor; and, according to the rule of armory, "He muſt carry the ſword upright, the hilts being holden under his bulk, and the blade directly up the midſt of his breaſt, and ſo forth between the ſword-bearer's brows."

5. The common-hunt; whoſe buſineſs is to take care of the pack of hounds belonging to the lord-mayor and citizens, and to attend them in hunting in thoſe grounds to which they are authoriſed by charter.

6. The common-crier. It belongs to him and the ſerjeant at arms, to ſummon all executors and adminiſtrators of freemen to appear, and to bring in inventories of the perſonal eſtates of freemen, within two months after their deceaſe: and he is to have notice of the appraiſements. He is alſo to attend the lord-mayor on ſet days, and at the courts held weekly by the mayor and aldermen.

7. The water-bailiff; whoſe office is to look after the preſervation of the river Thames, againſt all encroachments; and to look after the fiſhermen for the preſervation of the young fry, to prevent the deſtroying them by unlawful nets. For that end there are juries for each county, that hath any part of it lying on the ſides or ſhores of the ſaid river; which juries, ſummoned by the water-bailiff at certain times, do make inquiry of all offences relating to the river and the fiſh, and make their preſentments accordingly. He is alſo bound to attend the lord-mayor on ſet days in the week.

N. B. Theſe ſeven purchaſe their places; except the town-clerk, who is choſen by the livery.

There are alſo three ſerjeant-carvers; three ſerjeants of the chamber; a ſerjeant of the channel; four yeomen of the water-ſide; an under water-bailiff; two yeomen of the chamber; two meal weighers; two yeomen of the wood wharfs; a foreign taker; city-marſhals. There are beſides theſe, ſeven gentlemens men; as, The ſword bearer's man, the common hunt's two men, the common-crier's man, and the carver's three men.

Nine of the foregoing officers have liveries of the lord-mayor, viz. the ſword-bearer and his man, the three carvers, and the four yeomen of the water-ſide. All the reſt have liveries from the chamber of London.

The following officers are likewiſe belonging to the city; farmer of the markets, auditor, clerk of the chamber, clerk to the commiſſioners of the ſewers, clerk of the court of conſcience, beadle of the ſame court, clerk of the city-works, printer to the city, juſtice of the Bridge-yard, clerk-comptroller of the Bridge-houſe, ſteward of the Borough, bailiff of the Borough.

There are alſo a coroner, called ſo from *corona*, i. e. a *crown*, becauſe he deals principally with the crown, or in matters appertaining to the imperial crown of England. As to the antiquity of this office, there were coroners in the time of king Alfred, as appears by the book intitled *The mirror*. The lord-mayor for the time being, is coroner, but hath his deputy for the management thereof. In ancient time, this office was of ſuch great eſteem, that none could execute it under the degree of a knight. As the ſheriff may inquire of all felonies, ſo the coroner is to inquire of all ſudden deaths; and to that end he impannels a jury, takes evidence upon oath, and gives the charge to the jury.

Beſides theſe officers, there are ſeveral courts in this city for the executing of juſtice, viz. the court of huſtings, lord-mayor's court, &c. In the city there are alſo two ſubordinate kinds of government. One executed by the alderman, deputy, and common council men, and their inferior officers, in each ward; under which form are comprehended all the inhabitants, free or not free of the city. Every ward is therefore like a little free ſtate, and at the ſame time ſubject to the lord-mayor as chief magiſtrate of the city. The houſekeepers of each ward elect their repreſentatives the common-council, who join in making bye-laws for the government of the city. The officers and ſervants of each ward manage the affairs belonging to it, without the aſſiſtance of the reſt; and each has a court called the *wardmote*, as has been already deſcribed, for the management of its own affairs. The other, by the maſter, wardens, and court of aſſiſtants, of the incorporate companies; whoſe power reaches no further than over the members of their reſpective guilds or fraternities; except that in them is inveſted the power to chooſe repreſentatives in parliament for the city, and all thoſe magiſtrates and officers elected by a common-hall: which companies are inveſted with diſtinct powers, according to the tenor of their reſpective charters.

36 With regard to the number of inhabitants in London, they have commonly been reckoned at a million, or at leaſt upwards of 700,000; but Mr Entick reduces this number to 500,000, and indeed conſiderably reduces the ſuppoſed number of inhabitants in ſeveral other great cities, altho' he eſtimates the number of houſes in London at 100,000.

"If we compare London, (ſays he), with other cities both ancient and modern, we ſhall find that our metropolis is the moſt numerous. Nineveh, though its walls are ſaid to encompaſs 480 furlongs, or 60 miles, does not appear to have contained above 403,000 citizens, which is 97,000 leſs than London. Babylon was alſo 60 Engliſh miles in compaſs, and not allowed to contain more than 487,921 inhabitants, which is 12,079 leſs than London. As to Jeruſalem, the inhabitants did not amount to more than a ſixth part of the preſent inhabitants of this metropolis. Rome has been the ſubject of many panegyrics; but, in its utmoſt extent, it never entertained more than 367,448, which is 132,552 leſs than in London. Conſtantinople is at this time allowed to have no more than 420,000 inhabitants; Grand Cairo no more than 300,000; Pekin in China no more than 412,610: and to conclude this parallel, it may be concluded that Paris, whoſe encomium has been ſo extravagantly publiſhed, does not contain more than 437,438 inhabitants.

"Another method to arrive at ſome certainty about the

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the number of inhabitants in ſuch a vaſt place, is, that it has been calculated upon a preſumption of the number of mouths, which conſume yearly 369,635 quarters, and upwards, of wheat-flour; 98,244 cattle; 711,123 ſheep and lambs: 194,760 calves; 186,932 hogs; 52,000 ſucking pigs; 115,536 buſhels of oyſters; 14,740,000 mackarel; 16,366,728 pounds of butter; 21,066,000 pounds of cheeſe; beſides the infinite quantities of fowls of all ſorts, of fiſh of all ſorts, and of garden-ſtuff and milk: of which laſt article, reckoning only a gallon to each houſe in a week, there is expended annually 5,200,000 gallons. And in the year from Midſummer 1759 to 1760 there were brewed in the city and ſuburbs, 975,217 barrels and three firkins of beer.

LONDONDERRY, or COLERAIN, a county of Ireland, in the province of Ulſter. It is bounded on the ſouth and ſouth-weſt by the county of Tyrone; by Antrim on the eaſt, from which it is parted by the river Bann; by Donegal, on the weſt; and that county and the Deucaledonian ocean, on the north. Its greateſt length is about 36 miles, its breadth 30, containing about 251,510 acres. The bogs and heaths of this country are manured with ſea-ſhells, as thoſe of Donegal. Like that too, it is pretty champaign, and not unfruitful. It is particularly noted for a very clear river called the *Bann*, abounding with ſalmon, a fiſh ſaid to delight in limpid ſtreams. This river, to diſtinguiſh it from a leſſer of the ſame name, is called the *Greater* or *Lower Bann*. In order to cultivate, ſettle, and civilize this county, king James I. granted it, by letters-patent, to a ſociety, by the name of the *Governor and Aſſiſtants at London of the new plantation of Ulſter in the realm of Ireland*. It contains ſix baronies; and, beſides the two knights of the ſhire, ſends to parliament two members for the city of Londonderry, and two each for Coleraine, and Newton-Limavady or Lamnevady.

LONDONDERRY, or *Derry*, the capital of the county, and the ſee of a biſhop, ſtands at the bottom of Lough-Foyle. This city has a very good port, to which ſhips of the greateſt burden have acceſs, and a conſiderable trade. It will be ever famous for the gallantry and perſeverance with which it defended itſelf in three memorable ſieges, in defiance of the greateſt hardſhips and diſcouragements, namely, 1ſt, In 1641, when the rebels could not reduce it either by fraud or force. 2dly, In 1649, when it was beſieged by the lord Ardes, and reduced almoſt to extremity by famine, till at laſt relieved by troops ſent from England. 3dly, When it held out againſt the French and Iriſh from the 7th of December 1688, to the laſt day of July 1689, though it was neither well fortified, nor provided with a garriſon or ſtores of proviſion and ammunition, and hardly any attempt made to relieve it during ſo long a time. Though the city is 20 miles up the river, yet very large ſhips can came up to the quay, where there is four or five fathoms of water. It is now well fortified with a ſtrong wall, beſides outworks; and along the banks of the river are ſeveral caſtles, and a fort. This city is of no great antiquity, having been built and planted in the reign of James I. by a colony ſent by the ſociety abovementioned. The trade of the town is very conſiderable, having not only a large ſhare in the herring-fiſhery, but ſending ſhips alſo to the Weſt-Indies, New-England, and Newfoundland, for which they are ſo advantageouſly ſituated, that a veſſel bound from thence to America often arrives there before a London ſhip can get clear of the ſoundings, or arrive in the latitude of Londonderry. Tho' there are a great many ſhallows in Lough-Foyle, which ſerves it inſtead of a road; yet they are eaſily avoided, as there are deep channels between them. Thoſe points called *Emiſtone*, *Ruſterhull*, or *Caldy-head*, which lie a little to the weſt of the mouth of the harbour, are counted the moſt northerly of Ireland, lying in lat. 55. 20. The inhabitants of this city are almoſt all Proteſtants. It gives title of *earl* and *baron* to a branch of the family of Pitt. A late traveller ſays, "Derry is, perhaps, the cleaneſt, beſt built, and moſt beautifully ſituated town in Ireland; and, excepting Corke, as convenient as any for commerce, foreign and domeſtic; and, but for the reſtrictions on the trade of Ireland, would in a few years become a flouriſhing and wealthy city." The lake almoſt ſurrounds it; and the whole ground-plot both of it and its liberties belongs to the 12 great companies of London. Great quantities of ſalmon, ſalted and barrelled, are exported from hence to America.

Long, Longævity.

LONG, an epithet given to whatever exceeds the uſual ſtandard of length.

LONG-*Boat*, the largeſt and ſtrongeſt boat belonging to any ſhip. It is principally employed to carry great burdens, as anchors, cables, ballaſt, &c. See BOAT.

LONGEVITY, length of life.

From the different longevities of men in the beginning of the world, after the flood, and in theſe ages, Mr Derham draws an argument, for the interpoſition of a divine Providence.

Immediately after the creation, when the world was to be peopled by one man and one woman, the ordinary age was 900 and upwards.—Immediately after the flood, when there were three perſons to ſtock the world, their age was cut ſhorter, and none of thoſe patriarchs, but Shem, arrived at 500.—In the ſecond century we find none that reached 240: in the third, none but Terah that came to 200 years; the world, at leaſt a part of it, by that time being ſo well peopled, that they had built cities, and were cantoned out into diſtant nations.—By degrees, as the number of people increaſed, their *longevity* dwindled, till it came down at length to 70 or 80 years: and there it ſtood, and has continued to ſtand ever ſince the time of Moſes.—This is found a good medium, and by means hereof the world is neither overſtocked, nor kept too thin; but life and death keep a pretty equal pace.

That the common duration of man's life has been the ſame in all ages ſince the world was peopled, is plain both from ſacred and profane hiſtory. To paſs by others, Plato lived to 81, and was accounted an old man: and the inſtances of *longevity* produced by Pliny, L. vii. c. 48. as very extraordinary, may moſt of them be matched in modern hiſtories. Mr Carew (A) tells us, that there lived in his time, in Cornwall, one Polzew, who reached the age of 130; a kinſman of his lived to 112; one Mr

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(A) Survey of Cornwall, fol. 63.

Mr Beauchamp, to 106; and that there died in his own pariſh, in the ſhort ſpace of 14 weeks, four perſons, whoſe years made together 340. The famous Thomas Par, who was born at Alderbury in Shropſhire, lived to 152 years (B). In Oxfordſhire, Dr Plott tells us of Richard Clifford, living, at Bolſcot, to 114; Brian Stevens, at Woodſtock, and two or three perſons then living at Oxford, above 100 (C). Dr Willet informs us of a man who lived at Everſden, in Bedfordſhire, to the age of 124 (D). Dr Hakewill obſerves of William, marquis of Wincheſter, that he reached 107 (E). Dr Plott tells us, that Mr Biddulph, of Biddulph in Staffordſhire, had 12 tenants living, whoſe ages, put together, made 1000 (F). Henry Jenkins, of Yorkſhire, died at 168 (G). In Scotland alſo, ſome perſons have attained to a very great ages. Buchanan mentions one, who at 140, was able to go out to fiſh, in a tempeſtuous ſea, in his own little boat (H); and Mr Martin affirms, that one Tairville lived, in Shetland, to 180 (I). The counteſs of Deſmond, in Ireland, who was known to Sir Walter Ralegh and Lord Bacon, lived to 140 (K).

No certain cauſes have hitherto been diſcovered to which the longevity of mankind can always be attributed. Some have attributed it to temperance and a country life; but inſtances of longevity are as rare among people who live in this way as among others who live more freely, provided they go not to great exceſſes. It would ſeem therefore, that at the firſt formation of the human body, the original ſtamina in ſome are of ſuch a nature as to be capable of continuing life for a much longer time than in others, even where circumſtances are otherwiſe very much alike. Hence we may eaſily ſee how it becomes exceedingly difficult, or rather impoſſible, to lay down a rule by following of which he may expect to attain to long life;—a deficiency in the original ſtamina cannot by ſupplied by art, though temperance and ſobriety are undoubtedly the beſt methods of avoiding any waſte of that ſtrength which nature has originally given, or of ſhortening our life by bringing on diſeaſes. See ABSTINENCE.

LONGFORD, a county of Ireland, 25 miles in length, and 16 in breadth, bounded on the eaſt and ſouth by Weſt-Meath, on the north and north-weſt by Letrim and Cavan, and on the weſt by the river Shannon. It contains upwards of 5000 houſes, 24 pariſhes, 6 baronies, 4 boroughs, and ſends 10 members to parliament. It is a ſmall, but rich and pleaſant country, and the principal town is of the ſame name.

LONG-ISLAND, is an iſland of North America, in the colony of New-York, which is ſeparated from the continent by a narrow channel; and is about 100 miles in length, and 12 in breadth, containing Queen's-county, Suffolk-county, and Richmond-county. There is a fine plain in the middle of the iſland, called *Saliſbury-plain*, on which they have horſe-races; and gentlemen come to it from the neighbouring parts, as thoſe in England do to New-Market. The produce of this iſland is chiefly proviſions for the mouth, ſuch as wheat, Indian-corn, ſalt, beef, pork, fiſh, and ſtrong-beer, which they ſend to the Caribbee Iſlands; and, in lieu of them, receive ſugar, rum, cotton, and indigo.

LONGIMETRY, the art of meaſuring lengths, both acceſſible and inacceſſible. See GEOMETRY and TRIGONOMETRY.

LONGING, is a preternatural appetite in pregnant women, and in ſome ſick perſons when about to recover. It is called *pica*, from the bird of that name, which is ſaid to be ſubject to the ſame diſorder. The diſorder conſiſts of both a deſire of unuſual things to eat and drink, and in being ſoon tired of one and wanting another. It is called *malacia*, from μαλακος, "weakneſs." In pregnant women it is ſomewhat relieved by bleeding, and in about the fourth month of their pregnancy it leaves them. Chlorotic girls, and men who labour under ſuppreſſed hæmorrhoids, are very ſubject to this complaint, and are relieved by promoting the reſpective evacuations. In general, whether this diſorder is obſerved in pregnant women, in perſons recovering from an acute fever, or in thoſe who labour under obſtructions of the natural evacuations, this craving of the appetite ſhould be indulged.

LONGINICO, a town of Turky in Europe, in the Morea, anciently called *Olympia*, famous for being the place where the Olympic games were celebrated, and for the temple of Jupiter Olympus, about a mile diſtant. It is now but a ſmall place, ſeated on the river Alpheus, 10 miles from its mouth, and 50 ſouth of Lepanto. E. Long. 22. 0. N. Lat. 37. 30.

LONGINUS (Dionyſius), a celebrated Greek critic of the third century, was probably an Athenian. His father's name is unknown, but by his mother he was allied to the celebrated Plutarch. His youth was ſpent in travelling with his parents, which gave him an opportunity to increaſe his knowledge, and improve his mind. After his travels he fixed his reſidence at Athens, and with the greateſt aſſiduity applied to ſtudy. Here he publiſhed his Treatiſe on the Sublime; which raiſed his reputation to ſuch a height, and gave the Athenians ſuch an opinion of his judgment and taſte, that they made him ſovereign judge of all authors, and every thing was received and rejected by the public according to his deciſions. He ſeems to have ſtaid at Athens a long time; here he taught the academic philoſophy, and among others had the famous Porphyry for his pupil. But it was at length his fortune to be drawn from Athens, and to mix in more active ſcenes; to train up young princes to virtue and glory; to guide the buſy paſſions of the great to noble objects; to ſtruggle for, and at laſt to die, in the cauſe of liberty. Zenobia, queen of the Eaſt, prevailed on him to undertake the education of her ſons; and he ſoon gained an uncommon ſhare in her eſteem: ſhe ſpent the vacant hours of her life in his converſation, and modelled her ſenti-

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(B) Philoſophical Tranſactions, N° xliv. p. 886—(C) Natural Hiſtory of Oxfordſhire, chap. ii. p. 19.—(D) Dr Andrew Willet's Hexapla in Gen. chap. v. §. 5. p. 68—(E) Hakewill's Apology, lib. iii. p. 183.—(F) Natural Hiſtory of Staffordſhire, chap. viii. p. 329.—(G) Philoſophical Tranſactions, N° ccxxii. p. 266—(H) Rerum Scot. Hiſt. lib. i. Roberti Sibbaldi Prodr. Hiſt. Nat. Scot. lib. i. cap. 20. p. 44—(I) Deſcription of the Weſtern Iſlands of Scotland, p. 373.—(K) Sir Walter Ralegh's Hiſtory of the World, b. i. chap. 5. §. 5. Lord Bacon's Works, edit. 1753. vol. i. p. 241. See alſo Dr Baynard's Appendix to Sir J. Floyer's Treatiſe on Cold Baths.

ſentiments and conduct by his inſtructions. That princeſs was at war with Aurelian; and being defeated by him near Antioch, was compelled to ſhut herſelf up in Palmyra, her capital city. The emperor wrote her a letter, in which he ordered her to ſurrender; to which ſhe returned an anſwer, drawn up by Longinus, which filled him with reſentment. The emperor laid ſiege to the city; and the Palmyrians were at length obliged to open their gates, and receive the conqueror. The queen and Longinus endeavoured to fly into Perſia; but were unhappily overtaken and made priſoners when they were on the point of croſſing the Euphrates. The queen, intimidated, weakly laid the blame of vindicating the liberty of her country on its true author; and the brave Longinus, to the diſgrace of the conqueror, was carried away to immediate execution. The writings of Longinus were numerous, ſome on philoſophical, but the greater part on critical ſubjects. Dr Pearce has collected the titles of 25 treatiſes, none of which, excepting that on the Sublime, have eſcaped the depredations of time and barbarians. On this imperfect piece the great fame of Longinus is raiſed, who, as Pope expreſſes it—"is himſelf the great ſublime he draws." The beſt edition of his works is that by Tollius, printed at Utrecht in 1694, *cum notis variorum*. It has been tranſlated into Engliſh by Mr Smith.

LONGISSIMUS dorsi. See Anatomy, *Table of the Muſcles*.

LONGITUDE *of a* Star, in aſtronomy, an arch of the ecliptic, intercepted between the beginning of Aries and the point of the ecliptic cut by the ſtar's circle of longitude.

Longitude of any place on the ſurface of the earth. See Geography, Astronomy, and Navigation. See alſo Harrison.

Method of finding the Longitude *at Sea.* See Navigation.

LONGITUDINAL, in general, denotes ſomething placed lengthwiſe; thus ſome of the fibres in the veſſels of the human body are placed longitudinally, others tranſverſely or acroſs.

LONGOMONTANUS (Chriſtian), a learned aſtronomer, born in a village of Denmark, in 1562. He was the ſon of a ploughman; and was obliged to ſuffer during his ſtudies all the hardſhips to which he could be expoſed, dividing his time, like the philoſopher Cleanthes, between the cultivation of the earth and the leſſons he received from the miniſter of the place. At laſt, when he was 15, he ſtole away from his family, and went to Wiburg, where there was a college, in which he ſpent 11 years; and though he was obliged to earn a livelihood, he applied himſelf to ſtudy with ſuch ardour, that among other ſciences he learned the mathematics in great perfection. He afterwards went to Copenhagen; where the profeſſors of that univerſity in a ſhort time conceived ſo high an opinion of him, that they recommended him to the celebrated Tycho Brahe. Longomontanus lived eight years with that famous aſtronomer, and was of great ſervice to him in his obſervations and calculations. At length, being extremely deſirous of obtaining a profeſſor's chair in Denmark, Tycho Brahe conſented, though with ſome difficulty, to deprive himſelf of his ſervice; gave him a diſcharge, filled with the higheſt teſtimonies of his eſteem; and furniſhed him with money for the expence of his long journey. He obtained a profeſſorſhip of mathematics in the univerſity of Copenhagen, in 1605; and diſcharged the duty of it worthily till his death, which happened in 1647. He wrote many learned works; amuſed himſelf with endeavouring to ſquare the circle, and pretended that he had made that diſcovery; but Dr John Pell, an Engliſh mathematician, attacked him warmly on that ſubject, and proved that he was miſtaken.

LONGUEVILLE, a town of France, in Upper Normandy, and in the territory of Caux, ſeated on the ſmall river Lee, 17 miles north of Rouen. It has the title of a duchy. E. Long. 1. 10. N. Lat. 49. 46.

LONGWY, a town of France, on the frontiers of the duchy of Luxemburg, with a caſtle, divided into the the old and new towns. This laſt was built and fortified by Lewis XIV. It is ſeated on an eminence. E. Long. 5. 51. N. Lat. 40. 32.

LONGUS, a Greek ſophiſt, author of a book, intitled Ποιμενικα, or Paſtorals, and a romance containing the loves of Daphnis and Chloe. Huetius, biſhop of Avranches, ſpeaks very advantageouſly of this work; but he cenſures the obſcene touches with which it is interſperſed. None of the ancient authors mention him, ſo the time when he lived cannot be certainly fixed. There is an Engliſh tranſlation of this author, which is aſcribed to the late J. Craggs, Eſq; ſecretary of ſtate.

LONICERA, Honeysuckle; a genus of the monogynia order, belonging to the pentandria claſs of plants.

Species. 1. The alpigena, or upright red-berried honeyſuckle, riſes with a ſhrubby, ſhort, thick, upright ſtem, branching ſtrong and erectly four or five feet high; largiſh, ſpear-ſhaped leaves, in pairs oppoſite; and from the ſides of the branches many red flowers by two's on long footſtalks, each ſucceeded by two red berries joined together at their baſe; it flowers in Auguſt, and the berries ripen in autumn. 2. The cærulea, or blue-berried upright honeyſuckle, riſes with a ſhrubby upright ſtem, branching moderately three or four feet high, with many white flowers proceeding from the ſides of the branches; appearing in May, and ſucceeded by blue berries joined together at their baſe. 3. The nigra, or black-berried upright honeyſuckle, riſes with a ſhrubby ſtem branching three or four feet high, with white flowers ſucceeded by ſingle and diſtinct black-berries. 4. The tartarica, or Tartarian honeyſuckle, riſes with a ſhrubby upright ſtem, branching erectly three or four feet high; heart-ſhaped, oppoſite leaves, and whitiſh erect flowers ſucceeded by red berries, ſometimes diſtinct, and ſometimes double. 5. The diervilla, or yellow-flowered Acadian honeyſuckle, riſes with ſhrubby upright ſtalks, branching erect to the height of three or four feet; the branches terminated by cluſters of pale yellow flowers, appearing in May and June, and ſometimes continuing till autumn; but rarely ripening ſeeds here. 6. The xyloſteum, or fly honeyſuckle, riſes with a ſtrong ſhrubby ſtem, branching erect to the height of ſeven or eight feet; with erect white flowers proceeding from the ſides of the branches; each ſucceeded by large double red berries, joined together at their baſe. The flowers appear in June, and the berries ripen in September. 7. The ſymphoricarpos, or ſhrubby St Peter's-wort, riſes with a ſhrubby, rough ſtem, branching erect four or five feet high, with ſmall greeniſh flowers appearing round the ſtalk in Auguſt. 8. The periclymenum, or common climbing honeyſuckle, hath two principal varieties, viz. The Engliſh wild honeyſuckle, or woodbine of our woods and hedges, and the Dutch or German honeyſuckle. The former riſes with ſhrubby, weak, very long ſlender ſtalks, and branches trailing on the ground, or climbing round any ſupport; all terminated by oval imbricated heads, furniſhing ſmalliſh flowers of white or red colours, and appearing from June or July till autumn. The Dutch honeyſuckle riſes with a ſhrubby declinated ſtalk, and long trailing purpliſh branches, terminated by oval imbricated heads, furniſhing large beautiful red flowers of a fragrant odour, appearing in June and july. 9. The caprifolium, or Italian honeyſuckle, riſes with ſhrubby declinated ſtalks, ſending out long ſlender trailing branches, terminated by verticillate or whorled bunches of cloſe-ſitting flowers, very fragrant, and white, red, and yellow colours. 10. The ſempervirens, or evergreen trumpet-flowered honeyſuckle, riſes with a ſhrubby declinated ſtalk, ſending out long ſlender trailing branches, terminated by naked verticillate ſpikes, of long, unreflexed, deep ſcarlet flowers, very beautiful, but of little fragrance.

Culture. The moſt eaſy method of propagating theſe plants is by layers or cuttings, eſpecially the latter; both of theſe readily emit roots, and form plants in one year fit for tranſplantation. Some ſorts are alſo propagated by ſuckers and ſeed.

LONSDALE, or *Kirkby* LONSDALE, a town of Weſtmoreland, ſeated on the river Lon, in a pleaſant and rich valley of the ſame name. It is a large well-built town, has a handſome church, and a fine ſtone-bridge over the river. It is well inhabited; and is the beſt town in the county, except Kendal. W. Long. 2. 27. N. Lat. 54. 10.

LOO, a town of the United Provinces, in Guelderland, eight miles weſt of Deventer, where the prince of Orange has a fine palace. E. Long. 6. 0. N. Lat. 52. 18.

LOOF, the after part of a ſhip's bow; or that part of her ſide forward where the planks begin to be incurvated into an arch as they approach the ſtem.

LOOK-OUT, in the ſea-language, a watchful attention to ſome important object or event which is expected to ariſe from the preſent ſituation of a ſhip, &c. It is principally uſed in navigation when there is a probability of danger from the real or ſuppoſed proximity of land, rocks, enemies, and, in ſhort, whatever peril ſhe may encounter through inattention, which might otherwiſe have been avoided by a prudent and neceſſary vigilance.

There is always a look-out kept on a ſhip's forecaſtle at ſea, to watch for any dangerous objects lying near her track, and to which ſhe makes a gradual approach as ſhe advances: the mate of the watch accordingly calls often from the quarter-deck, "Look out afore there!" to the perſons appointed for this ſervice.

LOOKING-GLASSES, are nothing but plain mirrors of glaſs; which, being impervious to the light, reflect the images of things placed before them; for the the theory whereof, ſee the articles MIRROR and REFLECTION.

For the caſting, grinding, and poliſhing of looking-glaſſes, ſee the article GLASS.

For foliating of looking-glaſſes. See the article FOLIATING.

LOOM, a frame compoſed of a variety of parts, uſed in all the branches of weaving; for a particular deſcription of which, ſee the article WEAVING.

Heir-LOOM, in law, are ſuch goods and perſonal chattels, as, contrary to the nature of chattels, ſhall go by ſpecial cuſtom to the heir along with the inheritance, and not to the executor of the laſt proprietor. The termination, *loom*, is of Saxon original; in which language it ſignifies a limb or member; ſo that an heir-loom is nothing elſe but a limb or member of the inheritance. They are generally ſuch things as cannot be taken away without damaging or diſmembering the freehold: otherwiſe the general rule is, that no chattel-intereſt whatſoever ſhall go to the heir, notwithſtanding it be expreſsly limited to a man and his heirs, but ſhall veſt in the executor. But deer in a real authorized park, fiſhes in a pond, doves in a dove-houſe, &c. though in themſelves perſonal chattels, yet they are ſo annexed to, and ſo neceſſary to the well-being of, the inheritance, that they ſhall accompany the land wherever it veſts, by either deſcent or purchaſe. For this reaſon alſo the ancient jewels of the crown are held to be heir-looms; for they are neceſſary to maintain the ſtate, and ſupport the dignity, of the ſovereign for the time being. Charters likewiſe, and deeds, court-rolls, and other evidences of the land, together with the cheſts in which they are contained, ſhall paſs together with the land to the heir, in the nature of heir-looms, and ſhall not go to the executor. By ſpecial cuſtom alſo, in ſome places, carriages, utenſils, and other houſehold implements, may be heir-looms; but ſuch cuſtom muſt be ſtrictly proved. On the other hand, by almoſt general cuſtom, whatever is ſtrongly affixed to the freehold or inheritance, and cannot be ſevered from thence without violence or damage, *quod ab ædibus non facile revellitur*, is become a member of the inheritance, and ſhall thereupon paſs to the heir; as chimney-pieces, pumps, old fixed or dormant tables, benches, and the like. A very ſimilar notion to which prevails in the duchy of Brabant; where they rank certain things moveable among thoſe of the immoveable kind, calling them by a very peculiar appellation, *prædia volantia*, or volatile eſtates: ſuch as beds, tables, and other heavy implements of furniture, which (as an author of their own obſerves) *dignitatem iſtam nacta ſunt, ut villis, ſylvis, et ædibus, aliiſque prædiis, comparentur; quod ſolidiora mobilia ipſis ædibus ex deſtinatione patrisfamilias cohærere videantur, et pro parte ipſarum ædium æſtimentur.*

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Other perſonal chattels there are, which alſo deſcend to the heir in the nature of heir-looms; as a monument or tomb-ſtone in a church, or the coat-armor of his anceſtor there hung up, with the pennons and other enſigns of honour ſuited to his degree. In this caſe, albeit the freehold of the church is in the parſon, and theſe are annexed to that freehold, yet cannot the parſon or any other take them away or deface them, but is liable to an action from the heir. Pews in the church are ſomewhat of the ſame nature, which may deſcend by cuſtom immemorial (without any eccleſiaſtical concurrence) from the anceſtor to the heir. But though the heir has a property in the monuments and eſcutcheons of his anceſtors, yet he has none in their bodies or aſhes; nor can he bring any civil action againſt ſuch as indecently at leaſt, if not impiouſly, violate and diſturb their remains, when dead and buried. The parſon indeed, who has the freehold of the ſoil, may bring an action of treſpaſs againſt ſuch as dig and diſturb it: and, if any one in taking up a dead body ſteals the ſhroud or other apparel, it will be felony; for the property thereof remains in the executor, or whoever was at the charge of the funeral.

Heir-looms, though they be mere chattels, yet cannot be deviſed away from the heir by will; but ſuch a deviſe is void, even by a tenant in fee-ſimple. For, though the owner might during his life have ſold or diſpoſed of them, as he might of the timber of the eſtate, ſince, as the inheritance was his own, he might mangle or diſmember it as he pleaſed; yet, they being at his death inſtantly veſted in the heir, the deviſe (which is ſubſequent, and not to take effect till after his death) ſhall be poſtponed to the cuſtom, whereby they have already deſcended.

LOOMING, in the ſea-language, an indiſtinct appearance of any diſtant object, as the ſea-coaſt, ſhips, mountains, &c. as, "ſhe looms large before the wind;" "the looming of the land is high above the water, &c."

LOPES LE VEGA, See VEGA.

LOPHIUS, FISHING-FROG, *Toad-fiſh*, or *Sea-devil;* a genus of the branchioſtegious order of fiſhes, whoſe head is in ſize equal to all the reſt of the body. There are three ſpecies, the moſt remarkable of which is the piſcatorius, or common fiſhing-frog, an inhabitant of the Britiſh ſeas. This ſingular fiſh was known to the ancients by the name of Βατραχος, and *Rana;* and to us by that of the *fiſhing-frog*, for it is of a figure reſembling that animal in a tadpole ſtate. Pliny takes notice of the artifice uſed by it to take its prey: *Eminentia ſub oculis cornicula turbato limo exerit, aſſultantes piſciculos attrahens, donec tam prope accedunt, ut aſſiliat.* "It puts forth the ſlender horns it has beneath its eyes, enticing by that means the little fiſh to play round, till they come within reach, when it ſprings on them." The fiſhing-frog grows to a large ſize, ſome being between four and five feet in length; and Mr Pennant mentions one taken near Scarborough, whoſe mouth was a yard wide. The fiſhermen on that coaſt have a great regard for this fiſh, from a ſuppoſition that it is a great enemy to the dog-fiſh; and whenever they take it with their lines, ſet it at liberty.

It is a fiſh of very great deformity: the head is much bigger than the whole body; is round at the circumference, and flat above; the mouth of a prodigious wideneſs. The under jaw is much longer than the upper: the jaws are full of ſlender ſharp teeth: in the roof of the mouth are two or three rows of the ſame: at the root of the tongue, oppoſite each other, are two bones of an elliptical form, thick ſet, with very ſtrong ſharp teeth. The noſtrils do not appear externally, but in the upper part of the mouth are two large orifices that ſerve inſtead of them. On each ſide the upper jaw are two ſharp ſpines, and others are ſcattered about the upper part of the head. Immediately above the noſe are two long tough filaments, and on the back three others; theſe are what Pliny calls *cornicula*, and ſays it makes uſe of to attract the little fiſh. They ſeem to be like lines flung out for that end. Along the edges of the head and body are a multitude of ſhort fringed ſkins, placed at equal diſtances. The aperture to the gills is placed behind; each of theſe is very wide, ſo that ſome writers have imagined it to be a receptacle for the young in time of danger. The body grows ſlender near the tail, the end of which is quite even. The colour of the upper part of this fiſh is duſky, the lower part white; the ſkin ſmooth.

LORANTHUS, in botany, a genus of the monogynia order, belonging to the hexandria claſs of plants. There is only one ſpecies, a native of America, diſcovered by Father Plumier, and found growing naturally at La Vera Cruz by Dr Houſton. It riſes with a ſhrubby ſtalk, eight or 10 feet high, dividing into ſeveral branches, having at their ends cluſters of ſmall ſcarlet-coloured flowers, ſucceeded by oval berries with a pulpy covering, and a hard ſhell with one cell, incloſing ſeveral compreſſed ſeeds. It is propagated by ſeeds, which ſhould be ſown ſoon after they are ripe; otherwiſe they are very apt to miſcarry, or lie a year in the ground without germinating. The plants require always to be kept in a bark-ſtove.

LORD, a title of honour given to thoſe who are noble either by birth or creation. In this ſenſe, it amounts to much the ſame as *peer of the realm*, or *lord of parliament*. The title is by courteſy alſo given to all the ſons of dukes and marquiſes, and to the eldeſt ſons of earls: and it is alſo a title of honour beſtowed on thoſe who are honourable by their employments; as *lord advocate*, *lord chamberlain*, *lord chancellor*, *&c.* The word is Saxon, but abbreviated from two ſyllables into one; for it was originally *Illaford*, which, by dropping the aſpiration, became *Laford*, and afterwards, by contraction, *Lord.* "The etymology of the word (ſays J. Coates) is well worth obſerving: for it was compoſed of *illaf*, "a loaf of bread," and *ford*, "to give, or afford;" ſo that *Illaford*, now *Lord*, implies "a giver of bread;" becauſe, in thoſe ages, ſuch great men kept extraordinary houſes, and fed all the poor; for which reaſon they were called *givers of bread*, a thing now much out of date; great men being fond of retaining the title, but few regarding the practice for which it was firſt given. See LADY.

Houſe of LORDS, one of the three eſtates of parliament, and compoſed of the Lords Spiritual and Temporal.

1. The *Spiritual Lords* conſiſt of 2 archbiſhops, and 24 biſhops; and, at the diſſolution of monaſteries by Henry VIII. conſiſted likewiſe of 26 mitred abbots, and two priors: a very conſiderable body, and in thoſe times equal in number to the temporal nobility. All theſe hold, or are ſuppoſed to hold, certain ancient baronies under the king: for William the Conqueror thought proper to change the ſpiritual tenure of frankalmoign or free-alms, under which the biſhops held their lands during the Saxon government, into the feodal or Norman tenure by barony; which ſubjected

their eſtates to all civil charges and aſſeſſments, from which they were before exempt; and, in right of ſucceſſion to thoſe baronies, which were unalienable from their reſpective dignities, the biſhops and abbots were allowed their ſeats in the houſe of lords. But though theſe lords ſpiritual are in the eye of the law a diſtinct eſtate from the lords temporal, and are ſo diſtinguiſhed in moſt of our acts of parliament; yet in practice they are uſually blended together under the name of *the lords;* they intermix in their votes, and the majority of ſuch intermixture joins both eſtates. And from this want of a ſeparate aſſembly, and ſeparate negative of the prelates, ſome writers have argued very cogently, that the lords ſpiritual and temporal are now in reality only one eſtate: which is unqueſtionably true in every effectual ſenſe, though the ancient diſtinction between them ſtill nominally continues. For if a bill ſhould paſs their houſe, there is no doubt of its validity, tho' every lord ſpiritual ſhould vote againſt it; of which Selden and Sir Edward Coke give many inſtances: as, on the other hand, doubtleſs it would be equally good, if the lords temporal preſent were inferior to the biſhops in number, and every one of thoſe temporal lords gave his vote to reject the bill; though this Sir Edward Coke ſeems to doubt of.

2. The *temporal lords* conſiſt of all the peers of the realm, (the biſhops not being in ſtrictneſs held to be ſuch, but merely lords of parliament), by whatever title of nobility diſtinguiſhed; dukes, marquiſes, earls, viſcounts, or barons *. Some of theſe ſit by deſcent, as do all ancient peers; ſome by creation, as do all new-made ones; others, ſince the union with Scotland, by election, which is the caſe of the 16 peers, who repreſent the body of the Scots nobility. Their number is indefinite, and may be increaſed at will by the power of the crown: and once, in the reign of queen Anne, there was an inſtance of creating no leſs than 12 together; in contemplation of which, in the reign of king George I. a bill paſſed the houſe of lords, and was countenanced by the then miniſtry, for limiting the number of the peerage. This was thought by ſome to promiſe a great acquiſition to the conſtitution, by reſtraining the prerogative from gaining the aſcendant in that auguſt aſſembly, by pouring in at pleaſure an unlimited number of new-created lords. But the bill was ill reliſhed, and miſcarried in the houſe of commons, whoſe leading members were then deſirous to keep the avenues to the other houſe as open and eaſy as poſſible.

The diſtinction of ranks and honours is neceſſary in every well-governed ſtate: in order to reward ſuch as are eminent for their ſervices to the public, in a manner the moſt deſirable to individuals, and yet without burthen to the community; exciting thereby an ambitious yet laudable ardour and generous emulation in others. And emulation, or virtuous ambition, is a ſpring of action which, however dangerous or invidious in a mere republic or under a deſpotic ſway, will certainly be attended with good effects under a free monarchy; where, without deſtroying its exiſtence, its exceſſes may be continually reſtrained by that ſuperior power, from which all honour is derived. Such a ſpirit, when nationally diffuſed, gives life and vigour to the community; it ſets all the wheels of government in motion, which, under a wiſe regulator, may be directed to any beneficial purpoſe; and thereby every individual may be made ſubſervient to the public good, while he principally means to promote his own particular views. A body of nobility is alſo more peculiarly neceſſary in our mixed and compounded conſtitution, in order to ſupport the rights of both the crown and the people, by forming a barrier to withſtand the encroachments of both. It creates and preſerves that gradual ſcale of dignity, which proceeds from the peaſant to the prince; riſing like a pyramid from a broad foundation, and diminiſhing to a point as it riſes. It is this aſcending and contracting proportion that adds ſtability to any government; for when the departure is ſudden from one extreme to another, we may pronounce that ſtate to be precarious. The nobility therefore are the pillars, which are reared from among the people, more immediately to ſupport the throne; and, if that falls, they muſt alſo be buried under its ruins. Accordingly, when in the laſt century the commons had determined to extirpate monarchy, they alſo voted the houſe of lords to be uſeleſs and dangerous. And ſince titles of nobility are thus expedient in the ſtate, it is alſo expedient that their owners ſhould form an independent and ſeparate branch of the legiſlature. If they were confounded with the maſs of the people, and like them had only a vote in electing repreſentatives, their privileges would ſoon be borne down and overwhelmed by the popular torrent, which would effectually level all diſtinctions. It is therefore highly neceſſary that the body of nobles ſhould have a diſtinct aſſembly, diſtinct deliberations, and diſtinct powers from the commons. See alſo KING, NOBILITY, PARLIAMENT, COMMONS, *and* COMMONALTY.

As to the peculiar laws and cuſtoms relating to the houſe of lords: One very ancient privilege is that declared by the charter of the foreſt, confirmed in parliament 9 Hen. III.; viz. that every lord ſpiritual or temporal ſummoned to parliament, and paſſing thro' the king's foreſts, may, both in going and returning, kill one or two of the king's deer without warrant; in view of the foreſter if he be preſent, or on blowing a horn if he be abſent; that he may not ſeem to take the king's veniſon by ſtealth.

In the next place, they have a right to be attended, and conſtantly are, by the judges of the court of king's-bench and common-pleas, and ſuch of the barons of the exchequer as are of the degree of the coif, or have been made ſerjeants at law; as likewiſe by the king's learned counſel, being ſerjeants, and by the maſters of the court of chancery; for their advice in point of law, and for the greater dignity of their proceedings. The ſecretaries of ſtate, with the attorney and ſolicitor general, were alſo uſed to attend the houſe of peers, and have to this day (together with the judges, &c.) their regular writs of ſummons iſſued out at the beginning of every parliament, *ad tractandum et conſilium impendendum,* though not *ad conſentiendum:* but, whenever of late years they have been members of the houſe of commons, their attendance here hath fallen into diſuſe.

Another privilege is, that every peer, by licence obtained from the king, may make another lord of parliament his proxy, to vote for him in his abſence: A privilege, which a member of the other houſe can by no means have, as he is himſelf but a proxy for a multitude of other people.

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* See *Nobility.*

Each peer has alſo a right, by leave of the houſe, when a vote paſſes contrary to his ſentiments, to enter his diſſent on the journals of the houſe, with the reaſons for ſuch diſſent; which is uſually ſtyled his proteſt.

All bills likewiſe, that may in their conſequences any way affect the rights of the peerage, are by the cuſtom of parliament to have their firſt riſe and beginning in the houſe of peers, and to ſuffer no changes or amendments in the houſe of commons.

There is alſo one ſtatute peculiarly relative to the houſe of lords; 6 Ann. c. 23. which regulates the election of the 16 repreſentative peers of North Britain, in conſequence of the 22 and 23 articles of the union: and for that purpoſe preſcribes the oaths, &c. to be taken by the electors; directs the mode of balloting; prohibits the peers electing from being attended in an unuſual manner; and expreſsly provides, that no other matter ſhall be treated of in that aſſembly, ſave only the election, on pain of incurring a præmunire. See alſo the articles NOBILITY and PEERS.

LORETTO, a town of Italy, in the Marca or Marche of Ancona, with a biſhop's ſee. It is ſmall, but fortified; and contains the *caſa ſanta*, or the houſe of Nazareth, in which they pretend Jeſus Chriſt was brought up. They tell us, that it was carried by angels into Dalmatia, and thence to the place where it now ſtands. The inner part of this houſe or chapel is very old, but it is ſurrounded by a marble wall, and within a church built of free-ſtone. The famous lady of Loretto, who holds the infant Jeſus in her arms, ſtands upon the principal altar: this ſtatue is of cedar wood, three feet high; but her face can hardly be ſeen, on account of the ſmoke of the numerous lamps round about her. She is cloathed with cloth of gold, ſet off with jewels; and the little Jeſus is covered with a ſhirt. He holds a globe in his hand, and is adorned with rich jewels. There are prodigious numbers frequently go in pilgrimage to Loretto, particularly at Eaſter and Whitſuntide, among whom there are many of the firſt diſtinction. Every pilgrim, after having performed his devotion, makes the Virgin a preſent proportionable to his ability; whence it may be readily concluded, that this chapel muſt be full of immenſe riches.—Chriſtina, queen of Sweden, made the Virgin a preſent of a crown of gold, worth above 100,000 crowns; and Iſabella, infanta of Spain, ſent her a garment which coſt 40,000 ducats. Lewis XIII. of France, and his queen, ſent her two crowns of gold, enriched with diamonds. Beſides theſe crowns, they ſent an angel of maſſy ſilver, holding in his hand the figure of the dauphin, of ſolid gold. The place where the governor reſides ſtands near the church, and the eccleſiaſtics who are employed in it lodge in the ſame palace, where they receive the pilgrims of high diſtinction. As for the town itſelf, excluſive of the chapel, it is neither very conſiderable nor very agreeable; nor does it contain above 300 inhabitants, who are almoſt all ſhoemakers, taylors, or ſellers of chaplets. The environs of this town are very agreeable, and in fine weather the high mountains of Croatia may be ſeen from hence. It is ſeated on a mountain, in E. Long. 13. 50. N. Lat. 43. 24.

LORIMERS, one of the companies of London, that make bits for bridles, ſpurs, and ſuch like ſmall iron ware. They are mentioned in ſtatute 1 Rich. II. c. 12.—The word ſeems derived from the Latin word *lorum*, a thong.

LORME (Philibert de), one of the moſt celebrated architects of the 16th century, was born at Lyons. Queen Catharine de Medicis gave him the ſuperintendance of buildings; and he had the direction of thoſe of the Louvre, the Tuilleries, the caſtle of St Anet, St Germains, and other edifices erected by her orders. He wrote ſeveral books of architecture, which are eſteemed; and died about the year 1577.

LORNE, a diviſion of Argyleſhire in Scotland, which gives the title of marquis to the duke of Argyle. It extends above 30 miles in length from north to ſouth, and about nine at its utmoſt breadth; bounded on the eaſt by Braidalbin; on the weſt, by the iſlands; on the north, by Lochaber; and is divided from Knapdale on the ſouth, by Loch Ettiff, on the banks of which ſtands the caſtle of Bergomarn, wherein the courts of juſtice were anciently held. This diſtrict, abounding with lakes, is the moſt pleaſant and fertile part of Argyleſhire, producing plenty of oats and barley. It once belonged to the ancient family of Mac Dougal, ſtill reſiding on the ſpot; but devolved to the lords of Argyle, in conſequence of a marriage with the heireſs, at that time a branch of the Stuart family. The only place of note in this diſtrict is the caſtle of Dunſtaffnage, or St Stephen's mountain, which formerly belonged to the kings of Scotland, ſome of whom are here interred: at preſent it is poſſeſſed by the duke of Argyle, and governed by an hereditary captain.

LORRAIN, a ſovereign ſtate of Europe, bounded on the north by Luxemburg and the archbiſhoprick of Treves, on the eaſt by Alſace and the duchy of Deux Ponts, on the ſouth by Franche Compté, and on the weſt by Champagne and the duchy of Bar. It is about 100 miles in length, and 75 in breadth; and abounds in all ſorts of corn, wine, hemp, flax, rape-ſeed, game, and fiſh, with which it carries on ſome trade, and in general all the neceſſaries of life. There are fine meadows and large foreſts, with mines of iron, ſilver, and copper, as alſo ſalt-pits. There are a great number of rivers; of which the principal are the Maeſe or Meuſe, the Moſelle, the Seille, the Meure, and the Sarre. It is divided into three parts; the duchy of Lorrain, properly ſo called, which was heretofore a ſovereign ſtate; the duchy of Barr, which formerly belonged to the dukes of Lorrain, but afterwards came under the government of France; and the third comprehends the three biſhopricks of Metz, Toul, and Verdun, which have belonged to France ever ſince the year 1552. In 1733, the emperor of Germany being at war with France, this laſt got poſſeſſion of the duchy of Lorrain; and when there was a peace made in 1735, it was agreed, that Staniſlaus king of Poland, father-in-law to the king of France, ſhould poſſeſs theſe duchies, and that after his death they ſhould be united for ever to the crown of France. It was alſo then agreed, that Francis Stephen, duke of Lorrain, and the emperor's ſon-in-law, ſhould have the grand duchy of Tuſcany as an equivalent for Lorrain. After the death of the great duke of Tuſcany, in 1737, king

Staniſlaus and the duke of Lorrain took poſſeſſion of their reſpective dominions, and the ceſſation was confirmed and guarantied by a treaty in 1738. The inhabitants are laborious and valiant, and their religion is the Roman Catholic. They have but little trade with ſtrangers, becauſe they have no navigable rivers, and becauſe they have all neceſſaries within themſelves: but what little trade they have conſiſts of corn and linen cloth. Nanci is the capital town.

LORRAIN (Robert le), an eminent ſculptor, born at Paris in 1666. From his infancy, he made ſo rapid a progreſs in the art of deſigning, that at the age of 18 the celebrated Girardon intruſted him with the care of teaching his children and correcting his diſciples. He committed to him alſo, in conjunction with Nouliſſon, the execution of the famous tomb of cardinal Richlieu in the Sorbonne, and his own tomb at St Landres in Paris. On his return from Rome, he finiſhed ſeveral pieces at Marſeilles, which had been left imperfect by the death of Mr Puget. He was received into the academy of Sculpture in 1701. His *chief d'œuvre* is Galatea, a work univerſally admired. Lorrain afterwards made a Bacchus for the gardens at Verſailles, a Faun for thoſe of Marly; and ſeveral bronzes, among which is an Andromeda; all in an excellent taſte. This artiſt ſucceeded chiefly in heads; and more particularly in that of young girls, which he performed with incomparable delicacy and truth.

Lorrain (Claude.) See Claud.

LOTEN (John), a good landſcape-painter of the Engliſh ſchool; though a native of Switzerland. His taſte led him to ſolemn and dreary ſcenes, as landſtorms accompanied with ſhowers of rain, &c. and he ſeldom omitted to introduce oak-trees in his proſpects: his landſcapes are generally large, and he painted with nature, truth, and force. But the effect of his compoſition had been much greater if he had been leſs cold in his colouring: for the judicious eye is not pleaſed with the darkiſh tint that predominates in it.

LOTHIAN, a name given to three counties of Scotland, viz. Linlithgow-ſhire, Haddington-ſhire, and Edinburgh-ſhire. An account is given of Linlithgow ſhire, or weſt Lothian, under the article LINLITHGOW.

Eaſt-Lothian, or Haddington-ſhire, is bounded on the north by the Frith of Forth; on the ſouth, by the hills of Lammermuir; and on the weſt, by the ſhire of Edinburgh or Mid Lothian. It is about 20 miles in length, and 12 in breadth; and is one of the moſt fruitful counties in Scotland, producing great quantities of wheat and all ſorts of grain, well-watered, and plentifully ſupplied with fiſh, fowl, fuel, and all the neceſſaries of life. It abounds with towns, villages, and farms, interſperſed with a great number of agreeable houſes belonging to perſons of rank and fortune. For cultivation, populouſneſs, and fertility, this ſhire may vie with any tract of land in the iſland of Great Britain. Over and above the farming, which turns out to great account, the people towards the ſea-coaſt employ themſelves in the fiſhery, ſalt-making, and in foreign trade; and ſome of the more inland inhabitants engage in the linen and woollen manufactures. Limeſtone and coal are found in moſt parts of the country, and great numbers of ſheep are fed on the hills of Lammermuir.

Edinburgh-ſhire, or Mid-Lothian, is 20 miles long, but varies in its breadth in different places from five to 16 miles. It is bounded on the eaſt by Eaſt-Lothian; on the weſt, by the ſhire of Linlithgow; on the ſouth, by Tweeddale; and on the north, by part of Weſt-Lothian and the Frith of Forth. The aſpect of the country is in general level and pleaſant, interſperſed with a few hills, that help to exhibit agreeable proſpects. It is well watered with rivers, and ſhaded with woods. It produces plenty of coal, lime-ſtone, a ſoft black marble, and ſome copper ore. The ſoil, of itſelf fertile, is finely cultivated, and yields as plentiful harveſts of excellent wheat as are found in any part of Great Britain. The whole ſhire is interſperſed with noble houſes and plantations belonging to noblemen and gentlemen of fortune. The farmers are maſter of the ſcience of agriculture; and wealthy in conſequence of their ſkill, ſome of them paying 500 l. of yearly rent. The country is well inhabited, and preſents us with a good number of towns and populous villages. Along the ſea-coaſt the common people ſubſiſt by fiſhing, and traffic in coals and ſalt, and ſome few carry on a ſmuggling commerce. Thoſe in the inland are employed in farming, and ſome branches of the weaving manufacture. The ſheriffalty of this ſhire is in the gift of the crown; and Edinburgh is a county in itſelf.

Mid-Lothian is adorned with a great number of elegant houſes, which we cannot pretend to particularize; among others, the houſes of the earls of Morton and Lauderdale, about ſix miles to the weſtward of Edinburgh, two elegant edifices, ſurrounded with parks agreeably planted with a variety of trees; and at a little diſtance the houſe of New-Linton, a delightful ſeat, where the late earl of Stair reſided during his honourable receſs from courts and corruption. Nor is it deficient in Roman antiquities. At Cramond, upon the Frith, four miles to the weſtward of Edinburgh, we ſee the remains of a great Roman ſtation, in the eſtate of Sir John Ingliſh. Here ſeveral Roman altars have been found, and ſtones having inſcriptions dug up, together with a great quantity of Roman coins, braſs, ſilver, and gold. Great part of theſe, and many other curious pieces of antiquity, were collected by the late Sir John Clerk of Pennycuick, one of the barons of the exchequer, a gentleman of conſiderable fortune, eminent for his taſte and learning, whoſe country-houſe at Mavis Bank, in this county, is one of the moſt agreeable villas in all Scotland.

LOTION, is, ſtrictly ſpeaking, ſuch waſhing as concerns beautifying the ſkin, by cleanſing it of thoſe deformities which a diſtempered blood throws upon it. Medicines of this kind, however, are for the moſt part inſignificant, and ſometimes very dangerous; the only proper method of treating theſe diſorders is, by adminiſtering ſuch medicines as tend to correct the morbid ſtate of the conſtitution from whence they ariſe.

LOTTERY, a kind of public game at hazard, frequent in Britain, France, and Holland, in order to raiſe money for the ſervice of the ſtate; being appointed with us by the authority of parliament, and managed by commiſſioners appointed by the lords of the treaſury for that purpoſe. It conſiſts of ſeveral numbers of blanks and prizes, which are drawn out of wheels, one of which contains the numbers, and the other the correſponding blanks or prizes.

The firſt Engliſh lottery we find mentioned in hiſtory, was drawn A. D. 1569. It conſiſted of 40,000 lots, at 10s. each lot: the prizes were plate; and the profits were to go towards repairing the havens of this kingdom. It was drawn at the weſt door of St Paul's cathedral. The drawing began on the 11th of January 1569, and continued inceſſantly drawing, *day and night*, till the 6th of May following; as Maitland, from Stowe, informs us in his Hiſtory, Vol. I. p. 257. There were then only *three* lottery-offices in London. The propoſals for this lottery were publiſhed in the years 1567 and 1568. It was at firſt intended to have been drawn at the houſe of Mr Dericke, her majeſty's ſervant (*i. e.* her jeweller), but was afterwards drawn as abovementioned.

Dr Rawlinſon ſhewed the Antiquary Society, 1748, "A propoſal for a very rich lottery, general without any blankes, contayning a great number of good prizes, as well of redy money as of plate and certain ſorts of merchandizes, having been valued and priſed by the commandment of the queene's moſt excellent majeſtie's order, to the entent that ſuch commodities as may chance to ariſe thereof after the charges borne may be converted towards the reparations of the havens and ſtrength of the realme, and towards ſuch other public good workes. The number of lotts ſhall be foure hundred thouſand, and no more; and every lott ſhall be the ſum of tenne ſhillings ſterling, and no more. To be filled by the feaſt of St Bartholomew. The ſhew of priſes are to be ſeen in Cheapſide, at the ſign of the Queene's Armes, the houſe of Mr Dericke, goldſmith, ſervant to the queene. Some other orders about it in 1567-8. Printed by Hen. Bynneman."

"In the year 1612, king James, in ſpecial favour for the preſent plantation of Engliſh colonies in Virginia, granted a lottery, to be held at the weſt end of St Paul's; whereof one Thomas Sharplys, a taylor of London, had the chief prize, which was 4000 crowns in fair plate." Baker's Chronicle.

In the reign of queen Anne, it was thought neceſſary to ſuppreſs lotteries, as nuiſances to the public. Since that time, however, they have been licenſed by an act of parliament. The following is an abſtract of the laſt act for regulating Lottery-offices. It reſtrains any perſon from keeping an office for the ſale of tickets, ſhares, or chances, or for buying, ſelling, inſuring, or regiſtering, without a licence; for which licence each office-keeper muſt pay 50l. to continue in force for one year, and the produce to be applied towards defraying the expences of the lottery. And no perſon is to be allowed to ſell any ſhare or chance leſs than a ſixteenth, on the penalty of 50l. All tickets divided into ſhares or chances, are to be depoſited in an office eſtabliſhed in London by the commiſſioners of the treaſury, who are to appoint a perſon to conduct the buſineſs thereof; and all ſhares are to be ſtamped by the ſaid officer, who is to give a receipt for every ticket depoſited with him. The numbers of all tickets ſo depoſited are to be entered in a book, with the names of the owners, and the number of ſhares into which they are divided, and 2d. for each ſhare is to be paid to the officer on depoſiting ſuch tickets, who is therewith to pay all expences incident to the office. All tickets depoſited in the office to remain there three days after drawing. And any perſon keeping an office, or ſelling ſhares, or who ſhall publiſh any ſcheme for receiving moneys in conſideration of any intereſt to to be granted in any ticket in the ſaid lottery, &c. without being in poſſeſſion of ſuch ticket, ſhall forfeit 500l. and ſuffer three months impriſonment. And no buſineſs is to be tranſacted at any of the offices after eight in the evening, except on the evening of the Saturday preceding the drawing. No perſon to keep any office for the ſale of tickets, &c. in Oxford or Cambridge, on penalty of 20l.

LOTUS, in botany, a genus of the decandria order, belonging to the diadelphia claſs of plants. There are many ſpecies, but only five are uſually cultivated in our gardens. 1. The tetragonolobus, or winged pea, hath trailing, ſlender, branchy ſtalks, about a foot long; garniſhed with trifoliate oval leaves; and, from the axillas of the branches, large, papilionaceous red flowers, one on each footſtalk; ſucceeded by tetragonous ſolitary pods, having a membranous wing or lobe, running longitudinally at each corner. It flowers in June and July, and the ſeeds ripen in autumn. 2. The creticus, or Cretan ſilvery lotus, hath a ſlender undershrubby ſtalk, riſing by ſupport three or four feet high, ornamented with trifoiliate, bright ſilvery leaves; and branches terminated by ſeveral yellow flowers ſucceeded by ſubternate pods. 3. The Jacobæus, or lotus of St James's iſland, hath upright herbaceous ſtalks branching two or three feet high, and, from the upper part of the branches, long ſlender footſtalks, terminated each by three or five yellowiſh purple flowers, appearing moſt part of the ſummer and autumn, and ſucceeded by ſubternate pods filled with plenty of ſeeds. 4. The hirſutus, or hairy Italian lotus, hath upright hairy ſtalks branching a yard high; and terminated by heads of whitiſh hoary-cupped flowers appearing in June, which are ſucceeded by oval pods full of ſeed, which ripens in autumn. 5. The dorcynium, or white Auſtrian lotus, hath underſhrubby ſmooth ſtalks, branching three or four feet high, and the branches terminated by aphyllous heads of ſmall white flowers appearing in June, ſucceeded by ſhort pods.

Culture, &c. The firſt ſpecies is a hardy annual, and is eaſily raiſed from ſeed ſown any time from the month of February to May; the plants requiring no other culture than to be kept free from weeds. It was formerly cultivated as an eſculent; for its young green ſeed-pods may be dreſſed and eat like peaſe, or in the manner of kidney-beans. The other ſpecies may be propagated either by ſeeds or cuttings, but require to be kept in pots in the green-houſe during the winter-ſeaſon.

LOVAGE, in botany. See Ligusticum.

LOVE. See Morals, n° 144.

The ſymptoms produced by this paſſion are as follow: The eye-lids often twinkle; the eyes are hollow, and yet appear as if full with pleaſure: the pulſe is not peculiar to the paſſion, but the ſame with that which attends ſolicitude and care. When the object of this affection is thought of, particularly if the idea is ſudden, the ſpirits are confuſed, the pulſe changes, and its force and time are very variable: in ſome inſtances, the perſon is ſad and watchful; in others, the perſon, not being conſcious of his ſtate, pines away, is ſlothful, and regardleſs of food; tho' the wiſer, when they find themſelves in love, ſeek pleaſant company and active entertainments. As the force of love prevails, ſighs grow deeper; a tremor affects the heart and pulſe; the countenance is alternately pale and red; the voice is ſuppreſſed in the fauces; the eyes grow dim; cold ſweats breaks out; ſleep abſents itſelf, at leaſt until the morning; the ſecretions become diſturbed; and a loſs of appetite, a hectic fever, melancholy, or perhaps madneſs, if not death, conſtitutes the ſad cataſtrophe. On this ſubject the curious may conſult Ægineta, lib. iii. cap. 17. Oribat. Synop. lib. viii. cap. 9. or a treatiſe profeſſedly written on love, as it is a diſtemper, by James Ferrard, Oxford, printed 1640.

LOVE-*Apple*. See SOLANUM.

LOVENTINUM, or LUENTINUM, (anc. geog.), a town of the Demeta in Britain, near the mouth of the Tuerobis or Tivy. Suppoſed to have been afterwards ſwallowed up by an earthquake, and to have ſtood where is now the lake called *Lin Savatan* in Brecknockſhire.

LOUIS, or *Knights of* St LOUIS, the name of a military order in France, inſtituted by Lewis XIV. in 1693. Their colours are of a flame colour, and paſs from left to right; the king is their grand-maſter. There are in it eight great croſſes, and 24 commanders; the number of knights is not limited. At the time of their inſtitution, the king charged his revenue with a fund of 300,000 livres for the penſions of the commanders and knights.

LOUIS, *Lewis*, *Louis d'or*, or *Lewidore*, a French coin, firſt ſtruck in 1640, under the reign of Louis XIII. and which has now a conſiderable currency. See MONEY-*Table*.

LOUISIANA, a country in North America, bounded on the ſouth by the gulph of Mexico, on the eaſt by the river Miſſiſippi, on the weſt by New Mexico, and on the north by an unknown country. It extends from the 29th to the 40th degree of north latitude, and from about the 80th to the 96th or 97th degree weſt longitude from London. The climate of Louiſiana varies according the latitudes. The ſouthern parts are not ſo hot as thoſe parts of Africa which lie under the ſame parallel, and the northern parts are colder than the countries of Europe at the ſame diſtance from the pole: the cauſes of which are ſuppoſed to be the thick foreſts which over-run the country, and the great number of rivers; the former preventing the ſun from heating the earth, and the latter ſupplying it with moiſt vapours; beſides the cold winds which come from the north over vaſt tracts of land. They have bad weather; but it never laſts long, for the rain generally falls in ſtorms and ſudden ſhowers; the air is wholeſome, the inhabitants healthy, and they who are temperate live to a great old age. The country is extremely well watered; and almoſt all the rivers that run through it fall into the Miſſiſippi, which diſcharges itſelf into the gulph of Florida.

LOUSE, in zoology. See PEDICULUS and LICE.

LOUSY DISEASE. PHTHIRIASIS.

LOUTH, a county in the eaſtern part of Ireland, which extends in the form of a bow or half-moon, on the ſide of the ocean, being much longer than it is broad; it is bounded on the ſouth and ſouth-weſt by the county of Eaſt-Meath, on the north-weſt by Monaghan, on the north by Armagh, and on the north-eaſt by the bay of Carlingford, which parts it from the county of Down; it is watered by ſeveral ſmall rivers which fall into the ſea, and its ſouth frontiers are watered by the river Boyne, which renders it fruitful and rich. The moſt conſiderable places are Drogheda, Ardes, Dundalk, and Carlingford.

LOUVAIN, a city in the Auſtrian Netherlands, in the province of Brabant, pleaſantly ſeated on the river Dyle, in a plentiful and agreeable country. The walls are about eight or nine miles in circumference; but they include ſeveral fields and vineyards. The caſtle ſtands on a high hill, ſurrounded with fine gardens, and has a charming proſpect all over the country. This town contains nine market-places, 14 water-mills, 126 ſtreets, 16 ſtone bridges, and ſeveral handſome palaces. The town-houſe is a venerable old building, adorned with ſtatues on the outſide; and the churches are very handſome, particularly the collegiate church of St Peter: but the principal ornament is the univerſity, there being 60 colleges, which have two courts each; the ſtudents in divinity conſtantly wear gowns and caps, but the reſt only at public exerciſes. The Engliſh have a nunnery here, which is reckoned the beſt in the Netherlands. This town was taken in the year 1746, by the French. E. Long. 4. 40. N. Lat. 51. 12.

LOW-BELL, in birding, a name given to a bell, by means of which they take birds in the night, in open champaign countries, and among ſtubble, in October. The method is to go out about nine o'clock at night in a ſtill evening, when the air is mild, and the ſun does not ſhine. The low-bell ſhould be of a deep and hollow ſound, and of ſuch a ſize that a man may conveniently carry it in one hand. The perſon who carries it is to make it toll all the way he goes, as nearly as may be, in that manner in which the bell on the neck of a ſheep tolls as it goes on and feeds. There muſt alſo be a box made like a large lanthorn, about a foot ſquare, and lined with tin, but with one ſide open. Two or three great lights are to be ſet in this; and the box is to be fixed to the perſon's breaſt, with the open ſide forwards, ſo that the light may be caſt forward to a great diſtance. It will ſpread as it goes out of the box; and will diſtinctly ſhew to the perſon that carries it whatever there is in the large ſpace of ground over which it extends, and conſequently all the birds that rooſt upon the ground. Two perſons muſt follow him who carries the box and bell, one on each ſide, ſo as not to be within the reach of the light to ſhew themſelves. Each of theſe is to have a hand-net of about three or four feet ſquare, faſtened to a long ſtick or pole; and on whichever ſide any bird is ſeen at rooſt, the perſon who is neareſt is to lay his net over it, and take it with as little noiſe as poſſible. When the net is over the bird, the perſon who laid it is not to be in a hurry to take the bird, but muſt ſtay till he who carries the light is got beyond it, that the motions may not be diſcovered. The blaze of the light and the noiſe of the bell terrify and amaze the birds in ſuch a manner that they remain ſtill to be taken; but the people who are about the work muſt keep the greateſt quiet and ſtillneſs that may be.

Some people are fond of going on this ſcheme alone. The perſon then fixes the light-box to his breaſt, Lower ‖ Lowth.

breaſt and carries the bell in one hand and the net in the other; the net in this caſe may be ſomewhat ſmaller, and the handle ſhorter. When more than one are out at a time, it is always proper to carry a gun; as it is no uncommon thing to ſpy a hare when on this expedition.

LOWER (Richard) an eminent Engliſh phyſician in the 17th century, was born in Cornwall, and educated at Weſtminſter-ſchool and Oxford. He entered on the phyſic line; and practiſed under Dr Thomas Willis, whom he inſtructed in ſome parts of anatomy, eſpecially when the latter was writing his *Cerebri anatome*. He, with Dr Willis, in 1674, diſcovered the medicinal waters at Aſhop in Northamptonſhire; which, upon their recommendations, became very much frequented. In 1666, he followed Dr Willis to London; practiſed phyſic under him; and became fellow of the royal ſociety, and of the college of phyſicians. In 1669, he publiſhed his *Tractatus de corde;* and, after the death of Dr Willis in 1675, he was eſteemed the moſt eminent phyſician in London. Upon the breaking out of the Popiſh plot in 1678, ſays Mr Wood in his *Athenæ Oxonienſis*, he cloſed with the Whigs, ſuppoſing that party would carry all before them; but, being miſtaken, he loſt his credit and practice. He died in 1691.

LOWERING, among diſtillers, a term uſed to expreſs the debaſing the ſtrength of any ſpirituous liquor, by mixing water with it. The ſtandard and marketable price of theſe liquors is fixed in regard to a certain ſtrength in them called *proof;* this is that ſtrength which makes them when ſhook in a vial, or poured from on high into a glaſs, retains a froth or crown of bubbles for ſome time. In this ſtate, ſpirits conſiſt of about half pure or totally inflammable ſpirit, and half water; and if any foreign or home ſpirits are to be expoſed to ſale, and are found to have that proof wanting, ſcarce any body will buy it till it has been diſtilled again and brought to that ſtrength; and if it is above that ſtrength, the proprietor uſually adds water to it to bring it down to that ſtandard. See the article Proof.

There is another kind of lowering among the retailers of ſpirituous liquors to the vulgar, by reducing it under the ſtandard-proof. Whoever has the art of doing this without deſtroying the bubble-proof, which is eaſily done by means of ſome addition that gives a greater tenacity to the parts of the ſpirits, will deceive all that judge by this proof alone. In this caſe, the beſt way to judge of liquors is by the eye and tongue, and eſpecially by the inſtrument called Hydrometer.

LOWTH (William), a learned divine, was the ſon of an apothecary born at London in 1661, and took his degrees at Oxford. His eminent worth and learning recommended him to Dr Mew biſhop of Wincheſter, who made him his chaplain, gave him two livings in Hampſhire, and conferred on him a prebend in the cathedral of Wincheſter. He acquired an unuſual ſhare of critical learning; but the moſt valuable part of his character was that which was leaſt conſpicuous to the world; that of a pious, diligent, and hoſpitable pariſh-prieſt. He publiſhed, 1. A vindication of the divine authority and inſpiration of the Old and New Teſtament. 2. Directions for the profitable reading of the Holy Scripture. 3. Commentaries on the prophets; and other works.

Loxia.

LOXIA, in zoology, the name of a genus of birds of the order of paſſeres: the diſtinguiſhing characters of which are, that the tongue is plain, equal, and whole; the beak large, thick, and ſhort, crooked and convex both ways. There are 48 ſpecies, principally diſtinguiſhed by the colour. The following are natives or viſitors of Britain.

1. The coccothrauſtes, or haw-groſbeak, viſits us only at uncertain times, and is not regularly migrant. They feed on berries; and even on kernels of the ſtrongeſt ſtones, ſuch as thoſe of cherries and almonds, which they crack with the greateſt facility: their bills are well adapted to that work, being remarkably thick and ſtrong. Mr Willughby tells us, they are common in Germany and Italy; that in the ſummer they live in woods, and breed in hollow trees, laying five or ſix eggs; but in the winter they come down into the plains. The length of this ſpecies is ſeven inches; the breadth, 13: the bill is of a funnel ſhape; ſtrong, thick, and of a dull pale pink colour; the breaſt and whole under-ſide is of a dirty fleſh colour; the neck aſh-coloured; the back and coverts of the wings of a deep brown, thoſe of the tail of a yellowiſh bay: the greater quill-feathers are black, marked with white on their inner webs. The tail is ſhort, ſpotted with white on the inner ſides. The legs fleſh-colour. The great particularity of this bird, is the form of the ends of the middle quill-feathers; which Mr Edwards juſtly compares to the figure of ſome of the ancient battle-axes: theſe feathers are gloſſed over with a rich blue; but are leſs conſpicuous in the female.

2. The enucleator, or pine-groſbeak, is common to Hudſon's Bay, Sweden, and Scotland. Mr Pennant obſerved them flying above the great pine-foreſts of Invercauld in Aberdeenſhire, and imagines they breed there. They feed on the ſeeds of the pine. Linnæus ſays, they ſing in the night. It is near twice the ſize of the bulfinch. The bill is ſtrong, duſky, forked at the end; leſs thick than that of the common bulfinch: head, back, neck, and breaſt, of a rich crimſon: the bottoms of the feathers aſh-colour: the quill-feathers and tail duſky; their exterior edges, of a dirty white: legs black: length, nine inches and a half. There ſeems an agreement in colours, as well as food, between this ſpecies and the croſs-bill.

3. The curviroſtra, or croſs-bill. There are two varieties of this bird: Mr Edwards has very accurately figured the leſſer, which is ſeen frequently; the other is very rare. Theſe birds, like the former, are inconſtant viſitants of this iſland: in Germany and Switzerland, they inhabit the pine foreſt, and breed in thoſe trees as early as the months of January and February. They feed on the ſeeds of the cones of pines and firs; and are very dexterous in ſcaling them, for which purpoſe the croſs ſtructure of the lower mandible of their bill is admirably adapted: they feed alſo on hemp-ſeed, and the pips or kernels of apples, and are ſaid to divide an apple with one ſtroke of the bill to get at the contents. Linnæus ſays, that the upper mandible of this bird is moveable; but, on examination, Mr Pennant could not diſcover its ſtructure to

differ from that of others of the genus. Theſe birds change their colours, or rather the ſhades of the colours: that is, the males which are red, vary at certain ſeaſons to deep red, to orange, or to a ſort of a yellow; the females, which are green, alter to different varieties of the ſame colour.

4. The pyrrhula, or bullfinch. The wild note of this bird is not in the leaſt muſical; but when tamed it becomes remarkably docil, and may be taught any tune after a pipe, or to whiſtle any notes in the juſteſt manner: it ſeldom forgets what it has learned; and will become ſo tame as to come at call, perch on its maſter's ſhoulders, and (at command) go through a difficult muſical leſſon. They may be taught to ſpeak, and ſome thus inſtructed are annually brought to London from Germany.—The male is diſtinguiſhed from the female by the ſuperior blackneſs of its crown, and by the rich crimſon that adorns the cheeks, breaſt, belly, and throat of the male; thoſe of the female being of a dirty colour: the bill is black, ſhort, and very thick: the head large: the hind part of the neck and the back are grey: the coverts of the wings are black; the lower croſſed with a white line: the quill-feathers duſky, but part of their inner webs white: the coverts of the tail and the vent-feathers white: the tail black.

In the ſpring theſe birds frequent our gardens; and are very deſtructive to our fruit-trees, by eating the tender buds. They breed about the latter end of May, or beginning of June, and are ſeldom ſeen at that time near houſes, as they chooſe ſome very retired place to breed in. They are ſometimes wholly black; and there are inſtances of their changing to this colour after they were full grown, and of recovering their natural colour in another year. Birds fed on hempſeed alone are moſt apt to change their colour in this manner.

LOYOLA (Ignatius). See Ignatius.

LOZENGE, in heraldry; a four-cornered figure, reſembling a pane of glaſs in old caſements. See Heraldry, p. 3597, col. 1. Tho' all heralds agree, that ſingle ladies are to place their arms on lozenges, yet they differ with reſpect to the cauſes that gave riſe to it. Plutarch ſays, in the life of Theſeus, that in Megara, an ancient town of Greece, the tomb ſtones, under which the bodies of the Amazons lay, were ſhaped after that form; which ſome conjecture to be the cauſe why ladies have their arms on lozenges. *S. Petra Sancta* will have this ſhield to repreſent a *cuſhion*, whereupon women uſed to ſit and ſpin, or do other houſewifery. Sir J. Ferne thinks it is formed from the ſhield called *teſſera*, which the Romans finding unfit for war, did allow to women to place their enſigns upon, with one of its angles always uppermoſt.

Lozenges, among jewellers, are common to brilliant and roſe diamonds. In brilliants, they are formed by the meeting of the ſkill and ſtar facets on the bezil; in the latter, by the meeting of the facets in the horizontal ribs of the crown. See Facets.

LUBEC, a city and port-town of Germany, in the circle of Lower Saxony and duchy of Holſtein, in E. Long. 10. 35. N. Lat. 54. 20. It ſtands at the conflux of ſeveral rivers, the largeſt of which is the Trave, 12 miles from the Baltic, where it has a fine harbour, and 40 north-eaſt of Hamburg. By the Steckenitz, another of thoſe rivers, it has a communication with the Elbe, and conſequently with the German ocean. The city lies on the ſide of a hill, with the Trave, increaſed by the Steckenitz on the one ſide, and the Wackenitz on the other; and is ſtrongly fortified with baſtions, moats, walls, and ramparts; the laſt of which are planted with trees, and form an agreeable walk. Lubec being formerly the chief of the Hanſe towns, was very powerful, in conſequence of the vaſt trade it carried on; but a great part of that trade is now transferred to Hamburg: however, it is ſtill ſaid to employ 150 of its own ſhips, and has a great ſhare of the Baltic trade. It is about two miles in length, and more than one in breadth. The houſes are all of ſtone, but old-faſhioned. Several of the ſtreets have on each ſide rows of lime-trees, with canals in the middle, like thoſe of Holland. The public ſtructures conſiſt of the ancient cathedral of the biſhopric of Lubec, and ſeveral other Lutheran churches; a nunnery for 22 ladies, with an abbeſs and prioreſs; a poor-houſe, an alms-houſe, and houſe of correction; an orphan-houſe; an hoſpital dedicated to the Holy-Ghoſt; a houſe in which poor travellers are entertained three days, and then ſent forward with a paſs; but ſuch as happen to be ſick, are provided with all neceſſaries, till they recover or die; the city-armoury, a grammar-ſchool of ſeven claſſes, the Calviniſt church, and the Popiſh chapel. The deputies of the Hanſe-towns uſed to meet here formerly in the town-houſe. An alliance ſtill ſubſiſts between Lubec, Hamburg, and Bremen; and theſe cities, under the name of *Hanſe-towns*, negotiate treaties with foreign powers. Here are divers manufactures, and the city's territory is about 60 miles in compaſs. In the diet of the empire Lubec is poſſeſſed of the third ſeat among the Rheniſh imperial cities; and among thoſe of the circle, has the firſt. In the matricula, its aſſeſſment is 480 florins, and to the chamber of Wetzlar it pays 557 rixdollars and 88 kruitzers. The city is a republic within itſelf, and both makes and executes laws in regard to civil and criminal matters, &c. A father and ſon, or two brothers, cannot be in the regency at the ſame time. The famous league of the Hanſe-towns was begun here in 1164. This city had its charter of privileges from the emperor Frederic II. Formerly it carried on wars, both offenſive and defenſive, for ſeveral years, not only againſt the dukes of Mecklenburg, but againſt the kings of Sweden and Denmark; particularly in 1428, when it fitted out 250 ſhips of force againſt Eric X. king of Denmark. There are about 20 churches in Lubec, with lofty ſteeples or ſpires. The Trave brings ſhips of burden into the very heart of the city; but the largeſt unload at Travemünde, i. e. the mouth of the Trave, eight or ten miles diſtant. Formerly it is ſaid to have employed no leſs than 600 ſhips. In the famous cellar here, it is ſaid there is wine 200 years old. The church of St Mary's, a noble lofty pile, is ſupported by tall pillars, all of one ſtone each, and has a high ſpire, covered with gilt lead. The town's garriſon conſiſts of about 700 or 800 men. The revenue of its Lutheran biſhop, though he is a prince of the empire, is ſaid not to exceed 3000 pounds.

LUBEN, a city of Germany, in the marquiſate of Lower Luſatia. It is ſituated on the river Spree, and is the capital of a ſmall circle of the ſame name. It is the ſeat of the diets, and of the chief tribunals and offices; and has ſeveral churches, with a noble land-houſe and hoſpital. E. Long. 14. 25. N. Lat. 52. 0.

LUBIENIETSKI (Staniſlaus), a Popiſh gentleman, deſcended from a noble family, and born at Cracow in 1623, was educated by his father with great attention. He became a celebrated Socinian miniſter; and took great pains to obtain a toleration from the German princes for his Socinian brethren. His labours, however, were ineffectual; being himſelf perſecuted by the Lutheran miniſters, and baniſhed from place to place; until at length he was baniſhed out of the world, with his two daughters, by poiſon, his wife narrowly eſcaping, in 1675. We have of his writing, *A hiſtory of the reformation in Poland; A treatiſe on comets;* with other works in Latin.

LUBIN (Eilhard), was profeſſor of poetry in the univerſity of Roſtock in 1595; and ten years after, was promoted to the profeſſorſhip of divinity. He wrote notes on Anacreon, Juvenal, Perſius, &c. and ſeveral other works; but that which made the moſt noiſe is a Treatiſe on the nature and origin of evil, intitled, *Phoſphorus de cauſa prima et natura mali*, printed at Roſtock in 1596; in which we have a curious hypotheſis to account for the origin of moral evil. He ſuppoſed two co-eternal principles; not *matter* and *vacuum*, as Epicurus did; but God, and *Nihilum* or *Nothing*. This being publiſhed againſt by Grawer, was defended by Lubin; but after all, he is deemed better acquainted with polite literature than with divinity. He died in 1621.

LUBLIN, a handſome and conſiderable town of Poland, capital of the palatinate of the ſame name, with a citadel, a biſhop's ſee, an univerſity, and a handſome Jewiſh ſynagogue. Here the judicial courts for all Poland are held. It has three fairs, frequented by merchants from all nations. It is ſeated on the river Byſtrzna. E. Lon. 22. 31. N. Lat. 51. 26.

LUCANUS (Marcus Annæus), a Latin poet, born at Corduba in Spain, about A. C. 39. He was the ſon of Annæus Mela, brother to Seneca, and of Acilia, daughter of Lucanus a very famous orator. When he was ſcarcely 14 years of age, he declaimed with applauſe, both in Greek and Latin: and became the rival of Perſius. Nero, charmed with his wit, made him augur and quæſtor before the due age: but at laſt Nero diſparaging his verſes, he was ſo offended at it, that he engaged himſelf in Piſo's conſpiracy; for which he had his veins cut, as his uncle Seneca had before him, A. C. 65. He wrote ſeveral poems; but we have none remaining beſide his *Pharſalia*, of which an excellent Engliſh verſion has been given by Mr Nicholas Rowe.

LUCAR DE BARRAMEDA (St), an handſome and conſiderable town of Spain, with a very good harbour, well defended, in Andaluſia. It was once the greateſt port in Spain, before the galleons unloaded their treaſure at Cadiz. It is ſeated at the mouth of the river Quadalquiver. W. Long. 6. 5. N. Lat. 36. 40.

LUCAR *de Guadiana* (St.), a ſtrong town of Spain, in Andaluſia, on the confines of Algarve; ſeated on the river Guadiana, with a little harbour. W. Long. 5. 59. N. Lat. 37. 32.

LUCAR *la Major* (St.), a ſmall town of Spain, in Andaluſia, with the title of a duchy. It is ſeated on the river Guadiana, in W. Long. 6. 32. N. Lat. 37. 21.

LUCAS (Van Leyden), an excellent painter and engraver, was thus named from the place of his birth, he being born in Leyden in 1494. He was at firſt a diſciple of his father, a painter of ſome eminence, and afterwards of Cornelius Engelbert; and was greatly admired in the Netherlands for his ſkill in painting and engraving. He took much pains with his works, and was a great emulator of Albert Durer; with whom he at length became ſo intimate, that they drew each other's picture: and indeed their ſtyle and manner have in all reſpects ſo cloſe a reſemblance, that it ſeems as if they had been both animated with the ſame ſoul. He lived and dreſſed with great magnificence; and died in the year 1533.

LUCAS (Richard), D. D. a learned Engliſh divine, was born in 1648, and ſtudied at Oxford; after which he entered into holy orders, and was for ſome time maſter of the free ſchool at Abergavenny. Being eſteemed an excellent preacher, he became vicar of St Stephen's, Coleman ſtreet, in London, and lecturer of St Olave's, in Southwark. He was doctor of divinity; and in 1696, was inſtalled prebendary of Weſtminſter. His ſight began to fail him in his youth; but he totally loſt it in his middle age. He was greatly eſteemed for his piety and learning; and publiſhed ſeveral works, particularly, 1. Practical Chriſtianity 2. An inquiry after happineſs. 3. Several ſermons. 4. A Latin tranſlation of the whole duty of man. He died in 1715.

LUCCA, a ſmall republic of Italy on the coaſt of the Mediterranean, between the territory of Genoa on the weſt, Modena on the north, and Tuſcany on the eaſt. According to Keyſler, it is only about 30 miles in circumference, but is exceedingly fertile and populous. It contains, beſides the city of Lucca, 15 ovillages. The number of inhabitants are computed at 120,000. The government is lodged in a goſalonier, whoſe power is much the ſame with that of the doges of Venice and Genoa. He is aſſiſted by nine counſellors: but the power of all the ten continues only for two months; during which time they live in the ſtate-palace, and at the public expence. They are choſen out of the great council, which conſiſts of 240 nobles; but even this council is changed by a new election every two years. The revenues of the republic are about 400,000 ſcudi or crowns; out of which they maintain 500 men by way of regular force, and 70 Swiſs as a guard to their acting magiſtrates. The city of Lucca is ſituated in a plain, terminating in moſt delightful eminences, adorned with villas, ſummer-houſes, corn-fields, and plantations of every kind; ſo that nothing either for uſe or pleaſure is here wanting. The city, which is about three Italian miles in circumference, has regular well-lined fortifications; and its ſtreets, though irregular, are wide, well paved, and full of handſome houſes. The number of its inhabitants are computed to be above 40,000; and they carry on large manufactures, eſpecially of ſilk-ſtuffs. Lucca has a biſhop, who enjoys ſeveral extraordinary privileges; and its cathedral is Gothic. The city ſtands in E. Long. 11. 27. N. Lat. 43. 52.

LUCERIA, (anc. geog.), a town of Apulia in Italy; which in Strabo's time ſtill exhibited marks of Diomed's ſovereignty in thoſe parts. Ptolemy has *Nuceria;* whether from miſtake, or the cuſtom of his time, uncertain. Now *Nocera de Pagani,* in the kingdom of Naples. E. Long. 15. 0. N. Lat. 40. 40.

LUCERNE, in botany. See MEDICAGO. For the culture of this plant, ſee AGRICULTURE, n° 137.

LUCIA (St), one of the Caribbee Iſlands in the Weſt-Indies, about 22 miles long, and 11 broad, the middle of it lying in N. Lat. 39. 14. W. Long. 27. 0. It was firſt ſettled by the French in 1650; but was reduced by the Engliſh in 1664, who evacuated it in 1666. The French immediately re-ſettled the iſland, but were again driven away by the Caribbs. As ſoon as the ſavages were gone, the former inhabitants returned, but only for a ſhort time; for being afraid of falling a prey to the firſt privateer that ſhould viſit their coaſts, they removed either to other French ſettlements that were ſtronger, or which they might expect to be better defended. There was then no regular culture or colony at St Lucia; it was only frequented by the inhabitants of Martinico, who came thither to cut wood, and to build canoes, and who had who had conſiderable docks on the iſland. In 1718 it was again ſettled by the French; but four years after, it was given by the court of London to the duke of Montagu, who was ſent to take poſſeſſion of it. This occaſioned ſome diſturbance between the two courts; which was ſettled, however, by an agreement made in 1731, that, till the reſpective claims ſhould be finally adjuſted, the iſland ſhould be evacuated by both nations, but that both ſhould wood and water there. This precarious agreement furniſhed an opportunity for private intereſt to exert itſelf. The Engliſh no longer moleſted the French in their habitations; but employed them as their aſſiſtants in carrying on with richer colonies a ſmuggling trade, which the ſubjects of both governments thought equally advantageous to them. This trade has been more or leſs conſiderable till the treaty of 1763, when the property of St Lucia was ſecured to the crown of France. After that time the colony flouriſhed conſiderably. In the beginning of the year 1772, the number of white people amounted to 2018 ſouls, men, women, and children; that of the blacks to 663 freemen, and 12,795 ſlaves. The cattle conſiſted of 928 mules or horſes, 2070 head of horned cattle, and 3184 ſheep or goats. There were 38 ſugar-plantations, which occupied 978 pieces of land; 5,395,889 coffee-trees; 1,321,600 cocoa plants; and 367 plots of cotton. There were 706 dwelling-places. The annual revenue at that time was about 175,000 l. which, according to the abbé Raynal, muſt have increaſed one-eighth yearly for ſome time. It was taken by the Britiſh fleet under admirals Byron and Barrington, in the year 1778.

The ſoil of St Lucia is tolerably good, even at the ſea-ſide; and is much better the farther one advances into the country. The whole of it is capable of cultivation, except ſome high and craggy mountains which bear evident marks of old volcanoes. In one deep valley there are ſtill eight or ten ponds, the water of which boils up in a dreadful manner, and retains ſome of its heat at the diſtance of 6000 toiſes from its reſervoirs. The air in the inland parts, like that of all other uninhabited countries, is foul and unwholeſome; but grows leſs noxious as the woods are cleared and the ground laid open. On ſome parts of the ſea-coaſt, the air is ſtill more unhealthy, on account of ſome ſmall rivers which ſpring from the foot of the mountains, and have not ſufficient ſlope to waſh down the ſands with which the influx of the ocean ſtops up their mouths, by which means they ſpread themſelves into unwholeſome marſhes on the neighbouring grounds.

LUCIA *(St)*, a high and mountainous iſland of Africa, and one of thoſe of Cape Verde, is about nine leagues long, and lies in the latitude of 16° 18′ N. according to the Engliſh geographers; but according to all others, it is a degree farther to the northward. On the eaſt-ſouth-eaſt ſide is a harbour, with a bottom and ſhore of white ſand; but its beſt road is oppoſite to St Vincents to the ſouth-weſt, where there are at leaſt 20 fathoms of water. On the weſt ſide there is no water: it abounds with goats, ſea and land fowl, tortoiſes, &c. but whether it hath any inhabitants is not certainly known.

LUCIAN, a celebrated Greek author in the firſt century, was born at Samoſata, of obſcure parents, in the reign of the emperor Trajan. He ſtudied law, and practiſed ſome time as an advocate; but growing weary of the wrangling oratory of the bar, he commenced rhetorician. He lived to the time of Marcus Aurelius, who made him regiſter of Alexandria in Egypt; and, according to Suidas, he was at laſt worried by dogs. Lucian was one of the fineſt wits in all antiquity. His *Dialogues,* and other works, are written in Greek. In theſe he has joined the uſeful to the agreeable, inſtruction to ſatire, and erudition to elegance; and we every-where meet with that fine and delicate raillery which characteriſes the Attic taſte.—Thoſe who cenſure him as an impious ſcoffer at religion, have reaſon on their ſide, if religion conſiſted in the theology of the Pagan poets, or in the extravagant opinions of philoſophers; for he perpetually throws ſuch ridicule on the gods and philoſophers, with their vices, as inſpires hatred and contempt for them; but it cannot be ſaid that he writes any-where againſt an over-ruling providence.

LUCIFER, according to the poets, was the ſon of Jupiter and Aurora: in aſtronomy, Lucifer is the bright planet Venus, which either goes before the ſun in the morning, and is our morning-ſtar; or in the evening follows the ſun, and then is called *Heſperus,* or the evening-ſtar.

LUCILIUS (Caius), a Roman knight, and a Latin poet, was born at Sueſſa in Italy, about 140 B.C. He ſerved under Scipio Africanus in the war with the Numantines; and was in great favour with that celebrated general, and with Lælius. He wrote 30 books of ſatires, in which he laſhed ſeveral perſons of quality very ſharply. Some learned men aſcribe the invention of ſatire to him; but M. Dacier has maintained, with great probability, that Lucilius only gave a better turn to that kind of poetry, and wrote it with more wit and humour than his predeceſſors Ennius and Pacuvius had done. His fragments have been carefully collected by Francis Douza at Leyden in 1599, with notes. But they require ſtill to be better illuſtrated by ſome learned critic.

LUCINA, a goddeſs among the Romans, who preſided over women in labour. Some take her to be Diana, others Juno. She is called *Lucina*, becauſe ſhe brought children to the light; from the Latin word *lux*, "light."

LUCIUS, in ichthyology. See Esox.

LUCONIA. See Manila.

LUCOPHEREA, in ichthyology. See Perca.

LUCRETIA, the famous Roman matron, wife of Collatinus, and the cauſe of the revolution in Rome from a monarchy to a republic: this lady being raviſhed by Sextus, the eldeſt ſon of Tarquin king of Rome, ſtabbed herſelf, 509 B. C. The bloody poinard, with her dead body expoſed to the ſenate, was the ſignal of Roman liberty; the expulſion of the Tarquins, and abolition of the regal dignity, was inſtantly reſolved on, and carried into execution.

LUCRETIUS, or Titus Lucretius Caius, one of the moſt celebrated of the Latin poets, was born of an ancient and noble Roman family, and ſtudied at Athens, where he became one of Epicurus's ſect. He acquired great reputation by his learning and eloquence; but in the flower of his age fell into a frenzy, occaſioned by a philtre given him by his wife, who was diſtractedly fond of him. Lucretius, during the intervals of his madneſs, put Epicurus's doctrines into verſe, and compoſed his ſix books *De rerum natura*, which are ſtill extant. It is ſaid that he killed himſelf in a fit of madneſs, in the 54th year before the Chriſtian æra, when 51 years old. The moſt correct edition of Lucretius is that of Simon de Coline. The cardinal de Polignac has refuted Lucretius's arguments in his excellent Latin poem intitled *Anti-Lucretius*. His poem *De rerum natura* has been tranſlated into Engliſh by Mr Creech.

LUCRINUS lacus (anc. geogr.), a lake of Campania between Baiæ and Puteoli, famous for its oyſters, (Horace, Martial, Juvenal); *Lucrinenſes* (Cicero), the people dwelling on it. Now a perfect bay ſince the earthquake in 1538.

LUCULLUS (Lucius Licinius), a Roman general, celebrated for his eloquence, his victories, and his riches. In his youth, he made a figure at the bar; and being afterwards made quæſtor in Aſia, and prætor in Africa, governed thoſe provinces with great moderation and juſtice. Scarce was he known as a military man, when he twice beat the fleet of Amilcar, and gained two great victories over him. His happy genius was greatly improved by ſtudy; for he employed his leiſure in reading the beſt authors on military affairs. Being made conſul with Aurelius Cotta, during the third war with Mithridates king of Pontus, he was ſent againſt this prince: and this expedition was attended with a ſeries of victories, which did him leſs honour than an act of generoſity towards his colleague; who, willing to take advantage of his abſence to ſignalize himſelf by ſome great exploit, haſtened to fight Mithridates; but was defeated, and ſhut up in Calcedonia; where he muſt have periſhed, if Lucullus, ſacrificing his reſentment to the pleaſure of ſaving a Roman citizen, had not flown to his aſſiſtance, and diſengaged him. All Pontus then ſubmitted to Lucullus; who being continued in his government of Aſia, entered the territories of Tigranes, the moſt powerful king in Aſia. That prince marched with a formidable army againſt Lucullus: who defeated him with a handful of men, and killed great numbers of his forces; took Tigranocertes, the capital of his kingdom; and was ready to put an end to the war, when the intrigues of a tribune got him depoſed, and Pompey nominated in his room.

Lucullus having brought home prodigious riches, now gave himſelf up to exceſſive luxury; and his table was ſerved with a profuſion till that time unknown. He brought from the Eaſt a great number of books, which he formed into a library, and gave admittance to all men of learning, who frequented it in great numbers. Toward the end of his life, he fell into a kind of madneſs; and Lucullus, his brother, was appointed his guardian. He is ſaid to have been the firſt who brought cherries into Europe, having brought the grafts from the kingdom of Pontus.

LUCUS, in general, denotes a wood or grove ſacred to a deity; ſo called *à lucendo*, becauſe a great number of lights were uſually burning in honour of the god, (Iſidorus); a practice common with idolaters, as we learn from Scripture: hence Homer's αγλαον αλσος.

LUD, a Britiſh king mentioned in our old chronicles, and ſaid to have reigned about the year of the world 3878. He is reported to have enlarged and walled about *Troynovant*, or New Troy, where he kept his court, and made it his capital. The name of *London* is hence derived from *Lud's town*; and *Ludgate*, from his being buried near it: but this is only one among many other derivations of the name of London; which are at leaſt equally probable. See London.

LUDIUS, a celebrated painter, lived in the reign of Auguſtus Ceſar, and excelled in grand compoſitions. He was the firſt who painted the fronts of houſes in the ſtreets of Rome; which he beautified with great variety of landſcapes, and many other different ſubjects.

LUDLOW (Edmund), ſon of Sir Henry Ludlow, was born at Maidenhead, and educated in Trinity-college, Oxford. His father oppoſing the king's intereſt, Mr Ludlow joined with the ſame party, and was preſent at the battle of Edgehill as a volunteer under the earl of Eſſex. Upon the death of his father, he was choſen knight of the ſhire for Wilts, and obtained the command of a regiment of horſe for the defence of that county. He was one of king Charles I.'s judges: after whoſe death he was ſent by the parliament into Ireland, in quality of lieutenant-general of the horſe; which employment he diſcharged with diligence and ſucceſs till the death of the lord-deputy Ireton, when he acted for ſome time as general, though without that title; Cromwell, who knew him to be ſincerely in the intereſt of the commonwealth, always finding out ſome pretext to hinder the conferring of that character upon him. The laſt ſtroke had been given by Ludlow to the Iriſh rebellion, if the uſurpation of Cromwell had not prevented it. Under his power he never acted; and though Cromwell uſed his utmoſt efforts, he remained inflexible. After Cromwell's death, he endeavoured to reſtore the commonwealth;

Ludlow, Ludolph.

wealth; but Charles II. being recalled, he thought proper to conceal himſelf, and eſcaped into Switzerland, where he ſettled. After the revolution, he came over into England, in order to be employed in Ireland againſt king James: but appearing publicly in London, it gave great offence; and an addreſs was preſented by Sir Edward Seymour to king William III. for a proclamation in order to apprehend colonel Ludlow, attainted for the murder of king Charles I. Upon this he returned to Switzerland, where he died. During his retirement in Switzerland, he wrote his Memoirs.

Ludlow, a town of Shropſhire in England, ſituated in W. Long. 2. 45. N. Lat. 52. 28. It ſtands at the conflux of the Teme and Corve; and had formerly a ſtrong caſtle, incloſed by a wall a mile in compaſs. The preſident of the council of the marches, eſtabliſhed by Henry VIII. generally kept his courts in it, by which the town was much benefited, theſe courts not having been aboliſhed till the 1ſt of William and Mary. Its neighbourhood to Wales makes it a great thoroughfare, and engages many of the Welch to ſend their children of both ſexes to it for education. It was incorporated by Edward IV. and among other privileges has that of trying and executing criminals within itſelf. It is one of the neateſt towns in England, with walls, and ſeven gates. From the caſtle on the top of the hill on which the town ſtands, is a moſt delightful proſpect. In an apartment of the outer-gatehouſe of the palace, Samuel Butler is ſaid to have written the firſt part of Hudibras. Here Arthur, elder brother to Henry VIII. died, and was buried in the choir of the church. Without the town, on the north-ſide, ſtood anciently a rich priory; of which there are hardly any remains. The river Teme here has a good bridge over it, and dams or weirs acroſs it. In the church are ſome old monuments of the lords preſident, &c. The neighbouring country is exceeding pleaſant, eſpecially that part called *Corve's-Dale*, or the *valley along the Corve*.

LUDOLPH (Job), a very learned writer of the 17th century, was born at Erfurt in Thuringia. He travelled much, and was maſter of 25 languages; viſited libraries, ſearched after natural curioſities and antiquities every where, and converſed with learned men of all nations. He publiſhed a hiſtory of Ethiopia, and other curious books.

Ludolph (Henry William), nephew of Job abovementioned, was born at Erfurt in 1655. He came over to England as ſecretary to M. Lenthe, envoy from the court of Copenhagen to that of London; and being recommended to prince George of Denmark, was received as his ſecretary. He enjoyed this office for ſome years, until he was incapacitated by a violent diſorder; when he was diſcharged with a handſome penſion: after he recovered, he travelled into Muſcovy, where he was well received by the czar, and where his knowledge made the Muſcovite prieſts ſuppoſe him to be a conjuror. On his return to London in 1694, he was cut for the ſtone; and as ſoon as his health would permit, in acknowledgment of the civilities he had received in Muſcovy, he wrote a grammar of their language, that the natives might learn their own tongue in a regular method. He then travelled into the Eaſt, to inform himſelf of the ſtate of the Chriſtian church in the Levant; the deplorable condition of which induced him, after his return, with the aid of the biſhop of Worceſter, to print an edition of the New Teſtament in the vulgar Greek, to preſent to the Greek church. In 1709, when ſuch numbers of Palatines came over to England, Mr Ludolph was appointed by queen Anne one of the commiſſioners to manage the charities raiſed for them; and he died early the following year. His collected works were publiſhed in 1712.

LUES, among phyſicians, is in general uſe for a diſeaſe of any kind; but in a more particular ſenſe is reſtrained to contagious and peſtilential diſeaſes: thus the *lues Gallicia* or *venerea*, ſignifies the venereal diſeaſe. See (the *Index* to) Medicine.

LUFF, the order from the pilot to the ſteerſman to put the helm towards the *lee*-ſide of the ſhip, in order to make the ſhip ſail nearer the direction of the wind. Hence, luff round, or luff a-lee, is the exceſs of this movement, by which it is intended to throw the ſhip's head up in the wind, in order to tack her, &c. A ſhip is accordingly ſaid to ſpring her luff, when ſhe yields to the effort of the helm, by ſailing nearer to the line of the wind than ſhe had done before. See alſo Hauling *the Wind*.

Luff-*Tackle*, a name given by ſailors to any large tackle that is not deſtined for a particular place, but may be variouſly employed as occaſion requires. It is generally ſomewhat larger than the jigger tackle, although ſmaller than thoſe which ſerve to hoiſt the heavier materials into and out of the veſſel: which latter are the main and fore-tackles, the ſtay and quarter tackles, &c.

LUG-sail, a ſquare ſail, hoiſted occaſionally on the maſt of a boat, or ſmall veſſel, upon a yard which hangs nearly at right angles with the maſt. Theſe are more particularly uſed in the barca longas, navigated by the Spaniards in the Mediterranean.

LUGDUNUM, (anc. geog.), the capital of the Seguſiani in Gallia Celtica, ſituated at the conflux of the Arar and Rhodanus, on an eminence, as the Celtic term *dune* ſignifies; built by Manutius Plancus under Auguſtus, while commanding in that part of Gaul; and whither he led a colony. Now *Lyons*, capital of the Lyonois.

Lugdunum *Batavorum*, (anc. geog.), a town of the Batavi in Gallia Belgica. Now *Leyden* in Holland.

Lugdunum *Convenarum*, (anc. geog.) a town of Gaul in Aquitain, at the foot of the Pyrenees. Now *S. Bertrand*, in Gaſcony.

LUGEUS lacus, (anc. geog.) a lake of Japydia, the weſtmoſt diſtrict of Illyricum, to the ſouth of the Save, and near the head of the Arſia. Now commonly called the *Zirichnitz Lake*, from a ſmall adjoining town: it is locked on every ſide with mountains; from which ſcanty currents run down; the leſs in quantity their waters, becauſe drunk up by the earth; till at length they are ſwallowed up in rocky furrows ſo formed, as to reſemble artificial. In theſe the water being ſo redundant, as to refuſe receiving any more, they regurgitate, and return the water with extraordinary celerity; which thus ſpreading itſelf, forms a lake, in moſt places 18 cubits high: and theſe waters afterwards retire with no leſs celerity than they came on, not only through the furrows, but paſs through the whole of the bottom, as through a ſieve; which when perceived by the inhabitants, they directly ſtop up the larger apertures, and thus take large quantities of fiſh: when the lake is dry, they cut down their harveſt on the ſpot where they ſowed, and ſow again before the inundation comes on: and graſs ſhoots ſo quick on it, that it may be cut down in three weeks time, (Lazius, Wernherus.)

LUKE (St.), the evangeliſt, and the diſciple of the apoſtles, was originally of Antioch in Syria, and by profeſſion a phyſician. He particularly attached himſelf to St Paul, and was his faithful companion in his travels and labours. He went with him to Troas in Macedonia, about the year 51. He wrote his Goſpel in Achaia about the year 53; and, ten years after, the Acts of the Apoſtles, which contains a hiſtory of 30 years. Of all the inſpired writers of the New Teſtament, his works are written in the moſt elegant Greek. It is believed that St Luke died at Rome, or in Achaia.

Goſpel of St Luke, a canonical book of the New Teſtament. Some think that it was properly St Paul's Goſpel; and that, when the apoſtle ſpeaks of *his* Goſpel, he means what is called *St Luke's*. Irenæus ſays, that St Luke digeſted into writing what St Paul preached to the Gentiles; and Gregory Nazianzen tells us, that St Luke wrote with the aſſiſtance of St Paul.

St Luke *the Evangeliſt's Day*, a feſtival in the Chriſtian church, obſerved on the 18th of October.

LULA, a town of Swediſh Lapland; ſeated at the mouth of the river Lula, on the weſt ſide of the gulph of Bothnia, 42 miles ſouth-weſt of Tornea. E. Long. 21. 0. N. Lat. 64. 30.

Lula *Lapmark*, a province of Swediſh Lapland; bounded by that of Tornea on the north, by the Bothnic Gulph on the eaſt, by Pithia Lapmark on the ſouth, and Norway on the weſt.

LULLI (John Baptiſt), the moſt celebrated and moſt excellent muſician that has appeared in France ſince the revival of learning, was born at Florence. He was taken to France when very young by a perſon of quality; and he carried the art of playing on the violin to the higheſt perfection. Lewis XIV. made him ſuperintendant of muſic. Some time after, Perinna having introduced operas into France, and quarrelling with his company, he reſigned his privilege to Lulli. Operas were then carried to the utmoſt perfection by this celebrated muſician, and were attended with continual applauſe. Lulli every year, after this time, gave a piece of his own compoſition, till his death, which happened in 1687.

LULLY (Raymond), a famous writer, ſurnamed the *Enlightened Doctor*, was born in the iſland of Majorca in 1225. He applied himſelf with indefatigable labour to the ſtudy of the Arabian philoſophy, to chemiſtry, phyſic, and divinity; and acquired great reputation by his works. He at length went to preach the goſpel in Africa; and was ſtoned to death in Mauritania, at the age of 80. He is honoured as a martyr at Majorca, whither his body was carried. He wrote many treatiſes on all the ſciences, in which he ſhews much ſtudy and ſubtilty, but little judgment or ſolidity. A complete edition of his works has been printed at Mentz.—He ought not to be confounded with Raymond Lully of Terraca, ſurnamed *Neophyta*, who, from being a Jew, turned Dominican friar. This laſt Lully maintained ſeveral opinions that were condemned by pope Gregory XI.

LUMBAGO, a fixed pain in the ſmall of the back. See (the *Index* ſubjoined to) Medicine.

LUMBARIS, a name given to the arteries and veins which ſpread over the loins.

LUMBRICAL, a name given to four muſcles of the fingers, and to as many of the toes.

LUMBRICUS, the Earth-worm, in zoology, a genus of inſects belonging to the order of vermes inteſtina. The body is cylindrical, annulated, with an elevated belt near the middle. There is but one ſpecies of this animal. It lives under ground, and feeds upon the roots and ſeeds of plants. It comes above ground in the night, or during rain, for the purpoſe of copulation. For the effects of theſe animals in the human body, and the method of expelling them, ſee (the *Index* ſubjoined to) Medicine.

LUMELLO, a village in Italy, which gives name to the Lumellin, a ſmall diſtrict in the duchy of Milan, lying along the river Po, and of which Mortaria and Valencia are the principal places. It was ceded to the duke of Savoy in 1707, and confirmed by the treaty of Utrecht in 1713. E. Long. 8. 42. N. Lat. 45. 5.

LUMINOUSNESS *of the Sea*. See Light and Sea.

Luminousness *of Putreſcent Subſtances*. See Light.

LUMP-fish. See Cyclopterus.

LUNA, in aſtronomy, the moon. See Astronomy, *paſſim*.

Luna *Cornea*. See Chemistry, n° 239, 366.

LUNACY, the madneſs of a perſon who formerly hath had the uſe of his reaſon, but hath loſt it by diſeaſe, grief, or ſome other accident. See Medicine.

Lunacy, in law. See Idiocy and Lunatic.

LUNATIC, a perſon affected with lunacy. The word is indeed properly applied to one that hath lucid intervals; ſometimes enjoying his ſenſes, and ſometimes not; and that frequently ſuppoſed to depend on the influence of the moon.

Lunatic, in law. Under the general term of *non compos mentis*, (which Sir Edward Coke ſays is the moſt legal name) are comprized not only lunatics, but perſons under frenzies, or who loſe their intellects by diſeaſe; thoſe that *grow* deaf, dumb, and blind, not being *born* ſo; or ſuch, in ſhort, as are judged by the court of chancery incapable of conducting their own affairs. To theſe alſo, as well as idiots, the king is guardian, but to a very different purpoſe. For the law always imagines, that theſe accidental miſfortunes may be removed; and therefore only conſtitutes the crown a truſtee for the unfortunate perſons, to protect their property, and to account to them for all profits received, if they recover, or after their deceaſe to their repreſentatives. And therefore it is declared by the ſtatute 17 Edw. II. c. 10. that the king ſhall provide for the cuſtody and ſuſtentation of lunatics, and preſerve their lands, and the profits of them, for their uſe when they come to their right mind; and the king ſhall take nothing to his own uſe: and if the parties die in ſuch eſtate, the reſidue ſhall be diſtributed for their ſouls by the advice of the ordinary, and of courſe (by the ſubſequent amendments of the law of admininiſtrations) ſhall now go to their executors or adminiſtrators.

On the firſt attack of lunacy, or other occaſional inſanity, when there may be hopes of a ſpeedy reſtitution of reaſon, it is uſual to confine the unhappy objects in private cuſtody under the direction of their neareſt friends and relations: and the legiſlature, to prevent all abuſes incident to ſuch private cuſtody, hath thought proper to interpoſe its authority, by 14 Geo. III. c. 49. for regulating private madhouſes. But, when the diſorder is grown permanent, and the circumſtances of the party will bear ſuch additional expence, it is thought proper to apply to the royal authority to warrant a laſting confinement.

The method of proving a perſon *non compos* is very ſimilar to that of proving him an idiot. The lord chancellor, to whom, by ſpecial authority from the king, the cuſtody of idiots and lunatics is intruſted, upon petition or information, grants a commiſſion in nature of the writ *de idiota inquirendo*, to inquire into the party's ſtate of mind; and if he be found *non compos*, he uſually commits the care of his perſon, with a ſuitable allowance for his maintenance, to ſome friend, who is then called his committee. However, to prevent ſiniſter practices, the next heir is ſeldom permitted to be of this committee of the perſon; becauſe it is his intereſt that the party ſhould die. But, it hath been ſaid, there lies not the ſame objection againſt his next of kin, provided he be not his heir; for it is his intereſt to preſerve the lunatic's life, in order to increaſe the perſonal eſtate by ſavings, which he or his family may hereafter be entitled to enjoy. The heir is generally made the manager or committee of the eſtate, it being clearly his intereſt by good management to keep it in condition; accountable, however, to the court of chancery, and to the *non compos* himſelf, if he recovers; or otherwiſe, to his adminiſtrators. See Idiocy.

LUNDEN, a conſiderable town of Sweden, in Gothland; and capital of the territory of Schonen, with an archbiſhop's ſee, and an univerſity. It was ceded to the Swedes by the Danes in 1658. E. Long. 13. 25. N. Lat. 55. 40.

LUNENBURG, or Luneburg *Zell*, a principality of Germany, bounded to the ſouth by that of Calenberg, the dioceſe of Hildeſheim, and the duchy of Brunſwic; to the north, by the duchy of Lauenburg and the Elbe, by the laſt of which it is ſeparated from the territory of the imperial city of Hamburg; to the eaſt, by the duchy of Brunſwic, the Alte-Mark, and the duchy of Mecklenburg; and to the weſt, by the duchies of Bremen and Verden, the county of Hoya, and the principality of Calenberg. The ſoil, except along the Elbe, Aller, and Jetz, is either ſand, heath, or moors. In the more fruitful parts of it are produced wheat, rye, barley, oats, peaſe, buck-wheat, flax, hemp, hops, pulſe, oak, beech, firs, pines, birch, and alder, together with black cattle and horſes. The heaths abound with bees and honey, and a ſmall kind of ſheep whoſe wool is long and courſe. Lunenburg is well furniſhed with ſalt ſprings and limeſtone, and the foreſt of Gorde with veniſon. The rivers Elbe, Ilmenau, and Aller, are navigable; and conſequently very advantageous to the country, independent of the fiſh which they yield. The general diets of this principality are convened by the ſovereign twice a-year, and held at Zell. They conſiſt of the deputies of the nobility and the towns of Luneburg, Uelzen, and Zell, who have the nomination of the members of the high colleges, and other officers, jointly with the ſovereign. There are near 200 Lutheran churches in the country, under two general and 15 ſubordinate ſuperintendants, ſeveral grammar-ſchools, two Calviniſt churches at Zell, and an academy of exerciſes at Luneburg. The manufactures are chiefly linen cloth, cottons, ribbons, ſtockings, hats, ſtarch, bleached wax, refined ſugar, gold and ſilver wires, all kinds of wooden wares, barges, boats, and ſhips. The exports of theſe to Hamburg, Lubec, and Altena, are conſiderable. The neighbourhood of theſe cities, with the facility of conveying goods and merchandize to them and other places, either by land or water, is very advantageous to this country, and contributes greatly to its ſubſiſtence. On account of this principality, the king of Great Britain has a ſeat and voice both in the college of the princes of the empire, and of the circle of Lower-Saxony. Its quota in the Matricula is 20 horſe and 120 foot, or 720 florins in lieu of them. The revenues of the principality ariſe chiefly from the demeſnes, tolls on the Elbe, contributions, duties on cattle, beer, wine, brandy, and other commodities, which all together muſt be very conſiderable, ſome bailiwics alone yielding upwards of 20,000 rix-dollars.

Luneburg, the capital of the principality of the ſame name, is a pretty large town of Germany, on the river Elmen, or the Ilmenau, which is navigable from the town to the Elbe, at the diſtance of 13 miles. It is 27 miles from Hamburgh, 43 from Zell, 65 from Brunſwic, 76 from Bremen, 68 from Hanover; and ſtands in E. Long. 10. 40. N. Lat. 53. 28. Its inhabitants are reckoned at between 8000 and 9000. Formerly this town was one of the Hanſe, and an imperial city. Some derive its name from *Lina*, the ancient name of the Ilmenau; others from *Luna*, the moon, an image of which is ſaid to have been worſhipped by the inhabitants in the times of Paganiſm. Here were anciently ſeveral convents, viz. one of Minims, another of Premonſtratenſians, another of Benedictines, and a fourth of Minorites. Out of the revenues of the Benedictine monaſtery was founded an academy for the martial exerciſes, where young gentlemen of the principality of Luneburg are maintained gratis, and taught French, fencing, riding, and dancing; but foreigners are educated at a certain fixed price. A Latin ſchool was alſo founded, conſiſting of four claſſes, and well-endowed out of theſe revenues. The ſuperintendency and management of theſe, and the eſtates appropriated to their maintenance, belongs to the landſchaft director, and the aufreiter, who are both choſen from among the Luneburg nobility. The firſt came in place of the Popiſh abbot, and as ſuch is head of the ſtates of the principality, and preſident of the provincial college. He has the title of *excellency*; and in public inſtruments ſtyles himſelf, *by the grace of God landſchaft director*, and *lord of the manſion of St Michael in Luneburg*. The chief public edifices are three pariſh-churches, the ducal palace, three hoſpitals, the town-houſe, the ſalt-magazine, the anatomical theatre, the academy; the conventual church of St Michael, in which lie interred the ancient dukes; and in which is the famous table eight foot long, and four wide, plated over with chaſed gold, with a rim embelliſhed with precious ſtones, of an immenſe value, which was taken from the Saracens by the emperor Otho, and preſented to this church; but in 1698, a gang of thieves ſtripped it of 200 rubies and emeralds, together with a large diamond, and moſt of the gold, ſo that at preſent but a ſmall part of it remains. Here are ſome very rich ſalt-ſprings. Formerly, when there was a greater demand for the ſalt, upwards of 120,000 tons have been annually boiled here, and ſold off: but ſince the commencement of the preſent century, the ſalt-trade hath declined greatly. A fifth of the ſalt made here belongs to the king, but is farmed out. It is ſaid to excel all the other ſalt made in Germany. This town is well fortified; and has a garriſon, which is lodged in barracks. In the neighbourhood is a good lime-ſtone quarry; and along the Ilmenau are warehouſes, in which are lodged goods brought from all parts of Germany, to be forwarded by the Elmenau to Hamburg, or by the Aſche to Lubec, from whence other goods are brought back the ſame way. The town itſelf drives a conſiderable traffic in wax, honey, wool, flax, linen, ſalt, lime, and beer.

LUNGS. See Anatomy, n° 381.

Lung-*Wort*, in botany. See Pulmonaria.

Lungs *of Inſects*. In the fly-claſs, the ſtigmata are extremely numerous; and the trachea which they terminate are branched and divaricated all over the body in an amazing manner, as if every part and particle of the bodies of theſe little creatures had occaſion for its particular air-veſſels: beſides theſe, however, flies are provided with proper lungs. They have two; and thoſe ſo very large, that they frequently take up half, and ſometimes two thirds, of the body of the animal.—Theſe are two bladders placed ſide-ways, one by the other, alike in ſhape and ſize; and having their origin at the junction of the corcelet and body, and, in many flies whoſe bodies are compoſed of five rings, extending to the third, and ſometimes to the fourth. The ſize and figure of each of theſe bladders is ſuch as is neceſſary to fill almoſt entirely that cavity of the body in which it is lodged. They each of them touch the ſides of this cavity; the part where they join one another is flat, and this commiſſure forms a line running ſtraight down the body; they are, however, in this part, though ſo cloſely in contact, yet not at all joined to one another. This commiſſure, however, does not reach quite up to the back, or quite down to the belly: there is a ſmall cavity left between each, which was very neceſſary in both places; the one to give paſſage to the great artery, the other to the excrements.

LUNISOLAR year, in chronology, the ſpace of 532 common years; found by multiplying the cycle of the ſun by that of the moon.

LUNULA, in geometry, a plane figure like a creſcent or half-moon.

LUPERCALIA, feaſts inſtituted in ancient Rome, in honour of the god Pan.—The word comes from *Lupercal*, the name of a place under the Palatine mountain, where the ſacrifices were performed.

The lupercalia were celebrated on the 15th of the kalends of March, that is, on the 15th of February, or, as Ovid obſerves, on the third day after the ides. They are ſuppoſed to have been eſtabliſhed by Evander.

On the morning of this feaſt, the luperci, or prieſts of Pan, ran naked thro' the ſtreets of Rome, ſtriking the married women they met on the hands and belly, with a thong, or ſtrap of goat's leather, which was held an omen promiſing them fecundity and happy deliveries. See Luperci.

This feaſt was aboliſhed in the time of Auguſtus; but afterwards reſtored, and continued to the time of the emperor Anaſtaſius.—Baronius ſays, it was aboliſhed by the pope in 496.

LUPERCI, a name given to the prieſts of the god Pan. See Lupercalia.

The *luperci* were the moſt ancient order of prieſts in Rome; they were divided into two colleges, or companies, the one called *Fabii*, and the other *Quintilii*. To theſe Cæſar added a third, which he called *Julii*.

LUPINUS, lupine; a genus of the diadelphia order, belonging to the decandria claſs of plants. There are ſeven ſpecies, ſix of them hardy herbaceous flowery annuals, and one perennial; riſing with upright ſtalks from one to three or four feet high; ornamented with digitate or fingered leaves, and terminated by long whorled ſpikes of papilionaceous flowers, white, blue, yellow, and roſe-coloured. They are all eaſily raiſed from ſeed; and ſucceed in any open borders, where they make a fine variety.

LUPULUS, in botany. See Humulus.

LUPUS, in zoology. See Canis.

Lupus-*Marinus*. See Anarrhichas.

Lupus, in aſtronomy. See there, n° 206.

LURCHER, a kind of hunting-dog much like a mongrel gre-hound, with pricked ears, a ſhagged coat, and generally of a yellowiſh white colour: they are very ſwift runners, ſo that if they get between the burrows and the conies, they ſeldom miſs; and this is their common practice in hunting: yet they uſe other ſubtilties, as the tumbler does, ſome of them bringing in their game, and thoſe are the beſt. It is alſo obſervable, that a lurcher will run down a hare at ſtretch.

LURE, in falconry, a device of leather, in the ſhape of two wings, ſtuck with feathers, and baited with a piece of fleſh, to call back a hawk when at conſiderable diſtance.

LURIDÆ, the name of the 28th order in Linnæus's fragments of a natural method, conſiſting of plants whoſe pale and ominous appearance ſeems to indicate ſomething baleful and noxious in their nature and quality. This order contains the following genera, viz. atropa, browallia, capſicum, cateſbæa, celſia, ceſtrum, datura, digitalis, elliſia, hyoſcyamus, lycium, nicotiana, padalium, phyſalis, ſeſamum, ſolanum, ſtrychnus, and verbaſcum.

LUSATIA, a marquiſate of Germany, in Upper Saxony; bounded to the eaſt by Sileſia, to the weſt by Miſnia, to the ſouth by Bohemia, and to the north by the marquiſate by Brandenburg. Till towards the middle of the 15th century, the Upper Luſatia was called the *Mark*, i. e. *the marquiſite or the land, of Budiſzin and Gorlitz*; and the Lower only *Luſatia*, which, Luſatia.

which, it is ſaid, in the Sclavonic, ſignifies a woody or marſhy country. The air of the Upper Luſatia, which is hilly or mountainous, is better than that of the Lower, a great part of which is mooriſh and boggy. Both abound in wood, eſpecially the Lower, and turf for fuel. The heathy and mountainous tracts are generally barren; but the lower champaign and marſh lands, are tolerably fertile, producing paſture, wheat, rye, oats, barley, buck-wheat, peaſe, lentils, beans, and millet; together with flax, hops, tobacco, ſome white and red wine, and what is called *manna*. Of ſeveral of theſe articles, however, conſiderable quantities are imported. In this country are found alſo quarries of ſtone, medicinal ſprings, baſtard diamonds, agates, and jaſpers, earths and clays for tobacco-pipes and all ſorts of earthen ware, alum, good iron, ſtone, vitriolic and copper water; nor is it deſtitute of cattle, fiſh, and veniſon. The rivers Spree, the Schwarze or Black Elſter, and the Pulznitz, have their ſources in the Luſatias, which are alſo watered by the Neiſſe and Queis. The ancient inhabitants of this country were the Saxons, who were ſucceeded by the Vandals, and theſe by the Sorber-Wends, a Sclavonian people. The preſent inhabitants, the deſcendants of the Wends, have an odd dreſs; and the language is ſo inarticulate and guttural, that it hath been ſaid, it might be pronounced without lips, teeth, or tongue: but the towns are almoſt wholly peopled by Germans.

In the Upper Luſatia are ſix towns which appear at the land-diets, 16 ſmaller country-towns, and four market towns. In the Lower are four diet-towns, 13 country-towns, and two market ones. Both marquiſates were formerly ſubject either to the kings of Bohemia, the archdukes of Auſtria, or electors of Brandenburg; but, in 1636, both were abſolutely ceded to the elector of Saxony, in lieu of the 72 tons of gold, which he expended in aſſiſting the emperor Ferdinand II. againſt the Bohemians.

Chriſtianity was firſt planted in Luſatia in the ſeventh century; but it was ſeveral centuries after that, before Popery was fully eſtabliſhed. In the 11th century many cloiſters were erected in the country; but at the reformation ſuch numbers embraced Lutheraniſm, that it became the predominant religion, and ſtill continues, though there are ſtill ſeveral Roman Catholic foundations, churches, market towns, and villages. The enthuſiaſtic ſect of Hernhuters poſſeſſes a great influence and eſteem here. There are conſiderable manufactures of woollen and linen ſtuffs in the Luſatias, eſpecially the Upper. At Budiſſen, and in the adjacent country, prodigious quantities of ſtockings, ſpatterdaſhes, caps, and gloves, are made. The linen manufactures alſo flouriſh here, chiefly in the Upper-Luſatia, where all ſorts of linen are made, printed, and dyed. Excluſive of theſe, there are conſiderable manufactures of hats, leather, paper, gunpowder, iron, glaſs, bleached wax, &c. Though the demand and exportation of theſe commodities, particularly linens and woollens, is not ſo great as formerly, yet it is ſtill conſiderable, and more than over-balances their importations in wool, yarn, ſilk, wines, ſpices, corn, freſh and baked fruits, garden-ſtuff, and hops. Diſputes of many years ſtanding have ſubſiſted between the country-artificers and linen-manufacturers on the one ſide, and the diet-towns on the other; the latter unjuſtly ſeeking to exclude the former from any ſhare in the linen-trade. The natives of this country are ſaid to have quick natural parts, but to be ſordidly penurious. We are told they obſerve the Saxon laws much better than they did the Bohemian. Learning hath been much eſteemed and encouraged in both marquiſates ſince the reformation. The ſchools in the ſix diet-towns of Upper-Luſatia, particularly at Gorlitz, Budiſſen, and Zittau, greatly diſtinguiſh themſelves, having handſome ſtipends. In Lower Luſatia alſo are ſome good ſchools, with ſtipends for the maintenance of ſtudents. Printing is ſaid to be much followed, and brought to great perfection in this country.

In Upper-Luſatia, the ſtates conſiſt, 1ſt, of thoſe called *ſtate-lords*; 2dly, of the prelates; 3dly, of the gentry and commonalty, under which are comprehended the counts, barons, nobles, and burgeſſes, poſſeſſors of fees and fief-eſtates; and, 4thly, of the repreſentatives of the ſix principal towns. Without the conſent of theſe ſtates no taxes can be impoſed, nor any thing of importance, that regards the public, tranſacted. The diets are ordinary or extraordinary. The ordinary meet once in three years, and the extraordinary when ſummoned by the ſovereign upon particular emergencies. As to eccleſiaſtical matters, the dean of Budiſſen and his conſiſtory exerciſe all manner of epiſcopal juriſdiction; and, among the Proteſtants, the juriſdiction belongs either to the ſuperior, the upper-office, or the patrons. The revenues ariſing to the ſuperior or ſovereign, from Upper-Luſatia, conſiſt partly of the ſubſidies granted by the ſtates, among which, at preſent, are reckoned capitation and eſtate-money; and partly of the beer-tax, exciſe, tolls, &c. —Upper Luſatia is divided into two great circles, viz. thoſe of Budiſſen and Gorlitz, which are again divided into Leſſer circles.

The land-ſtates of Lower Luſatia conſiſt, like thoſe of the Upper, of prelates, lords, and knights, and the repreſentatives of the ſtate-towns, which are Luckau, Gubben-Lubben, and Kalau. Two land-diets are yearly held at Lubben, called *voluntary-diets*; but when the ſuperior cauſes the ſtates to be ſummoned together at his diſcretion, and propoſitions to be laid before them, by commiſſaries deputed for that purpoſe, ſuch convention is called a *great land-diet*. The marquiſate is divided into five circles, each of which holds a circle-aſſembly in its circle-town. The chief officers appointed either by the ſuperior or the ſtates, are, the preſident of the upper-office, the land-captain, and the land-judge. The principal tribunals are, the land-court, and the upper-office, to which lie appeals from the inferior judicatories. There are alſo officers for the ſeveral circles. Spiritual matters belong here to a conſiſtory, erected in 1668. The ordinary taxes are paid in the cheſt of the circle; and from thence conſigned to the general cheſt, of which the upper tax-receiver is ſuperintendant. By him an annual account of the receipts is made out, which is examined and paſſed by the deputies of the ſtates.

LUSITANIA, (anc. geog.) one of the diviſions of Spain, extending to the north of the Tagus, quite to the ſea of Cantabria, at leaſt to the Promontorium Celticum. But Auguſtus, by a new regulation, made the Anas its boundary to the ſouth, the Durius to the north; and thus conſtituting only a part of the modern Portugal. *Luſitani* the people, (Diodorus, Stephanus).

LUSTRATION, in antiquity, ſacrifices or ceremonies by which the ancients purified their cities, fields, armies, or people, defiled by any crime or impurity. Some of theſe luſtrations were public, others private. There were three ſpecies or manners of performing luſtration, viz. by fire and ſulphur, by water, and by air; which laſt was done by fanning and agitating the air round the thing to be purified. Some of theſe luſtrations were neceſſary, *i. e.* could not be diſpenſed with; as luſtrations of houſes in time of a plague, or upon the death of any perſon: others again were done out of choice, and at pleaſure. The public luſtrations at Rome were celebrated every fifth year; in which they led a victim thrice round the place to be purified, and in the mean time burnt a great quantity of perfumes. Their country luſtrations, which they called *ambarvalia*, were celebrated before they began to reap their corn: in thoſe of the armies, which they called *armiluſtria*, ſome choſen ſoldiers crowned with laurel, led the victims, which were a cow, a ſheep, and a bull, thrice round the army ranged in battle-array in the field of Mars, to which deity the victims were afterwards ſacrificed, after pouring out many imprecations upon the enemies of the Romans. The luſtrations of their flocks were performed in this manner: the ſhepherd ſprinkled them with pure water, and thrice ſurrounded his ſheepfold with a compoſition of ſavin, laurel, and brimſtone ſet on fire; and afterwards ſacrificed to the goddeſs Pales an offering of milk boiled, wine, a cake, and millet. As for private houſes, they were luſtrated with water, a fumigation of laurel, juniper, olive-tree, ſavin, and ſuch like; and the victim commonly was a pig. Luſtrations made for particular perſons were commonly called *expiations*, and the victims *piacula*. There were alſo a kind of luſtration uſed for infants, by which they were purified, girls the third, and boys the ninth day after their birth; which ceremony was performed with pure water and ſpittle. See the article Ambarvalia. In their luſtratory ſacrifices, the Athenians ſacrificed two men, one for the men of their city, and the other for the women. Divers of theſe expiations were auſtere: ſome faſted; others abſtained from all ſenſual pleaſures; and ſome, as the prieſts of Cybele, caſtrated themſelves. The poſtures of the penitents were different, according to the different ſacrifices. The prieſts changed their habits according to the ceremony to be performed; white, purple, and black, were the moſt uſual colours. They caſt into the river, or at leaſt out of the city, the animals or other things that had ſerved for a luſtration or ſacrifice of atonement; and thought themſelves threatened with ſome great misfortune when by chance they trod upon them. Part of theſe ceremonies were aboliſhed by the emperor Conſtantine, and his ſucceſſors: the reſt ſubſiſted till the Gothic kings were maſters of Rome; under whom they expired, excepting what the popes thought proper to adopt and bring into the church.

For the luſtration, or rather expiation, of the ancient Jews, ſee Expiation.

LUSTRE, the gloſs or brightneſs appearing on any thing, particularly on manufactures of ſilk, wool, or ſtuff. It is likewiſe uſed to denote the compoſition or manner of giving that gloſs.

The luſtre of ſilks is given them by waſhing in ſoap, then clear water, and dipping them in alum-water cold. To give ſtuffs a beautiful luſtre: For every 8 pounds of ſtuff allow a quarter of a pound of linſeed; boil it half an hour, and then ſtrain it through a cloth, and let it ſtand till it is turned almoſt to a jelly: afterwards put an ounce and a half of gum to diſſolve 24 hours; then mix the liquor, and put the cloth into this mixture; take it out, dry it in the ſhade, and preſs it. If once doing is not ſufficient, repeat the operation. Curriers give a luſtre to black leather firſt with juice of barberries, then with gum-arabic, ale, vinegar, and Flanders-glue, boiled together. For coloured leather, they uſe the white of an egg beaten in water. Moroccoes have their luſtre from juice of barberries, and lemon or orange. For hats, the luſtre is frequently given with common water; ſometimes a little black dye is added: the ſame luſtre ſerves for furs, except that for very black furs they ſometimes prepare a luſtre of galls, copperas, Roman alum, ox's marrow, and other ingredients.

LUSTRUM, in Roman antiquity, a general muſter and review of all the citizens and their goods, which was performed by the cenſors every fifth year, who afterwards made a ſolemn luſtration. See the article Lustration.

This cuſtom was firſt inſtituted by Servius Tullius, about 180 years after the foundation of Rome. In courſe of time the luſtra were not celebrated ſo often, for we find the fifth luſtrum celebrated at Rome only in the 574th year of that city.

LUTE, or Luting, among chemiſts, a mixed, tenacious, ductile ſubſtance, which grows ſolid by drying, and, being applied to the juncture of veſſels, ſtops them up ſo as to prevent the air from getting either in or out. See Chemistry, n° 78—81.

Lute, is alſo a muſical inſtrument with ſtrings.—The lute conſiſts of four parts, viz. the table, the body or belly, which has nine or ten ſides; the neck, which has nine or ten ſtops or diviſions, marked with ſtrings; and the head, or croſs, where the ſcrew for raiſing and lowering the ſtrings to a proper pitch of tone are fixed. In the middle of the table there is a roſe or paſſage for the ſound; there is alſo a bridge that the ſtrings are faſtened to, and a piece of ivory between the head and the neck to which the other extremities of the ſtrings are fitted. In playing, the ſtrings are ſtruck with the right hand, and with the left the ſtops are preſſed. The lutes of Bologna are eſteemed the beſt on account of the wood, which is ſaid to have an uncommon diſpoſition for producing a ſweet ſound.

LUTHER (Martin), the celebrated author of the Reformation, was a native of Eiſleben in Saxony, and born in 1483. Tho' his parents were poor, he received a learned education; during the progreſs of which, he gave many indications of uncommon vigour and acuteneſs of genius. As his mind was naturally ſuſceptible of ſerious impreſſions, and tinctured with ſomewhat of that religious melancholy which delights in the ſolitude and devotion of a monaſtic life, he retired into a convent of Auguſtinian friars; where he acquired great reputation, not only for piety, but for love of knowledge, and unwearied application to ſtudy. The cauſe

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cauſe of this retirement is ſaid to have been, that he was once ſtruck by lightning, and his companion killed by his ſide by the ſame flaſh. He had been taught the ſcholaſtic philoſophy which was in vogue in thoſe days, and made conſiderable progreſs in it: but happening to find a copy of the Bible which lay neglected in the library of his monaſtery, he applied himſelf to the ſtudy of it with ſuch eagerneſs and aſſiduity, as quite aſtoniſhed the monks; and increaſed his reputation for ſanctity ſo much, that he was choſen profeſſor firſt of philoſophy, and afterwards of theology, at Wittemberg on the Elbe, where Frederic elector of Saxony had founded an univerſity.

While Luther continued to enjoy the higheſt reputation for ſanctity and learning, Tetzel, a Dominican friar, came to Wittemberg in order to publiſh indulgences. Luther beheld his ſucceſs with great concern; and having firſt inveighed againſt indulgences from the pulpit, he afterwards publiſhed 95 theſes, containing his ſentiments on that ſubject. Theſe he propoſed, not as points fully eſtabliſhed, but as ſubjects of inquiry and diſputation. He appointed a day on which the learned were invited to impugn them either in perſon or by writing; and to the whole he ſubjoined ſolemn proteſtations of his high reſpect for the apoſtolic ſee, and of his implicit ſubmiſſion to its authority. No opponent appeared at the time prefixed; the theſes ſpread over Germany with aſtoniſhing rapidity, and were read with the greateſt eagerneſs.

Though Luther met with no oppoſition for ſome little time after he began to publiſh his new doctrines, it was not long before many zealous champions aroſe to defend thoſe opinions with which the wealth and power of the clergy were ſo ſtrictly connected. Their cauſe, however, was by no means promoted by theſe endeavours; the people began to call in queſtion even the authority of the canon law. and of the pope himſelf.—The court of Rome at firſt deſpiſed theſe new doctrines and diſputes; but at laſt the attention of the pope being raiſed by the great ſucceſs of the reformer, and the complaints of his adverſaries, Luther was ſummoned, in the month of July 1518, to appear at Rome, within 60 days, before the auditor of the chamber. One of Luther's adverſaries, named Prierias, who had written againſt him, was appointed to examine his doctrines, and to decide concerning them. The pope wrote at the ſame time to the elector of Saxony, beſeeching him not to protect a man whoſe heretical and profane tenets were ſo ſhocking to pious ears; and enjoined the provincial of the Auguſtinians to check by his authority the raſhneſs of an arrogant monk, which brought diſgrace upon their order, and gave offence and diſturbance to the whole church.

From theſe letters, and the appointment of his open enemy Pereiras to be his judge, Luther eaſily ſaw what ſentence he might expect at Rome; and therefore diſcovered the utmoſt ſolicitude to have his cauſe tried in Germany, and before a leſs ſuſpected tribunal. He wrote a ſubmiſſive letter to the pope, in which he promiſed an unreſerved obedience to his will, for as yet he entertained no doubt of the divine original of the pope's authority; and by the interceſſion of the other profeſſors, Cajetan the pope's legate in Germany was appointed to hear and determine the cauſe. Luther appeared before him without heſitation: but Cajetan thought it below his dignity to diſpute the point with a perſon ſo much his inferior in rank; and therefore required him, by virtue of the apoſtolic powers with which he was clothed, to retract the errors which he had uttered with regard to indulgences and the nature of faith, and to abſtain for the future from the publication of new and dangerous opinions; and at the laſt forbad him to appear in his preſence, unleſs he propoſed to comply with what had been required of him.

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This haughty and violent manner of proceeding, together with ſome other circumſtances, gave Luther's friends ſuch ſtrong reaſons to ſuſpect that even the imperial ſafe-conduct would not be able to protect him from the legate's power and reſentment, that they prevailed on him ſecretly to withdraw from Augſburg, where he had attended the legate, and to return to his own country. But before his departure, according to a form of which there had been ſome examples, he prepared a ſolemn appeal from the pope, ill-informed at that time concerning his cauſe, to the pope, when he ſhould receive more full intimation with reſpect to it.—Cajetan, enraged at Luther's abrupt retreat, and at the publication of his appeal, wrote to the elector of Saxony, complaining of both; and requiring him, as he regarded the peace of the church, or the authority of its head, either to ſend that ſeditious monk a priſoner to Rome, or to baniſh him out of his territories. Frederic had hitherto, from political motives, protected Luther, as thinking he might be of uſe in checking the enormous power of the ſee of Rome; and though all Germany reſounded with his fame, the elector had never yet admitted him into his preſence. But upon this demand made by the cardinal, it became neceſſary to throw off ſomewhat of his former reſerve. He had been at great expence and beſtowed much attention on founding a new univerſity, an object of conſiderable importance to every German prince; and foreſeeing how fatal a blow the removal of Luther would be to its reputation, he not only declined complying with either of the pope's requeſts, but openly diſcovered great concern for Luther's ſafety.

The ſituation of our reformer, in the mean time, became daily more and more alarming. He knew very well what were the motives which induced the elector to afford him protection, and that he could by no means depend on a continuance of his friendſhip. If he ſhould be obliged to quit Saxony, he had no other aſylum, and muſt ſtand expoſed to whatever puniſhment the rage or bigotry of his enemies could inflict; and ſo ready were his adverſaries to condemn him, that he had been declared a heretic at Rome before the expiration of the 60 days allowed him in the citation for making his appearance. Notwithſtanding all this, however, he diſcovered no ſymptoms of timidity or remiſſneſs; but continued to vindicate his own conduct and opinions, and to inveigh againſt thoſe of his adverſaries with more vehemence than ever. Being convinced, therefore, that the pope would ſoon proceed to the moſt violent meaſures againſt him, he appealed to a general council, which he affirmed to be the repreſentative of the Catholic church, and ſuperior in power to the pope, who, being a fallible man, might err, as St Peter, the moſt perfect of his predeceſſors, had done.

The court of Rome were equally aſſiduous in the mean time to cruſh the author of theſe new doctrines which gave them ſo much uneaſineſs. A bull was iſſued by the pope, of a date prior to Luther's appeal, in which he magnified the virtues of indulgences, and ſubjected to the heavieſt eccleſiaſtical cenſures all who preſumed to teach a contrary doctrine. Such a clear deciſion of the ſovereign pontiff againſt him might have been very fatal to Luther's cauſe, had not the death of the emperor Maximilian, which happened on January 17th 1519, contributed to give matters a different turn. Both the principles and intereſt of Maximilian had prompted him to ſupport the authority of the ſee of Rome: but, in conſequence of his death, the vicariate of that part of Germany which is governed by the Saxon laws devolved to the elector of Saxony; and, under the ſhelter of his friendly adminiſtration, Luther himſelf enjoyed tranquillity, and his opinions took ſuch root in different places, that they could never afterwards be eradicated. At the ſame time, as the election of an emperor was a point more intereſting to the pope (Leo X.) than a theological controverſy which he did not underſtand, and of which he could not foreſee the conſequences, he was ſo extremely ſolicitous not to irritate a prince of ſuch conſiderable influence in the electoral college as Frederic, that he diſcovered a great unwillingneſs to pronounce the ſentence of excommunication againſt Luther, which his adverſaries continually demanded with the moſt clamorous importunity.

From the reaſon juſt now given, and Leo's natural averſion to ſevere meaſures, a ſuſpenſion of proceedings againſt Luther took place for 18 months, though perpetual negociations were carried on during this interval in order to bring the matter to an amicable iſſue. The manner in which theſe were conducted having given our reformer many opportunities of obſerving the corruption of the court of Rome, its obſtinacy in adhering to eſtabliſhed errors, and its indifference about truth, however clearly propoſed or ſtrongly proved, he began, in 1520, to utter ſome doubts with regard to the divine original of the papal authority which he publicly diſputed with Eccius, one of his moſt learned and formidable antagoniſts. The diſpute was indeciſive, both parties claiming the victory; but it muſt have been very mortifying to the partizans of the Romiſh church to hear ſuch an eſſential point of their doctrine publicly attacked.

The Papal authority being once ſuſpected, Luther proceeded to puſh on his inquiries and attacks from one doctrine to another, till at laſt he began to ſhake the firmeſt foundations on which the wealth and power of the church were eſtabliſhed. Leo then began to perceive that there were no hopes of reclaiming ſuch an incorrigible heretic; and therefore prepared to denounce the ſentence of excommunication againſt him. The college of cardinals was often aſſembled, in order to prepare the ſentence with due deliberation; and the ableſt canoniſts were conſulted how it might be expreſſed with unexceptionable formality. At laſt it was iſſued on the 15th of June 1520. Forty-one propoſitions, extracted out of Luther's works, were therein condemned as heretical, ſcandalous, and offenſive to pious ear; all perſons were forbidden to read his writings, upon pain of excommunication; ſuch as had any of them in their cuſtody were commanded to commit them to the flames; he himſelf, if he did not, within 60 days, publicly recant his errors, and burn his books, was pronounced an obſtinate heretic, excommunicated, and delivered to Satan for the deſtruction of the fleſh; and all ſecular princes were required, under pain of incurring the ſame cenſure, to ſeize his perſon, that he might be puniſhed as his crimes deſerved.

Luther was not in the leaſt diſconcerted by this ſentence, which he had for ſome time expected. He renewed his appeal to the general council; declared the pope to be that antichriſt, or man of ſin, whoſe appearance is foretold in the New Teſtament; declaimed againſt his tyranny with greater vehemence than ever; and at laſt, by way of retaliation, having aſſembled all the profeſſors and ſtudents in the univerſity of Wittemberg, with great pomp, and in the preſence of a vaſt multitude of ſpectators, he caſt the volumes of the canon law, together with the bull of excommunication, into the flames. The manner in which this action was juſtified, gave ſtill more offence than the action itſelf. Having collected from the canon law ſome of the moſt extravagant propoſitions with regard to the plenitude and omnipotence of the pope's power, as well as the ſubordination of all ſecular juriſdiction to his authority, he publiſhed theſe with a commentary, pointing out the impiety of ſuch tenets, and their evident tendency to ſubvert all civil government.

On the acceſſion of Charles V. to the empire, Luther found himſelf in a very dangerous ſituation. Charles, in order to ſecure the pope's friendſhip, had determined to treat him with great ſeverity. His eagerneſs to gain this point, rendered him not averſe to gratify the papal legates in Germany, who inſiſted, that, without any delay or formal deliberation, the diet then ſitting at Worms ought to condemn a man whom the pope had already excommunicated as an incorrigible heretic. Such an abrupt manner of proceeding, however, being deemed unprecedented and unjuſt by the members of the diet, they made a point of Luther's appearing in perſon, and declaring whether he adhered or not to thoſe opinions which had drawn upon him the cenſures of the church. Not only the emperor, but all the princes through whoſe territories he had to paſs, granted him a ſafe conduct; and Charles wrote to him at the ſame time, requiring his immediate attendance on the diet, and renewing his promiſes of protection from any injury or violence. Luther did not heſitate one moment about yielding obedience; and ſet out for Worms, attended by the herald who had brought the emperor's letter and ſafe-conduct. While on his journey, many of his friends, whom the fate of Huſs, under ſimilar circumſtances, and notwithſtanding the ſame ſecurity of an imperial ſafe-conduct, filled with ſolicitude, adviſed and intreated him not to ruſh wantonly into the midſt of danger. But Luther, ſuperior to ſuch terrors, ſilenced them with this reply, "I am lawfully called (ſaid he) to appear in that city; and thither will I go in the name of the Lord, though as many devils as there are tiles on the houſes were there combined againſt me."

The reception which he met with at Worms, was ſuch as might have been reckoned a full reward of all his labours, if vanity and the love of applauſe had been the principles by which he was influenced. Greater crowds aſſembled to behold him, than had appeared at the emperor's public entry; his apartments were daily filled with princes and perſonages of the higheſt rank; and he was treated with an homage more ſincere, as well as more flattering, than any which preeminence in birth or condition can command. At his appearance before the diet, he behaved with great decency, and with equal firmneſs. He readily acknowledged an exceſs of acrimony and vehemence in his controverſial writings; but refuſed to retract his opinions unleſs he were convinced of their falſehood, or to conſent to their being tried by any other rule than the word of God. When neither threats nor intreaties could prevail on him to depart from this reſolution, ſome of the eccleſiaſtics propoſed to imitate the example of the council of Conſtance, and, by puniſhing the author of this peſtilent hereſy, who was now in their power, to deliver the church at once from ſuch an evil. But the members of the diet refuſing to expoſe the German integrity to freſh reproach by a ſecond violation of public faith, and Charles being no leſs unwilling to bring a ſtain upon the beginning of his adminiſtration by ſuch an ignominious action, Luther was permitted to depart in ſafety. A few days after he left the city, a ſevere edict was publiſhed in the emperor's name, and by authority of the diet, depriving him, as an obſtinate and excommunicated criminal, of all the privileges which he enjoyed as a ſubject of the empire, forbidding any prince to harbour or protect him, and requiring all to ſeize his perſon as ſoon as the term ſpecified in his protection ſhould be expired.

But this rigorous decree had no conſiderable effect; the execution of it being prevented partly by the multiplicity of occupations which the commotions in Spain, together with the wars in Italy and the Low Countries, created to the emperor; and partly by a prudent precaution employed by the elector of Saxony, Luther's faithful patron. As Luther, on his return from Worms, was paſſing near Altenſtrain in Thuringia, a number of horſemen in maſks ruſhed ſuddenly out of a wood, where the elector had appointed them to lie in wait for him, and, ſurrounding his company, carried him, after diſmiſſing all his attendants, to Wortburg, a ſtrong caſtle not far diſtant. There the elector ordered him to be ſupplied with every thing neceſſary or agreeable; but the place of his retreat was carefully concealed, until the fury of the preſent ſtorm againſt him began to abate, upon a change in the political ſyſtem of Europe. In this ſolitude, where he remained nine months, and which he frequently called his *Patmos*, after the name of that iſland to which the apoſtle John was baniſhed, he exerted his uſual vigour and induſtry in defence of his doctrines, or in confutation of his adverſaries, publiſhing ſeveral treatiſes, which revived the ſpirit of his followers, aſtoniſhed to a great degree and diſheartened at the ſudden diſappearance of their leader.

Luther, weary at length of his retirement, appeared publicly again at Wittemberg, upon the 6th of March 1522. He appeared indeed without the elector's leave; but immediately wrote him a letter, to prevent his taking it ill. The edict of Charles V. as ſevere as it was, had given little or no check to Luther's doctrine: for the emperor was no ſooner gone into Flanders, than his edict was neglected and deſpiſed, and the doctrine ſeemed to ſpread even faſter than before. Caroloſtadius, in Luther's abſence, had puſhed things on faſter than his leader; and had attempted to aboliſh the uſe of maſs, to remove images out of the churches, to ſet aſide auricular confeſſion, invocation of ſaints, the abſtaining from meats; had allowed the monks to leave their monaſteries, to neglect their vows, and to marry; in ſhort, had quite changed the doctrine and diſcipline of the church at Wittemberg: all which, though not againſt Luther's ſentiments, was yet blamed by him, as being raſhly and unſeaſonably done. Lutheraniſm was ſtill confined to Germany: it was not got to France; and Henry VIII. of England made the moſt rigorous acts to hinder it from invading his realm. Nay, he did ſomething more: to ſhew his zeal for religion and the holy ſee, and perhaps his ſkill in theological learning, he wrote a treatiſe *Of the ſeven ſacraments*, againſt Luther's book *Of the captivity of Babylon*; which he preſented to Leo X. in October 1521. The pope received it very favourably; and was ſo well pleaſed with the king of England, that he complimented him with the title of *Defender of the faith*. Luther, however, paid no regard to his kingſhip; but anſwered him with great ſharpneſs, treating both his perſon and performance in the moſt contemptuous manner. Henry complained of Luther's rude uſage of him to the princes of Saxony; and Fiſher, biſhop of Rocheſter, replied to his anſwer, in behalf of Henry's treatiſe: but neither the king's complaint, nor the biſhop's reply, was attended with any viſible effects.

Luther, though he had put a ſtop to the violent proceedings of Caroloſtadius, now made open war with the pope and biſhops; and, that he might make the people deſpiſe their authority as much as much as poſſible, he wrote one book againſt the pope's bull, and another againſt the order falſely called the *order of biſhops*. The ſame year 1522, he wrote a letter, dated July the 29th, to the aſſembly of the ſtates of Bohemia; in which he aſſured them that he was labouring to eſtabliſh their doctrine in Germany, and exhorted them not to return to the communion of the church of Rome: and he publiſhed alſo this year, a tranſlation of the New Teſtament in the German tongue, which was afterwards corrected by himſelf and Melancthon. This tranſlation having been printed ſeveral times, and being in every body's hands, Ferdinand archduke of Auſtria, the emperor's brother, made a very ſevere edict, to hinder the farther publication of it; and forbad all the ſubjects of his imperial majeſty to have any copies of it, or of Luther's other books. Some other princes followed his example; and Luther was ſo angry at it, that he wrote a treatiſe *Of the ſecular power*, in which he accuſes them of tyranny and impiety. The diet of the empire was held at Nurenburg, at the end of the year; to which Hadrian VI. ſent his brief, dated November the 25th: for Leo X. died upon the 2d of December 1521, and Hadrian had been elected pope upon the 9th of January following. In this brief, among other things, he obſerves to the diet, how he had heard, with grief, that Martin Luther, after the ſentence of Leo X. which was ordered to be executed by the edict of Worms, continued to teach the ſame errors, and daily to publiſh books full of hereſies: that it appeared ſtrange to him, that ſo large and ſo religious a nation could be ſeduced by a wretched apoſtate friar: that nothing, however, could be more pernicious to Chriſtendom: and that therefore he exhorts them to uſe their utmoſt endeavours to make Luther, and the authors of theſe tumults, return to their duty; or, if they refuſe and continue obſtinate, to proceed againſt them according to the laws of the empire, and the ſeverity of the laſt edict.

The reſolution of this diet was publiſhed in the form of an edict, upon the 6th of March 1523; but it had no effect in checking the Lutherans, who ſtill went on in the ſame triumphant manner. This year Luther wrote a great many pieces: among the reſt, one upon the dignity and office of the ſupreme magiſtrate; which Frederic elector of Saxony is ſaid to have been highly pleaſed with. He ſent, about the ſame time, a writing in the German language to the Waldenſes, or Pickards, in Bohemia and Moravia, who had applied to him "about worſhipping the body of Chriſt in the euchariſt." He wrote alſo another book, which he dedicated to the ſenate and people of Prague, "about the inſtitution of miniſters of the church." He drew up a form of ſaying maſs. He wrote a piece, entitled, *An example of popiſh doctrine and divinity;* which Dupins calls a *ſatire againſt nuns and thoſe who profeſs a monaſtic life.* He wrote alſo againſt the vows of virginity, in his preface to his commentary on 1 Cor. viii. And his exhortations here were, it ſeems, followed with effects: for ſoon after, nine nuns, among whom was Catharine de Bore, eloped from the nunnery at Nimptſchen, and were brought, by the aſſiſtance of Leonard Coppen, a burgeſs of Torgau, to Wittemberg. Whatever offence this proceeding might give to the Papiſts, it was highly extolled by Luther; who, in a book written in the German language, compares the deliverance of theſe nuns from the ſlavery of a monaſtic life, to that of the ſouls which Jeſus Chriſt has delivered by his death. This year Luther had occaſion to canonize two of his followers, who, as Melchior Adam relates, were burnt at Bruſſels in the beginning of July, and were the firſt who ſuffered martyrdom for his doctrine. He wrote alſo a conſolatory epiſtle to three noble ladies at Miſnia, who were baniſhed from the duke of Saxony's court at Friburg, for reading his books.

In the beginning of the year 1524, Clement VII. ſent a legate into Germany to the diet, which was to be held at Nurenburg. Hadrian VI. died in October 1523, and was ſucceeded by Clement upon the 19th of November. A little before his death he canonized Benno, who was biſhop of Meiſſen in the time of Gregory VII. and one of the moſt zealous defenders of the holy ſee. Luther, imagining that this was done directly to oppoſe him, drew up a piece with this title, *Againſt the new idol and old devil ſet up at Meiſſen;* in which he treats the memory of Gregory with great freedom, and does not ſpare even Hadrian. Clement VII.'s legate repreſented to the diet of Nurenburg, the neceſſity of enforcing the execution of the edict of Worms, which had been ſtrangely neglected by the princes of the empire: but, notwithſtanding the legate's ſolicitations, which were very preſſing, the decrees of that diet were thought ſo ineffectual, that they were condemned at Rome, and rejected by the emperor. It was in this year that the diſpute between Luther and Eraſmus, about free-will, began. Eraſmus had been much courted by the Papiſts to write againſt Luther; but he was all along of opinion, that writing would not be found an effectual way to end the differences and eſtabliſh the peace of the church. However, tired out at length with the importunities of the pope and the Catholic princes, and deſirous at the ſame time to clear himſelf from the ſuſpicion of favouring a cauſe which he would not ſeem to favour, he reſolved to write againſt Luther, though, as he tells Melancthon, it was with ſome reluctance, and choſe free-will for the ſubject. His book was intitled *A diatriba, or conference about free-will;* and was written with much moderation, and without perſonal reflections. He tells Luther in the preface, "That he ought not to take his diſſenting from him in opinion ill, becauſe he had allowed himſelf the liberty of differing from the judgment of popes, councils, univerſities, and doctors of the church. Luther was ſome time before he anſwered Eraſmus's book; but at laſt publiſhed a treatiſe *De ſervo arbitrio*, or *Of the ſervitude of man's will;* and though Melancthon had promiſed Eraſmus, that Luther ſhould anſwer him with civility and moderation, yet Luther had ſo little regard to Melancthon's promiſe, that he never wrote any thing ſharper. He accuſed Eraſmus of being careleſs about religion, and little ſolicitous what became of it, provided the world continued in peace; and that his notions were rather philoſophical than Chriſtian. Eraſmus immediately replied to Luther, in a piece called *Hyperaſpiſtes;* in the firſt part of which he anſwers his arguments, and in the ſecond his perſonal reflections.

In October 1524, Luther flung off the monaſtic habit; which, though not premeditated and deſigned, was yet a very proper preparative to a ſtep he took the year after; we mean, his marriage with Catharine de Bore. Catharine de Bore was a gentleman's daughter, who had been a nun, and was taken, as we have obſerved, out of the nunnery of Nimptſchen, in the year 1523. Luther had a deſign, as Melchior Adam relates, to marry her to Glacius, a miniſter of Ortamunden: but ſhe did not like Glacius; and ſo Luther married her himſelf, upon the 13th of June 1525. This conduct of his was blamed not only by the Catholics, but, as Melancthon ſays, by thoſe of his own party. He was even for ſome time aſhamed of it himſelf; and owns, that his marriage had made him ſo deſpicable, that he hoped his humiliation would rejoice the angels, and vex the devils. Melancthon found him ſo afflicted with what he had done, that he wrote ſome letters of conſolation to him. It was not ſo much the marriage, as the circumſtances of the time, and the precipitation with which it was done, that occaſioned the cenſures paſſed upon Luther. He married all of a ſudden, and at a when Germany was groaning under the miſeries of a war, which was ſaid at leaſt to be owing to Lutheraniſm. Then, again, it was thought an indecent thing in a man of 42 years of age, who was then, as he pretended, reſtoring the Goſpel and reforming mankind, to involve himſelf in marriage with a woman of 26, either through incontinence, or any account whatever. But Luther, as ſoon as he had recovered himſelf a little from this abaſhment, aſſumed his former air of intrepidity, and boldly ſupported what he had done with reaſons. "I took a wife, (ſays he), in obedience to my father's commands; and haſtened the conſummation, in order to prevent impediments, and ſtop the tongues of ſlanderers." It appears from his own confeſſion, that this reformer was very fond of Mrs de Bore, and uſed to call her *his Catharine;* which made profane people think and ſay wicked things of him: "And therefore," ſays he, "I am married of a ſudden, not only that I might not be obliged to hear the clamours which I knew would be raiſed againſt me, but to ſtop the mouths of thoſe who reproached me with Catharine de Bore." Luther alſo gives us to underſtand, that he did it partly as concurring with his grand ſcheme of oppoſing the Catholics.

Luther, notwithſtanding, was not himſelf altogether ſatisfied with theſe reaſons. He did not think the ſtep he had taken could be ſufficiently juſtified upon the principles of human prudence; and therefore we find him, in other places, endeavouring to account for it from a ſupernatural impulſe. But whether there was any thing divine in it or not, Luther found himſelf extremely happy in his new ſtate, and eſpecially after his wife had brought him a ſon. "My rib Kate (ſays he in the joy of his heart) deſires her compliments to you, and thanks you for the favour of your kind letter. She is very well, through God's mercy. She is obedient and complying with me in all things; and more agreeable, I thank God, than I could have expected; ſo that I would not change my poverty for the wealth of Crœſus." He was heard to ſay, (Seekendorf tells us,) that he would not exchange his wife for the kingdom of France, nor for the riches of the Venetians; and that for three reaſons: firſt, Becauſe ſhe had been given him by God, at the time when he implored the aſſiſtance of the Holy Ghoſt in finding a good wife; ſecondly, Becauſe, though ſhe was not without faults, yet ſhe had fewer than other women: and, thirdly, Becauſe ſhe religiouſly obſerved the conjugal fidelity ſhe owed him. There went at firſt a report, that Catharine de Bore was brought to bed ſoon after her marriage with Luther; but Eraſmus, who had wrote that news to his friends, acknowledged the falſity of it a little after.

His marriage, however, did not retard his activity and diligence in the work of reformation. He reviſed the Augſburg confeſſion of faith, and apology for the Proteſtants, when the Proteſtant religion was firſt eſtabliſhed on a firm baſis. See PROTESTANTS and REFORMATION.

After this, Luther had little elſe to do than to ſit down and contemplate the mighty work he had finiſhed; for that a ſingle monk ſhould be able to give the church ſo rude a ſhock, that there needed but ſuch another entirely to overthrow it, may very well ſeem a mighty work. He did indeed little elſe: for the remainder of his life was ſpent in exhorting princes, ſtates, and univerſities, to confirm the reformation which had been brought about thro' him; and publiſhing from time to time ſuch writings as might encourage, direct, and aid them in doing it. The emperor threatened temporal puniſhment with armies, and the pope eternal with bulls and anathemas; but Luther cared for none of their threats. His friend and coadjutor Melancthon was not ſo indifferent; for Melancthon had a great deal of ſoftneſs, moderation, and diffidence in his make, which made him very uneaſy, and even ſorrowful, in the preſent diſorders. Hence we find many of Luther's letters written on purpoſe to ſupport and comfort him under theſe ſeveral diſtreſſes and anxieties.

In the year 1533, Luther wrote a conſolatory epiſtle to the citizens of Oſchatz, who had ſuffered ſome hardſhips for adhering to the Augſburg confeſſion of faith; in which, among other things, he ſays: "The devil is the hoſt, and the world is his inn; ſo that wherever you come, you ſhall be ſure to find this ugly hoſt." He had alſo about this time a terrible controverſy with George duke of Saxony, who had ſuch an averſion to Luther's doctrine, that he obliged his ſubjects to take an oath that they would never embrace it. However, 60 or 70 citizens of Leipſic were found to have deviated a little from the Catholic way in ſome point or other, and they were known previouſly to have conſulted Luther about it; upon which George complained to the elector John, that Luther had not only abuſed his perſon, but alſo preached up rebellion among his ſubjects. The elector ordered Luther to be acquainted with this; and to be told at the ſame time, that if he did not clear himſelf of the charge, he could not poſſibly eſcape puniſhment. But Luther eaſily refuted the accuſation, by proving, that he had been ſo far from ſtirring up his ſubjects againſt him, on the ſcore of religion, that, on the contrary, he had exhorted them rather to undergo the greateſt hardſhips, and even ſuffer themſelves to be baniſhed.

In the year 1534, the Bible tranſlated by him into German was firſt printed, as the old privilege, dated at Bibliopolis, under the elector's hand, ſhows; and it was publiſhed the year after. He alſo publiſhed this year a book againſt maſſes and the conſecration of prieſts, in which he relates a conference he had with the devil upon thoſe points; for it is remarkable in Luther's whole hiſtory, that he never had any conflicts of any kind within, but the devil was always his antagoniſt. In February 1537, an aſſembly was held at Smalkald about matters of religion, to which Luther and Melancthon were called. At this meeting Luther was ſeized with ſo grievous an illneſs, that there were no hopes of his recovery. He was afflicted with the ſtone, and had a ſtoppage of urine for 11 days. In this terrible condition he would needs undertake to travel, notwithſtanding all that his friends could ſay or do to prevent him: his reſolution, however, was attended with a good effect; for the night after his departure, he began to be better. As he was carried along, he made his will, in which he bequeathed his deteſtation of Popery to his friends and brethren; agreeably to what he often uſed to ſay: *Peſtis eram vivus, moriens ero mors tua, papa;* that is, "I was the plague of Popery in my life, and ſhall continue to be ſo in my death."

This year the Pope and the court of Rome, finding it impoſſible to deal with the proteſtants by force, began to have recourſe to ſtratagem. They affected therefore to think, that though Luther had indeed carried things on with a high hand and to a violent extreme, yet what he had pleaded in defence of theſe meaſures was not entirely without foundation. They talked with a ſeeming ſhow of moderation; and Pius III. who ſucceeded Clement VII. propoſed a reformation firſt among themſelves, and even went ſo far as to fix a place for a council to meet at for that purpoſe. But Luther treated this farce as it deſerved to be treated; unmaſked and detected it immediately; and, to ridicule it the more ſtrongly, cauſed a picture to be drawn, in which was repreſented the pope ſeated on high upon a throne, ſome cardinals about him with foxes tails on, and ſeeming to evacuate upwards and downwards, (*ſurſum deorſum repurgare*, as Melchior Adam expreſſes it.) This was fixed over-againſt the title-page, to let the readers ſee at once the ſcope and deſign of the book; which was, to expoſe that cunning and artifice with which thoſe ſubtle politicians affected to cleanſe and purify themſelves from their errors and ſuperſtitions. Luther publiſhed about the ſame time a confutation of the pretended Grant of Conſtantine to Sylveſter biſhop of Rome; and alſo ſome letters of John Huſs, written from his priſon at Conſtance, to the Bohemians.

In this manner was Luther employed till his death, which happened in the year 1546. That year, accompanied by Melancthon, he paid a viſit to his own country, which he had not ſeen for many years, and returned again in ſafety. But ſoon after, he was called thither again by the earls of Mansfeldt, to compoſe ſome differences which had ariſen about their boundaries. Luther had not been uſed to ſuch matters; but becauſe he was born at Iſleben, a town in the territory of Mansfeldt, he was willing to do his country what ſervice he could, even in this way. Preaching his laſt ſermon therefore at Wittemberg, upon the 17th of January, he ſet off on the 23d; and at Hall in Saxony lodged with Juſtus Jonas, with whom he ſtayed three days, becauſe the waters were out. Upon the 28th, he paſſed over the river with his three ſons and Dr Jonas; and being in ſome danger, he ſaid to the Doctor, "Do not you think it would rejoice the devil exceedingly, if I and you, and my three ſons, ſhould be drowned?" When he entered the territories of the earls of Mansfeldt, he was received by 100 horſemen, or more, and conducted in a very honourable manner; but was at the ſame time ſo very ill, that it was feared he would die. He ſaid, that theſe fits of ſickneſs often came upon him, when he had any great buſineſs to undertake: of this, however, he did not recover; but died upon the 18th of February, in the 63d year of his age. A little before he expired, he admoniſhed thoſe that were about him to pray to God for the propagation of the Goſpel; "becauſe, (ſaid he), the council of Trent, which had ſat once or twice, and the pope, would deviſe ſtrange things againſt it." Soon after, his body was put into a leaden coffin, and carried with funeral pomp to the church at Iſleben, when Dr Jonas preached a ſermon upon the occaſion. The earls of Mansfeldt deſired that his body ſhould be interred in their territories; but the elector of Saxony inſiſted upon his being brought back to Wittemberg: which was accordingly done; and there he was buried with the greateſt pomp that perhaps ever happened to any private man. Princes, earls, nobles, and ſtudents without number, attended the proceſſion; and Melancthon made his funeral oration.

A thouſand lies were invented by the Papiſts about Luther's death. Some ſaid that he died ſuddenly; others, that he killed himſelf; others, that the devil ſtrangled him; others, that his corpſe ſtunk ſo abominably, that they were forced to leave it in the way, as it was carried to be interred. Nay, lies were invented about his death, even while he was yet alive. Luther, however, to give the moſt effectual refutation of this account of his death, put forth an advertiſement of his being alive; and, to be even with the Papiſts for the malice they had ſhewn in this lie, wrote a book at the ſame time to prove, that "the papacy was founded by the devil."

Luther's works were collected after his death, and printed at Wittemberg in 7 vols folio. Catharine de Bore ſurvived her huſband a few years; and continued the firſt year of her widowhood at Wittemberg, tho' Luther had adviſed her to ſeek another place of reſidence. She went from thence in the year 1547, when the town was ſurrendered to the emperor Charles V. Before her departure, ſhe had received a preſent of 50 crowns from Chriſtian III. king of Denmark; and the elector of Saxony, and the counts of Mansfeldt, gave her good tokens of their liberality. With theſe additions, to what Luther had left her, ſhe had wherewithal to maintain herſelf and her family handſomely. She returned to Wittemberg, when the town was reſtored to the elector; where ſhe lived in a very devout and pious manner, till the plague obliged her to leave it again in the year 1552. She ſold what ſhe had at Wittemberg; and retired to Torgau, with a reſolution to end her life there. An unfortunate miſchance befel her in her journey thither, which proved fatal to her. The horſes growing unruly, and attempting to run away, ſhe leaped out of the vehicle ſhe was conveyed in; and, by leaping, got a fall, of which ſhe died about a quarter of a year after, at Torgau, upon the 20th of December 1552. She was buried there in the great church, where her tomb and epitaph are ſtill to be ſeen; and the univerſity of Wittemberg, which was then at Torgau becauſe the plague raged at Wittemberg, made a public programma concerning the funeral pomp.

LUTHERANISM, the ſentiments of Martin Luther with regard to religion.

Lutheraniſm has undergone ſome alterations ſince the time of its founder.—Luther rejected the epiſtle of St James, as inconſiſtent with the doctrine of St Paul, in relation to juſtification; he alſo ſet aſide the apocalypſe: both which are now received as canonical, in the Lutheran church.

Luther reduced the number of ſacraments to two, viz. baptiſm, and the euchariſt: but he believed the impanation, or conſubſtantiation, that is, that the matter of the bread and wine, remain with the body and blood of Chriſt; and it is in this article that the main difference between the Lutheran and Engliſh churches conſiſts.

Luther maintained the maſs to be no ſacrifice; exploded the adoration of the hoſt, auricular confeſſion, meritorious works, indulgences, purgatory, the worſhip of images, &c. which had been introduced in the corrupt times of the Romiſh church. He alſo oppoſed the doctrine of free will, maintained predeſtination, and aſſerted our juſtification to be ſolely by the imputation of the merits and ſatisfaction of Chriſt. He alſo oppoſed the faſtings in the Romiſh church, monaſtical vows, the celibate of the clergy, &c.

LUTHERANS, the Chriſtians who follow the opinions of Martin Luther, one of the principal reformers of the church in the 16th century. See LUTHER.

LUTHERN, in architecture, a kind of window over the cornice, in the roof of a building; ſtanding perpendicularly over the naked of a wall, and ſerving to illuminate the upper ſtory.

Lutherns are of various forms, as ſquare, ſemicircular, round, called *bull's eyes*, *flat arches*, &c.

LUTRA, in zoology. See MUSTELA.

LUTTI (Beneditto), an eminent painter, born at Florence in 1666. He was the diſciple of Antonio Dominico Gabiani, and his merit was judged equal to that of his maſter: he painted few beſide eaſel-pieces; and his works were much valued and ſought for in England, France, and Germany. The emperor knighted him; and the elector of Mentz, together with his patent of knighthood, ſent him a croſs ſet with diamonds. Lutti was never ſatisfied in finiſhing his pictures; yet tho' he often retouched them, they never appeared laboured. He died in 1724.

LUTZEN, a town of Upper Saxony, in Germany; famous for a battle fought here in 1632, when Guſtavus Adolphus king of Sweden was killed. It is ſituated on the river Elſter, in E. Long. 12. 37. N. Lat. 51. 20.

LUXATION, is when any bone is moved out of its place or articulation, ſo as to impede or deſtroy its proper office or motion. See SURGERY.

LUXEMBURG, a city of the Auſtrian Netherlands, and capital of a duchy of the ſame name. It is ſeated partly on a hill, and partly on a plain; but is very ſtrong, both by art and nature. It is but indifferently built, though there are ſome good ſtone houſes in it. There is nothing very remarkable among the ſtructures but the Jeſuits church; which is a handſome edifice, after the modern taſte. It was taken by Lewis XIV. in 1684; who ſo augmented the fortifications, that it is now one of the ſtrongeſt towns in Europe. It was ceded to Spain by the treaty of Ryſwick; but the French took it again in 1701, and gave it up to the houſe of Auſtria by the treaty of Utrecht. It is 25 miles ſouth-weſt of Treves, and 100 weſt of Mentz. E. Long. 6. 10. N. Lat. 49. 52.

LUXEMBURG, the duchy of, is one of the 17 provinces of the Netherlands. It is bounded on the eaſt by the archbiſhoprick of Treves; on the ſouth, by Lorrain; on the weſt, partly by Champagne, and partly by the biſhoprick of Liege, which likewiſe, with part of Limburg, bound it on the north. It lies in the foreſt of Ardenne, which is one of the moſt famous in Europe. In ſome places it is covered with mountains and woods, and in general it is fertile in corn and wine; and here are a great number of iron-mines. The principal rivers are, the Moſelle, the Sour, the Ourte, and the Semoy. It belongs partly to the houſe of Auſtria, and partly to the French; and Thionville is the capital of the French part.

LUXEMBURG (François Henry de Montmorenci) duke of, and marſhal of France, a renowned general in the ſervice of Lewis XIV. was born in 1628. He was with the prince of Conde at the battle of Rocroy, in 1643; and in 1668 diſtinguiſhed himſelf at the conqueſt of Franche Compté. In 1672, he commanded in chief the French army in Holland; when he defeated the enemy near Woerden and Bodegrave, and was univerſally admired for the fine retreat he made in 1673. He became marſhal of France in 1675; gained the battle of Flerus in 1690, that of Steenkirk in 1692, and that of Nerwind in 1693. He died at Verſailles, in 1695.

LUXURIANS FLOS, "a luxuriant or double flower;" a flower, ſome of whoſe parts are increaſed in in number, to the diminution or entire excluſion of others.

The parts that are augmented or multiplied in luxuriant flowers, are the flower-cup and petals, which Linnæus conſiders as the teguments or covers of the flower; the parts that are diminiſhed, or entirely excluded, are the ſtamina or chives, which the ſame author denominates the male organs of generation.

Luxuriance in flowers is capable of the three following varieties.

1. A flower is ſaid to be MULTIPLIED, (*flos multiplicatus*), when the increaſe of the petals is not ſuch as to exclude all the ſtamina: in this ſenſe, flowers are properly ſaid to be double, triple, or quadruple, according to the number of multiplications of the petals.

2. A flower is ſaid to be FULL, (*flos penus*), when, by the multiplication of the petals, all the ſtamina are excluded. Such are moſt of the double flowers that engage the attention of floriſts.

3. A flower is ſaid to be PROLIFIC, (*flos prolifer*), which produces flowers, and ſometimes leaves, from its centre.

For a particular deſcription of each of theſe kinds of luxuriance in flowers, ſee the articles MULTIPLICATUS *Flos*, PLENUS *Flos*, and PROLIFER *Flos*.

Many natural orders of plants do not in any circumſtances produce luxuriant flowers. Of this kind are the maſqued-flowers of Tournefort, excepting calve's-ſnout; the rough-leaved, umbelliferous, ſtarry-plants, and ſuch as flower at the joints, of Ray: ſome umbelliferous flowers, however, are *prolific*.

The pea-bloom or butterfly-ſhaped flowers are rarely rendered double; ſome inſtances, however, of luxuriance, are obſerved in a ſpecies of ladies-finger, coronilla, and broom.

All luxuriant flowers are vegetable monſters. Such as are perfectly full, by which we mean the greateſt degree of luxuriance, cannot be propagated by ſeeds; becauſe theſe, for want of impregnation, can never ripen. Full flowers, therefore, are very properly denominated by Linnæus, *eunuchs*. This higheſt degree of luxuriance is very common in carnation, lychnis, anemone, ſtock, Indian creſs, roſe, marſh marigold, ranunculus, violet, pœony, and narciſſus.

Flowers which do not exclude all the ſtamina, perfect their ſeeds. Of this kind are poppy, fennel-flower, campanula, and ſome others.

Some flowers, as thoſe of the water-lily, fig-marigold, and cactus, have many rows or ſeries of petals, without the number of ſtamina being in the leaſt diminiſhed. Such flowers are by no means to be reckoned luxuriant, in the ſlighteſt degree.

Luxuriance in flowers is generally owing to exceſs of nouriſhment.

LUXURY; voluptuouſneſs, or an extravagant indulgence in diet and dreſs.

Concerning the general utility of luxury to a ſtate, there is much controverſy among the political writers. Baron Monteſquieu lays it down, that luxury is neceſſary in monarchies, as in France; but ruinous to democracies, as in Holland. With regard therefore to Britain, whoſe government is compounded of both ſpecies, it may ſtill be a dubious queſtion, how far private luxury is a public evil; and, as ſuch, cognizable by public laws. And indeed our legiſlators have ſeveral times changed their ſentiments as to this point: for formerly there were a number of penal laws exiſting, to reſtrain exceſs in apparel; chiefly made in the reigns of Edward III. IV. and Henry VIII. againſt picked ſhoes, ſhort doublets, and long coats; all of which were repealed by ſtatute 1 Jac. I. c. 25. But, as to exceſs in diet, there ſtill remains one ancient ſtatute unrepealed, 10 Edw. III. ſt. 3. which ordains, that no man ſhall be ſerved, at dinner or ſupper, with more than two courſes; except upon ſome great holidays there ſpecified, in which he may be ſerved with three.

LYBIA, or LIBYA, a name anciently given to all that part of Africa lying between the border of Egypt and the river Triton; and comprehending *Cyrenaica*, *Marmarica*, and the Regio *Syrtica*. See theſe articles.

LYCÆUM, in Grecian antiquity, an academy ſituated on the banks of the Iliſſus at Athens. It was compoſed of porticoes and walks, where Ariſtotle taught philoſophy; walking there conſtantly every day till the hour of anointing, whence he and his followers had the name of *Peripatetics*.

LYCÆUS, (anc. geog.), a mountain of Arcadia, ſacred to Jupiter; whence *Jupiter Lycæus*, (Pliny.) Sacred alſo to Pan, (Virgil): and hence *Lycæa*, the rites performed to Pan on this mountain; which Evander carrying with him to Latium, were called *Lupercalia*, (Virgil).

LYCAONIA, (anc. geog.) a ſmall country of the Hither Aſia, contained between Pamphylia to the ſouth, Cappadocia to the north, Piſidia and Phrygia to the weſt, and Armenia Minor to the eaſt. *Lycaones*, the people. This country, tho' ſituated very near mount Taurus, and part of it on it, yet the Romans reckoned it to Aſia intra Taurum. *Arcadia*, anciently called *Lycaonia*, (Stephanus.) Alſo an iſland in the Tiber, joined to Rome by a bridge, and to the land by another, namely, the Ceſtius and Fabricius.

LYCHNIS, CAMPION, including alſo the batchelor's button, catch-fly, &c.; a genus of the pentagynia order, belonging to the decandria claſs of plants.

Species, &c. 1. The Chalcedonica, or Chalcedonian ſcarlet lychnis, hath a fibrated perennial root; upright, ſtraight, hairy, annual ſtalks, riſing three or four feet high; garniſhed with long, ſpear-pointed, cloſe-fitting leaves, by pairs oppoſite; and the ſtalk crowned by a large, compact, flat bunch of beautiful ſcarlet or flame-coloured flowers, appearing in June and July. Of this there are varieties, with ſingle ſcarlet flowers, with large double ſcarlet flowers, of exceeding beauty and elegance, with pale-red flowers, and with white flowers. Of theſe varieties, the double ſcarlet lychnis is ſuperior to all for ſize and elegance: the flowers being large, very double, and collected into a very large bunch, exhibit a charming appearance; the ſingle ſcarlet kind is alſo very pretty; and the others effect an agreeable variety with the ſcarlet kinds. 2 The diœcia, or diœcious lychnis, commonly called *bachelors-button*, hath fibrated perennial roots; upright ſtalks, branching very diffuſe and irregular, two or three feet high; having oval, acute-pointed, rough leaves, by pairs oppoſite; and all the branches terminated by cluſters of diœcious flowers of different colours and properties in the varieties; flowering in April and May. The varieties, are the common ſingle red-flowered bachelors button, double red, double white, and ſingle white-flowered. The double varieties are exceedingly ornamental in their bloom; the flowers large, very double, and continue long in blow; the ſingle red ſort grows wild by ditch ſides and other moiſt places in many parts of England; from which the doubles were accidentally obtained by culture in gardens. The flowers are often diœcious, *i. e.* male and female on diſtinct plants. 3. The viſcaria, or viſcous German lychnis, commonly called *catch-fly*, hath fibry perennial roots; crowned by a tuft of long, graſſy leaves cloſe to the ground; many erect, ſtraight, ſingle ſtalks, riſing a foot and a half or two feet high, exſuding from their upper part a viſcous or clammy matter; garniſhed with long narrow leaves, by pairs oppoſite; and terminated by many reddiſh-purple flowers, in cluſters one above another, forming a ſort of long looſe ſpike; all the flowers with entire pentals; flowering in May. Of this alſo there are varieties, with ſingle red flowers, with double red flowers, and with white flowers. The double variety is conſiderably the moſt eligible for general culture, and is propagated in plenty by parting the roots. All the varieties of this ſpecies emitting a glutinous liquid matter from their ſtalks, flies happening to light thereon ſometimes ſtick and entangle themſelves, whence the plant obtain the name Catch-fly. 4. The flos-cuculi, cuckoo-flower lychnis, commonly called *ragged-robin*, hath fibry perennial roots; upright, branchleſs, channelled ſtalks, riſing near two feet high; garniſhed with long, narrow, ſpear-ſhaped leaves, in pairs oppoſite; and terminated by branchy foot-ſtalks, ſuſtaining many purple, deeply quadrifid flowers; appearing in May. The flowers having each petal deeply quadrifid in a torn or ragged-like manner, the plant obtained the cant name of Ragged-robin. There are varieties with ſingle flowers and double flowers. The double ſort is a large, very multiple, fair flower: it is an improved variety of the ſingle, which grows wild in moſt of our moiſt meadows, and is rarely cultivated; but the double, being very ornamental, merits culture in every garden. All the four ſpecies and reſpective varieties are very hardy; all fibrous-rooted, the roots perennial; but are annual in ſtalks, which riſe in ſpring, flower in ſummer, ſucceeded in the ſingles by plenty of ſeed in autumn, by which all the ſingle varieties may be raiſed in abundance, but the doubles only by dividing the roots, and ſome by cuttings of the flower-ſtalks.

LYCODONTES, in natural hiſtory, the petrified teeth of the lupus-piſcis, or wolf-fiſh, frequently found foſſile. They are of different ſhapes; but the moſt common kind riſe into a ſemiorbicular form, and are hollow within, ſomewhat reſembling an acorn-cup: this hollow is found ſometimes empty, and ſometimes filled with the ſtratum in which it is immerſed. Many of them have an outer-circle, of a different colour from the reſt.

LYCOPERDON, in botany; a genus of the order of fungi, belonging to the cryptogamia claſs of plants. There are ten ſpecies, of which the following are the moſt remarkable. 1. The tuber, truffles, or ſubterraneous puff-balls, is a native of woods both in Scotland and England. It is a ſubterraneous fungus, growing generally in cluſters three or four inches under ground, without any viſible root. The figure of it is nearly ſpherical, the ſize that of a potatoe; the exterior coat at firſt white, afterwards black, and ſtudded with pyramidical or polyhedrous tubercles; the internal ſubſtance ſolid and callous, of a dirty-white or pale-brown colour, grain'd like a nutmeg with ſerpentine lines; in which, according to Micheli, are imbedded minute oval capſules, containing each from two to four round warted ſeeds. The truffles of Great Britain ſeldom exceed three or four ounces in weight; but in Italy, and ſome other parts of the continent, they are ſaid to have been found of the enormous ſize of eight and even 14 pounds. They are received at our tables, either freſh and roaſted like potatoes, or dried and ſliced into ragouts. They have a volatile and ſomewhat urinous ſmell, and are reputed to be aphrodiſiacal. Dogs are with much pains taught to hunt for them by the ſcent, and to ſcratch up the ground under which they lie.

2. The boviſta, or common puff-ball, is frequent in meadows and paſtures in the autumn. It varies exceedingly in ſize, figure, ſuperficies, and colour. In general, it conſiſts of a ſack or bag, having a root at its baſe, and the bag compoſed of three membranes, an epidermis, a tough white ſkin, and an interior coat which adheres cloſely to the central pith. The pith in the young plants is of a yellowiſh colour, at firſt firm and ſolid, but ſoon changes into a cellular ſpongy ſubſtance, full of a dark dull-green powder, which diſcharges itſelf through an aperture at the top of the fungus, which aperture is formed of lacerated ſegments, in ſome varieties reflexed. The powder is believed to be the ſeeds, which through a microſcope appear of a ſphærical form, and to be annexed to elaſtic hairs. See *Haller's Hiſt. Helvet. n.* 2172.

Among the numerous varieties of this fungus, the glabrum is moſt remarkable. It is a ſmooth ſeſſile kind, of a nearly ſpherical form, puckered or contracted at the root. This ſometimes grows to an enormous ſize. It has been found in England as big as a man's head; and at Carraria, near Padua in Italy, ſpecimens have been gathered, weighing 25 pounds, and meaſuring two yards in circumference: but its more ordinary ſize is that of a walnut or an apple.

The varieties of this ſpecies have no limits, being frequently found to run into one another; the ſcaly, warty, and echinated coats turning ſmooth as the plants grow old, and the neck of the fungus having no determinate length. The natural colour of the puff-ball is either white, grey, or aſh-coloured: but is ſometimes found yellowiſh, tawny, and browniſh. The internal ſpongy part of it, bound on to wounds, is eſteemed good to ſtop bleedings. Preſſed and dried in an oven, the puff-ball becomes a kind of tinder, the ſmoke of which is ſaid to intoxicate bees. See *Gent. Mag.* July 1766. The Italians fry the great variety, and indeed any of the others when young, and eat them with ſalt and oil, according to the relation of Marſigli.

LYCOPODIUM, or CLUB-MOSS; a genus of the order of muſci, belonging to the cryptogamia claſs of plants. There are 24 ſpecies; of which the following are the moſt remarkable. 1. The *clavatum*, or common club-moſs, is common in dry and mountainous places, and in fir foreſts. The ſtalk is proſtrate, branched, and creeping, from a foot to two or three yards long; the radicles woody. The leaves are numerous, narrow, lanceolated, acute, often incurved at the extremity, terminated with a long white hair, and every where ſurround the ſtalk. The peduncles are erect, firm, and naked (except being thinly ſet with lanceolate ſcales), and ariſe from the ends of the branches. They are generally two or three inches long, and terminated with two cylindrical yellowiſh ſpikes, imbricated with oval-acute ſcales, finely lacerated on the edges, and ending with a hair. In the *ala* or boſom of each ſcale is a kidney-ſhaped capſule, which burſts with elaſticity when ripe, and throws out a light yellow powder, which, blown into the flame of a candle, flaſhes with a ſmall exploſion. The Swedes make mats of this moſs to rub their ſhoes upon. In Ruſſia, and ſome other countries, the powder of the capſules is uſed in medicine to heal galls in children, chops in the ſkin, and other ſores. It is alſo uſed to powder over officinal pills, and to make artificial lightning at theatres. The Poles make a decoction of the plant, and, dipping a linen cloth into it, apply it to the heads of perſons afflicted with the diſeaſe called the *plica polonica*, which is ſaid to be cured by this kind of fomentation.

2. The *ſelago*, or fir club-moſs, is common in the Highland mountains of Scotland, and in the Hebrides. The ſtalk at the baſe is ſingle and reclining; but a little higher is divided into upright dichotomous branches, from two to ſix inches high, ſurrounded with eight longitudinal oblique ſeries of lanceolate, ſmooth, rigid, imbricated leaves. Near the ſummits of the branches, in the *alæ* of the leaves, are placed ſingle kidney-ſhaped capſules, conſiſting of two valves, which open horizontally like the ſhells of an oyſter, and caſt out a fine yellow powder. Theſe capſules Linnæus ſuppoſes to be *antheræ*, or male parts of fructification. In the *alæ* alſo of many of the leaves, near the tops of the branches, are often found what the ſame great author calls *female flowers*, but which the ingenious Haller eſteems to be only gems or buds of a future plant. They conſiſt, firſt, of four ſtiff, lanceolate, incurved, minute leaves, one of the outermoſt longer and larger than the reſt. Theſe are ſuppoſed to correſpond to the *calyx* in regular flowers. Again, at the bottom of this *calyx*, are five ſmall pellucid ſubſtances reſembling leaves, viſible only by a microſcope, which are ſuppoſed analogous to piſtils. Theſe, in time, grow up into three large broad leaves,

two of the five united together like the hoof of an ox; with a third narrower one annexed at the baſe, and two other minute ones oppoſite to the other three. Theſe five leaves are joined at the baſe; and in autumn, falling from the *calyx*, vegetate, and produce a new plant. See a diſſertation *De ſeminibus muſcorum, Amœnit. Academ.* II. p. 261. In the iſland of Raaſay, near Sky, in Roſsſhire, and ſome other places, the inhabitants make uſe of this plant inſtead of alum, to fix the colours in dyeing. The Highlanders alſo ſometimes take an infuſion of it as an emetic and cathartic: but it operates violently; and, unleſs taken in a ſmall doſe, brings on giddineſs and convulſions. Linnæus informs us, that the Swedes uſe a decoction of it to deſtroy lice on ſwine and other animals.

LYCOPHRON, a famous Greek poet and grammarian, born at Colchis in Eubœa, flouriſhed about 304 B. C. and, according to Ovid, was killed by an arrow. He wrote 20 tragedies; but all his works are loſt, except a poem intitled *Caſſandra*, which contains a long train of predictions, which he ſuppoſes to have been made by Caſſandra, Priam's daughter. This poem is extremely obſcure. The beſt edition of it is that of Dr Potter, printed at Oxford, in 1697, folio.

LYCURGUS, the celebrated legiſlator of the Spartans, was the ſon of Eunomes king of Sparta. —He travelled to Greece, to the iſle of Crete, to Egypt, and even to the Indies, to converſe with the ſages and learned men of thoſe countries, and to learn their manners, their cuſtoms, and their laws. After the death of his brother Polydictes, who was king of Sparta, his widow offered the crown to Lycurgus, promiſing that ſhe would make herſelf miſcarry of the child of which ſhe was pregnant, provided he would marry her; but Lycurgus nobly refuſed theſe advantageous offers, and afterwards contented himſelf with being tutor to his nephew Charillus, and reſtored to him the government when he came of age: but notwithſtanding this regular and generous conduct, he was accuſed of a deſign to uſurp the crown. This calumny obliged him to retire to the iſland of Crete, where he applied himſelf to the ſtudy of the laws and cuſtoms of nations. At his return to Lacedæmon, he reformed the government: and, to prevent the diſorders occaſioned by luxury and the love of riches, he prohibited the uſe of gold and ſilver; placed all the citizens in a ſtate of equality; and introduced the ſtricteſt temperance, the moſt exact diſcipline, and thoſe admirable laws, which (a few excepted) have been celebrated by all hiſtorians. It is ſaid, that, to engage the Lacedæmonians to obſerve them inviolably, he made them promiſe with an oath not to change any part of them till his return; and that he afterwards went to the iſland of Crete, where he killed himſelf, after having ordered that his aſhes ſhould be thrown into the ſea, for fear leſt if his body ſhould be carried to Sparta the Lacedæmonians would think themſelves abſolved from their oath. He flouriſhed about 870 B. C.

LYDGATE (John), called *the Monk of Bury*; not, as Cibber conjectures, becauſe he was a native of that place, for he was born about the year 1380, in the village of Lydgate; but becauſe he was a monk of the Benedictine convent at St Edmund's-Bury. After ſtudying ſome time in our Engliſh univerſities, he travelled to France and Italy; and, having acquired a competent knowledge of the languages of thoſe countries, he returned to London, where he opened a ſchool, in which he inſtructed the ſons of the nobility in polite literature. At what time he retired to the convent of St Edmund's-Bury, does not appear; but he was certainly there in 1415. He was living in 1446, aged about 66; but in what year he died, is not known. Lydgate, according to Pits, was an elegant poet, a perſuaſive rhetorician, an expert mathematician, an acute philoſopher, and a tolerable divine. He was a voluminous writer; and, conſidering the age in which he lived, an excellent poet. His language is leſs obſolete, and his verſification much more harmonious, than the language and verſification of Chaucer, who wrote about half a century before him. He wrote, 1. Hiſtory of the Theban war, printed at the end of Chaucer's works, 1561, 1602, 1687. 2. Poemation of good counſel; at the end of Chaucer's works. 3. The life of Hector; London 1594, fol. printed by Groſs, dedicated to Henry V. 3. Life of the Bleſſed Virgin; printed by Caxton. 4. The proverbs of Lydgate upon the fall of princes; printed by Winck. Word. Lond. .... 4to. 5. Diſpute of the horſe, the ſheep, and the gooſe; printed in Caxton's Collect. 4to. 6. The temple of braſs; among the works of Chaucer. 7. London lickpenny; *vide* Stow's hiſtory, &c. &c. Beſides an incredible number of other poems and tranſlations preſerved in various libraries, and of which the reader will find a catalogue in biſhop Tanner.

LYDIA (anc. geogr.), the ſame with MÆONIA; though ſome reckoned this laſt only a part, by the name of *Lydia Superior*, (Callimachus, Pauſanias); inhabited by the people called *Mæones*, (Strabo); *Meones*, (Homer, Dionyſius Periegetes); the *Lower Lydia*, or that towards the ſea-coaſt, being inhabited by the *Lydi*. Thus the caſe anciently ſtood; though not ſo conſtantly, but that thoſe towards the Lower Lydia were called *Meones*; and *Lydi*, thoſe towards the Higher. Afterwards, the colony of the Ionians prevailing, and the name *Meones* becoming gradually to ceaſe, the lower part came to be called *Ionia*, the name *Lydia* being appropriated to the higher. This latter had Ionia on the weſt, Phrygia on the eaſt, Myſia to the north, and Caria to the ſouth. In Crœſus's time, the kingdom of Lydia extended from the Halys on the eaſt, to the Egean ſea on the weſt ſide. *Lydi*, the people, deſcendants of Lud, the ſon of Shem. They were the firſt who coined gold and ſilver, (Herodotus); were called *Mali*, from their vicious character, (Athenæus); proſtituted their daughters, (Herodotus, Horace); anciently a brave people, all excellent horſemen, (idem); *Lydius*, the epithet. *Lydius mos*, denotes *effeminacy*.

LYDYAT (Thomas), a learned Engliſh divine, born in 1572, and educated at Oxford. About the year 1609, he became acquainted with Dr James Uſher, afterwards archbiſhop of Armagh, who carried him to Ireland. He was at Dublin college for about two years, after which he returned to England; and the rectory of Alkrington becoming vacant, he was preſented to it: but at length, being engaged for the debts of a near relation, which for the preſent he was unable to pay, having before ſpent his patrimony in printing ſeveral books, he was ſent to priſon; and was confined at Oxford, in the King's-bench, and elſewhere, till Sir William Boſwell, a generous patron of learned men, Dr Robert Pink, warden of New-college, biſhop Uſher, and Dr Laud, diſcharged the debt. In the civil wars, he ſuffered much in his rectory of Alkrington from the parliament-party; was four times pillaged to the value of at leaſt 70 l.; and was forced for a quarter of a year together to borrow a ſhirt to ſhift himſelf. He died in 1646. He wrote ſome pieces in Engliſh, and many works in Latin, on chronology and natural hiſtory.

LYDIUS LAPIS, in the natural hiſtory of the ancients; the name of the ſtone uſed by way of touchſtone for the trial of gold and ſilver, and called by ſome *Heraclius Lapis;* both of which names were alſo applied by the ancients to the load-ſtone, and hence has ariſen no ſmall miſunderſtanding of their works. Pliny has obſerved, that both the load-ſtone and touch ſtone were at times called *Lydius* and *Heraclius Lapis*.

The true *lapis Lydius*, or the touch-ſtone, was anciently found only in the river Tmolus; but was afterwards found in many other places, and is now very common in many of the German rivers. The ancients give us very remarkable and circumſtantial accounts of the uſes they made of it; and it is plain they were able to diſcern the alloys of gold by means of it with very great exactneſs. We at preſent uſe ſeveral different ſtones under this name, and for the ſame purpoſe. In Italy, a green marble called *verdello*, is moſt frequently uſed; and with us, very frequently ſmall pieces of the *baſaltes*, the ſame with that vaſt piece of black marble called the *Giant's Cauſeway* in Ireland. See BASALTES; GIANT'S *Cauſeway*; ICELAND, n°9; STAFFA; and VOLCANO.

LYING-IN-WOMEN. See MIDWIFERY.

LYING-*To*, or *Lying-By*, the ſituation of a ſhip, when ſhe is retarded in her courſe, by arranging the ſails in ſuch a manner as to counteract each other with nearly an equal effort, and render the ſhip almoſt immoveable, with reſpect to her progreſſive motion, or head-way. A ſhip is uſually brought-to by the main and fore-top ſails, one of which is laid aback, whilſt the other is full; ſo that the latter puſhes the ſhip forward, whilſt the former reſiſts this impulſe by forcing her aſtern. This is particularly practiſed in a general engagement, when the hoſtile fleets are drawn up in two lines of battle oppoſite each other. It is alſo uſed to wait for ſome other ſhip, either approaching or expected; or to avoid purſuing a dangerous courſe, eſpecially in dark or foggy weather, &c.

LYME, a ſea-port town of Dorſetſhire, in England, ſeated on the ſea-ſhore, with a good harbour. It is ſo called from a little river which runs through the middle of the town, and falls into the ſea. It is a large well-built corporation-town, is a place of good trade, and ſends two members to parliament. The duke of Monmouth landed here with a handful of men in 1685, which were ſoon increaſed to 6000, and was then proclaimed king; but he was defeated by king James's army, taken priſoner, and beheaded. W. Long. 3. 5. N. Lat. 50. 40.

LYMPH, a fine colourleſs fluid, ſeparated in the body from the maſs of blood, and contained in peculiar veſſels called *lymphatics*.

The late ingenious Mr Hewſon publiſhed a diſſertation on the lymph and lymphatic ſyſtem in the human body, and that of other animals. The lymph he conſiders both as contained in its proper veſſels, and exhaled into the different cavities of the body. In each of theſe ſtates, the lymph coagulated when expoſed to the air, and ſeemed more to reſemble the buffy coat of the blood than its watery parts, to which it hath been compared by authors. This coagulum, Mr Hewſon found to vary conſiderably in its degree of coheſion, being always firm in ſtrong animals, but in weak ones of a much looſer texture. And, in the courſe of his experiments, he obſerved, that the fluid collected from the different cavities of the body uniformly agreed with that found in the lymphatic veſſels of the ſame animal, both in degree of tenacity, and time of coagulation. Thus far theſe fluids correſpond with the coagulable part of blood; but they differ from it in the time neceſſary to form the coagulum, the blood always jellying much ſooner than the lymph, and later in ſtrong than in weak animals; the very reverſe of what happens to that fluid.

From the following obſervations, Mr Hewſon is of opinion, that the veſſels exhaling fluids into the cavities of the body, whatever their ſtructure may be, have a power of changing the nature of their contents.

1. A coagulum is often found covering the internal ſurface of inflamed cavities, without the ſmalleſt eroſion. This can only be the natural exhalation, thrown out by inflamed veſſels, with a ſtrong diſpoſition to coagulate.

2. As the lymph is diſcharged, variouſly changed in tenacity and other properties, by diſeaſe; and as pus is ſometimes found in the ſame manner in cavities, without any ulceration; the author thinks it at leaſt probable, that this purulent matter is only the lymph itſelf, ſtill more altered by flowing through veſſels in a higher or different degree of inflammation; and in this notion he is confirmed, by obſerving, with the microſcope, globules in pus like thoſe of the milk, a ſecreted liquor.

On a review of his experiments, he thinks they evidently point out the following general concluſions: that the lymph and exhalations are of a ſimilar nature, but differ widely from the watery part of the blood; that they coagulate on expoſure to air, and are probably a ſpecies of the lymph of the blood; that they differ in the time and firmneſs of coagulation, in various degrees, from the cahectic habit, where they ſcarcely jelly at all, to the inflammatory, where very ſhort time is requiſite to a ſtrong coheſion; and that, in ſome caſes, the inflamed veſſels can even convert the fluid paſſing through them into real purulent matter.

Having thus given a correct idea of the properties of the lymph, he goes on to trace it from the circulating maſs, and to inveſtigate the manner of its ſeparation; with regard to which, he obſerves, two different opinions have been entertained. The firſt and moſt general is, that the lymph is poured into cavities, either by exhalent arteries, or pores of an organiſed nature on the ſides of veſſels. The other has lately been ſtarted by Dr Hunter, who conſiders the lymph as merely a tranſudation of the thinner parts of the blood through interſtices or inorganized pores in the veſſels circulating the red-blood; which, tho' they retain the ſerum, allow the more fluid parts to paſs with eaſe. In ſupport of this new doctrine, Dr Hunter adduces the following facts.

1. Water injected into the blood-veſſels of a dead animal readily imitates this tranſudation.

2. Blood itſelf tranſudes after death, the lymph to which it owed its conſiſtence being coagulated.

3. Bile tranſudes through the gall-bladder; for, on opening an animal, all the adjacent parts are tinged.

With a view to diſprove this notion, Mr Hewſon maintains, that there is a tenſion in the veſſels of a living body, forſaking them with life; and that, did ſuch an exſudation take place, it would defeat one great intention of veſſels, the conveyance of fluids, and involve us in a continual round of exhalation and abſorption, very contrary to the common ſimplicity of nature.

A ſecond objection of Mr Hewſon is, that, if liquors thus filtrate into cavities, not only muſt the veſſels, creeping on their ſides, but the membranes lining theſe cavities, be porous. But, if theſe pores are admitted in every part, we cannot deny them to the whole extent of theſe membranes. And, were this the caſe, a partial dropſy could never occur; as a fluid would as eaſily eſcape, from within, outwards, as it formerly inſinuated itſelf from the veſſels into any cavity.

Another argument againſt the opinion of Dr Hunter, is drawn by Mr Hewſon from his former experiment, where he found the lymph, in different ſtates of the body, ſo various in degree of viſcidity. He is at a loſs to conceive, how pores of an inorganized nature ſhould pour out fluids ſo different in conſiſtence, much leſs filtrate pus from the blood, where it never exiſted.

The argument of Dr Hunter, founded on the tranſudation of blood, proceeds, he thinks, on an erroneous principle; for the blood of a living animal is actually thinned by the preſence of the coagulable lymph: and, if this tranſudation takes place in a dead, and not in a living animal, it ought rather to be attributed to a change in the veſſels, than their contents. And this is almoſt proven by the attentive examination of one of the ſtrongeſt of the doctor's own facts, viz. the bilious tinge on parts contiguous to the gall-bladder, which only takes place after an animal has been ſome time dead; but is never found in one recently killed.

From all theſe, the author concludes, that, as the lymph is very different from water, it cannot be filtrated by inorganical paſſages; and that the common opinion is founded on reaſon and experiment, the lymph being not only tranſmitted thro' exhalant veſſels, but by them changed in its properties, and adapted to the office of lubricating parts.

The manner in which the lymph is diſcharged into the cavities of the body being thus aſcertained with a great degree of probability, Mr Hewſon proceeds to examine how it is again abſorbed, whether by the common veins, or by the lymphatic ſyſtem. Beſides the authority of all the ancients, the advocates for the firſt opinion think they are poſſeſſed of ſeveral concluſive arguments in its favour.

They allege, that, in dead bodies, injections eaſily flow from the veins into ſeveral cavities. This Mr Hewſon thinks, for many reaſons, to have little force. The veins are very delicate, and may be ruptured by a very ſmall diſtending power. And this ſeems in general to have been the caſe; for moſt of the injections uſed in theſe experiments were far too groſs to reach the extremities of the veins. And when thoſe of a more penetrating nature are employed, they imitate that tranſudation from vaſcular laxity, which takes place after death.

A ſecond argument adduced in favour of the old opinion is, that chyle has been ſeen in the meſenteric veins. But this is a very inconcluſive one, as the whole ſerum has been found of a white colour, and, in theſe veſſels, might eaſily be miſtaken for chyle. Another has been furniſhed by the ſtructure of the penis: but this analogy is now given up; it being generally allowed, that the blood is not abſorbed, but forced from its cells into the venous ſyſtem.

Ligatures and compreſſion on veins have afforded a fourth argument; but two circumſtances unite to render this leſs ſatisfactory: *1ſt*, The lymphatics, being contiguous to the veins, may be affected by the ſame cauſe. And, *2d*, the compreſſion of a vein will throw a greater quantity of fluids on the exhalant arteries, by obſtructing their flow through the red ones.

It has been farther alleged, that there is no continuation of veſſels nor any lymphatics in the placenta, though abſorption evidently takes place. To this Mr Hewſon replies, that there may be lymphatics, though not diſcovered, and continued veſſels from the mother to the fœtus, though never injected.

The ſixth argument is ſupplied by an experiment of Kaau Boerhaave. He injected a fluid into the inteſtines, which ſoon appeared in the meſeraic veins. But Mr Hewſon is much inclined to believe that there was ſome deception in this experiment, as it has been often repeated, without ſimilar ſucceſs. Did the fact even happen, it could never be by abſorption, that ceaſing ſoon after death, while this happened at the end of ſeveral hours; and, as preſſure was applied to the ſtomach, the author thinks a venous rupture might give riſe to the appearances obſerved by Kau Boerhaave.

The ſeventh and laſt argument in favour of abſorption by the veins was, that many animals were deſtitute of any other veſſels capable of performing that office, as birds, fiſhes, and amphibia; but the diſcovery of lymphatics in every one of theſe, has totally overthrown this argument.

To all theſe, the ingenious Mr Meckel has, of late, added ſome others, derived from injections of mercury into the lymphatic glands, veſiculæ ſeminales, bladder, and lacteal ducts of the breaſt, which he founſt to paſs readily, and without extravaſation, into the adjacent veins. But Mr Hewſon obſerves, that extravaſation is detected with difficulty; and as the lymphatic veſſels often lie contiguous to veins, it is not impoſſible that, in ſome caſes, the mercury might burſt from the one of them into the other, as often happened to Mr Hewſon in the meſentery of the turtle. From all theſe, the author conſiders the old opinion as at leaſt open to many and weighty objections.

Unſatiſfied, however, with this negative proof, he goes on to ſhow, that abſorption in reality is carried on by the lymphatic ſyſtem, from the analogy of all theſe veſſels with the lacteals, which form a part of that ſyſtem, and are without doubt abſorbents. Beſides this, the courſe by which poiſons reach the circulating fluids when externally applied, evidently points out that they enter the lymphatic veſſels alone, and are by them conveyed towards the heart. To theſe Mr Hewſon adds his obſervation, that the ſame fluid is always found in theſe veſſels, and the cavities whence they ariſe. Thus there will remain little doubt of the abſorbent power of lymphatics, a function of ſuch importance in the œconomy, that, for it alone, nature has provided a diſtinct ſet of veſſels: they had indeed, by ſome, been ſuſpected to be only reflected arterial branches; but this has been long confuted by the experiments of Dr Monro and Dr Hunter.

Lymphatics, in anatomy, the veſſels in which the lymph is contained, and the glands by which it is ſeparated in the human and other bodies. An account of the ſtructure and offices of the lymphatic glands and veſſels has lately been publiſhed, from Mr Hewſon's experiments, by Mr Falconer of London. He obſerves, that each lymphatic gland is a congeries of tubes, conſiſting of arteries, veins, lymphatic veſſels, and nerves, connected by the cellular ſubſtance. Glands of this kind, he remarks, are nowhere to be found but in the courſe of the larger lymphatic veſſels. Theſe veſſels, in their paſſage from the extreme parts of the body towards the thoracic duct, enter and paſs thro' the lymphatic glands in the following manner:

About a quarter of an inch before a lymphatic enters a gland, it divides into two, three, or four ſmaller branches, ſometimes into a greater number. Theſe enter the gland at the part fartheſt from the thoracic duct; and are then ſubdivided into branches, as ſmall as the ramifications of the arteries and veins which accompany them to every part of the gland. After being thus minutely divided, they reunite, and gradually become larger as they approach the oppoſite ſide of the gland, forming three or four branches, which are joined by other lymphatics that ariſe from the cells of the gland. All theſe branches unite together about a quarter of an inch from that part where they came out of the gland, and form a common trunk, larger than that below the gland, by the additional lymphatics it receives from the cells of the gland.

Although, in every lymphatic gland, very ſmall cells can be diſcovered by the microſcope, thoſe appearances in ſuch glands which have commonly been called *cellular*, are by no means of that nature, being only, our author obſerves, little eminences formed by the bending of one veſſel round another. On cutting into a freſh lymphatic gland, it is found to contain a thickiſh, white, milky fluid; and if this fluid be carefully waſhed from any part of it, and the gland then examined with the microſcope, an infinite number of very ſmall cells are obſerved, which cannot be diſcovered by the naked eye.

Mr Falconer adopts the opinion of the late Mr Hewſon with reſpect to the *uſe* likewiſe of the lymphatic ſyſtem. The glands he conſiders as organs intended for the purpoſe of ſecreting a fluid of a particular nature from the blood; and the lymphatic veſſels he looks upon as ſo many excretory ducts. In proof of this aſſertion, he obſerves, that, if the arteries and veins of a lymphatic gland have been previouſly injected with a coloured fluid, and a part of the gland be then viewed thro' the microſcope, theſe cells, formerly taken notice of, appear extremely vaſcular. And it is into their cavities that the whole fluid found in the gland is ſecreted. This fluid is abſorbed by the lymphatic veſſels which ariſe from the cells of the glands, and is by them, in common with the other fluids, carried into the courſe of the circulation. The lymphatic veſſels, therefore, which originate from the cells of the gland, are, in the lymphatic glands, analogous to the excretory ducts of other glands. We have the ſame proofs, our author aſſerts, that the lymphatic glands ſecrete this white fluid, and that it is carried from the lymphatic glands by the lymphatic veſſels, that we have of glands in other parts of the body ſeparating different fluids and having excretory ducts. For, if we cut into a lymphatic gland, we find a white fluid; and, if a ligature be made on the lymphatic veſſel coming from that gland, we find a fluid of the ſame kind contained in thoſe lymphatic veſſels. This, Mr Falconer obſerves, is as convincing a proof that the lymphatic veſſels are excretory ducts to the lymphatic glands; and as ſatisfactory, as that the hepatic duct is the excretory duct of the liver. We know the liver ſecretes bile, becauſe we find it in that viſcus; and we know the ductus hepaticus is its excretory duct, becauſe we find bile contained in it. The proofs are ſimilar, and therefore equally concluſive.

LYNCEUS, in fabulous hiſtory, one of the 50 ſons of Ægeus, married Hypermneſtra, one of the 50 daughters of Danaus. See Hypermnestra.

Lynceus, in fabulous hiſtory, one of the Argonauts, who went with Jaſon in the expedition to obtain the golden fleece. He was of great uſe to the Argonauts, by enabling them to avoid the ſand-banks and rocks they found in their way. The poets ſay, that Lynceus had ſo piercing a ſight, that it could not only penetrate to the bottom of the ſea, but even to hell. Some mythologiſts ſuppoſe, that this fable is taken from Lynceus's ſkill in obſerving the ſtars, and diſcovering the mines of gold and ſilver concealed in the earth.

LYNCURIUM, a ſtone thought to be the ſame with the tourmalin. The name is derived from λυγξ, *lynx*, and ȣρον, *urine*.

LYNCURIUS Lapis, a ſtone capable of producing muſhrooms. See Agaricus.

LYNN regis, a town of Norfolk, in England, ſituated in E. Long. 0. 33. N. Lat. 52. 46. It is a handſome, large, well-built corporation-town, and ſends two members to parliament; is encompaſſed with a wall and a deep trench; and there are two ſmall rivers that run through its ſtreets, over which there are about 15 bridges. It is a trading place on account of its commodious harbour; is governed by a mayor, recorder, high-ſteward, 12 aldermen, and 18 common council-men. Formerly it was well fortified; but it has now only a battery of 10 guns. It has two churches, a very large chapel, and two diſſenting meeting-houſe. Here are about 2000 houſes, moſtly pretty good ones, built with brick: the ſtreets are narrow, but well-paved; it has a good market-place, with an elegant croſs; and there are here ſome remains of monaſteries.

LYNX, in zoology. See Felis.

yon. LYON *King of* Arms. See King; and Law, Nº clviii. 16.

This office is of great antiquity and reſpect in Scotland; but although the preciſe time of its inſtitution is unknown, yet it muſt have been as early as the introduction of armorial figures as hereditary marks of gentility and diſtinction into this country, which was in the 12th century. His regalia are, a crown of gold, with a crimſon velvet-cap, a gold taſſel, and an ermine lining; a velvet-robe reaching to his feet, with the arms of the kingdom embroidered thereon before and behind in the proper tinctures; a triple row of gold chain round his neck, with an oval gold-medal pendent thereto, on one ſide of which is the royal bearing, and on the other St Andrew with his croſs enamelled in proper colours, and a baton of gold enamelled green, powdered with the badges of the kingdom. The Lord Lyon's rank is ſuperior to that of any other king of arms, as he holds his office immediately from the ſovereign by commiſſion under the great ſeal; whereas the kings of arms in England are deputies to the Earl Marſhal, and act under his authority. Formerly Scotland was divided into two provinces, the one on the north and the other on the ſouth ſide of Forth; and theſe provinces were under the management of two deputies appointed by the Lord Lyon to ſuperintend the execution of all the buſineſs of his office. Before the revolution, the Lord Lyon at his admiſſion into office was moſt ſolemnly crowned by the ſovereign, or his commiſſioner, in preſence of the nobility, the officers of ſtate, and other great men, after a ſuitable ſermon preached in the royal-chapel; and his crown was of the ſame form with the imperial crown of the kingdom. On ſolemn occaſions, he wears the regalia above deſcribed; at all other times, he wears the oval gold-medal or badge on his breaſt ſuſpended by a broad green ribbon. He has the abſolute diſpoſal of all the offices in his own court, and of the heralds and purſuivants places. The meſſengers at arms throughout Scotland are alſo created by him, and are amenable to his juriſdiction. And the powers veſted in him by his commiſſion are the ſame with thoſe of the ſovereign in all matters relative to the marks of gentility.

To give the reader a more complete idea of the dignity and nature of this office, we ſhall ſubjoin,

The order obſerved at the coronation of Sir Alexander Araſkine of Cambo, Baronet, Lord-Lyon King of Arms, at the royal palace of Holyrood-houſe, on the 27th day of July 1681; his royal highneſs James duke of Albany and York being his majeſty's high commiſſioner. I. The chair of ſtate being placed upon a throne of two ſteps in height, under the royal canopy, in the chamber of preſence; and the imperial crown, ſceptre, and ſword of ſtate, being placed on a table before the throne, the ſaid table covered with purple velvet fringed with gold; his majeſty's high-commiſſioner was conveyed by the officers of ſtate and the nobility to the throne, when he ſat down in the chair of ſtate, the nobility ſtanding on each ſide.

II. Then Sir Alexander Araſkine was introduced in this manner:

1. The king's ſix trumpets in their coats, two and two, ſounding.

2. The ſix purſuivants at arms in their coats, two and two.

3. The ſix heralds in their robes, two and two, the laſt five bearing the Lord Lyon's regalia thus: the eldeſt his crown, the ſecond his robe, the third his ſurcoat, the fourth his collar of gold and medal-pendant, the ſaid collar being compoſed of three rows, and the fifth his baton. Lyon.

III. Mr Robert Innes, Lyon-depute, bearing his patent under the great ſeal.

IV. The maſter of the ceremonies.

V. The Lord Lyon ſupported by two baronets, viz. Sir William Sharp of Scotſcraig, and Sir John Maitland; and attended with the ſix macers on either ſide, with their ſilver maces.

VI. Then having three ſeveral times done their homage to his majeſty's high commiſſioner, viz. at the door, in the middle of the chamber, and before the throne, thoſe who carried the patent and regalia drew near to the chair of ſtate; the reſt of the heralds and purſuivants retiring to the windows, and the trumpets to a place allotted for them.

VII. The maſter of the ceremonies brought the Lord Lyon to his majeſty's high commiſſioner, and he kneeled down before him on a velvet-cuſhion, and was dubbed knight with the ſword of ſtate.

VIII. The maſter of the ceremonies called for the patent under the great ſeal, and gave it to one of the clerks of the privy-council, who read it aloud. He then delivered it to his royal highneſs, and from him to the Lord Lyon, ſhewing him the king's pleaſure, his duty, and the importance of the honour conferred upon him by ſo gracious a maſter.

IX. His royal-highneſs cauſed the Lord Lyon to ſwear the oath of allegiance, and take the declaration, the ſame being read by one of the clerks of the privy-council.

X. The maſter of the ceremonies took the ſurcoat of arms, and gave it to his royal highneſs, who, with his aſſiſtance, put it on the Lord Lyon; his highneſs ſaying, "I do veſt you with this coat and robe of your office during all the days of your lifetime, which you ſhall wear on all honourable occaſions, keeping the ſame free from all ſpot of treaſon, villainy, and diſgrace."

XI. The maſter of the ceremonies took the crown, and delivered the ſame to his royal highneſs; who put it on the Lord Lyon's head, ſaying, "In the name of his moſt ſacred majeſty the king, I crown you, Sir Alexander Araſkine of Cambo, baronet, Lyon King of Arms throughout all the kingdom of Scotland, and the iſles, colonies, and dependencies thereunto belonging, with all the powers, privileges, liberties, honours, and dignities, belonging to that office."

XII. The maſter of the ceremonies gave the baton to his royal highneſs; who, delivering it to the Lord Lyon, ſaid, "I deliver to you this baton of your office, in token of that command and regal authority which his majeſty gives you over all who bear his majeſty's arms under you in this kingdom of Scotland."

XIII. The maſter of the ceremonies gave the collar to his royal highneſs; who put it about the Lord-Lyon's neck, ſaying, "This royal token and badge of your maſter's favour, I give you to be worn by you all the days of your life, in token of your precedency before all others of under degree and quality, in conſequence of your good and faithful ſervices done and to be done."

XIV. Then his royal highneſs bleſſed the Lord Lyon, and took his oath in the terms following: "I ſhall defend the Catholic faith to the uttermoſt of my power. I ſhall be leal and true, ſecret and ſerviceable, to our ſovereign lord the king, and to all eſtates, *that is to ſay*, to emperors, kings, princes, archdukes, dukes, marquiſſes, earls, viſcounts, lords, or barons, knights, eſquires, gentlemen, ladies, widows, and maidens of good fame, and ſhall forward their lawful buſineſs upon their expence: and what ambaſſage or meſſage I take in hand to do, I ſhall do the ſame truly, without adding or taking from. I ſhall forbear all open vices, common bordells, common hazard, and common drinking in taverns. I ſhall fortify and defend the privileges of the noble office of arms with all my power; and ſhall never reveal any man's ſecrets, treaſon excepted. I ſhall obſerve and keep all the forenamed points: So help me, God; and by my part of paradiſe."

XV. Then one of the heralds, with ſound of trumpet, proclaimed out of one of the windows Sir Alexander Araſkine of Cambo, baronet, Lyon King of Arms throughout all the kingdom of Scotland, and the iſles and dependencies thereunto belonging, with all the honours and privileges that to this office appertain.

XVI. His royal highneſs, taking the Lord-Lyon by both hands, raiſed him; who, taking off his crown, gave his highneſs his humble thanks, and then cried aloud, "A largeſs of the moſt high and mighty monarch Charles, by the grace of God, king of Scotland, England, France, and Ireland, defender of the faith, &c."

XVII. Then by ſound of trumpets all the heralds and purſuivants proclaimed the ſame words out of the windows.

XVIII. The Lord-Lyon, in his robes, collar, and crown, with the baton of command in his hand, was attended back to the chamber from whence he came, in the ſame order as before, the heralds and purſuivants proclaiming round the court in their return, "A Largeſs," &c. *ſupra*.

LYONNOIS, a large province of France; bounded on the north, by Burgundy; on the eaſt, by Dauphiny, Breſſe, and the principality of Dombs; on the ſouth, by Vivarais and Velay; and on the weſt, by Auvergne and a ſmall part of Bourbonnois. It comprehends Lower Lyonnois, Beaujolois, and Forez; and it produces corn, wine, fruits, and more eſpecially excellent cheſnuts. The principal rivers are the Soane, the Rhone, and the Loire. Lyons is the capital town.

LYONS, a large, rich, handſome, ancient, and famous town of France, being the moſt conſiderable in the kingdom, next to Paris, with an archbiſhop's ſee, an academy of ſciences and belles lettres, and an academy of arts and ſciences ſettled here in 1736. It is ſeated in the centre of Europe, on the confluence of the rivers Rhone and Soan: on the ſide of it are two high mountains; and the mountain of St Sebaſtian ſerves as a bulwark againſt the north winds, which often blow here with great violence. It contains about 150,000 inhabitants; and the houſes, in general, are high and well built. It has ſix gates, and as many ſuburbs. The town-houſe, the arſenal, the amphitheatre built by the ancient Romans, the hoſpital, and the numerous palaces, are worthy of a traveller's attention. The cathedral is a ſuperb ſtructure, and the canons that compoſe the chapter are all perſons of diſtinction. It is a place of very great trade, which is extended not only through France, but to Italy, Swiſſerland, and Spain; and there are four celebrated fairs every year, which are frequented by great numbers of people. It derives vaſt advantages from the rivers it ſtands upon; and is ſituated in E. Long. 4. 55. N. Lat. 45. 46.

LYRA, in ichthyology. See CALLYONIMUS.

LYRE, a muſical inſtrument of the ſtringed kind, much uſed by the ancients.

Concerning the number of ſtrings with which this inſtrument was furniſhed, there is great controverſy. Some aſſert it to be only three; and that the ſounds of the two remote were acute, and that of the intermediate one a mean between thoſe two extremes: that Mercury, the inventor, reſembled thoſe three chords to as many ſeaſons of the year, which were all that the Greeks reckoned, namely, Summer, Winter, and Spring; aſſigning the acute to the firſt, the grave to the ſecond, and the mean to the third.

Others aſſert that the lyre had four ſtrings; that the interval between the firſt and the fourth was an octave; that the ſecond was a fourth from the firſt, and the fourth the ſame diſtance from the third, and that from the ſecond to the third was a tone.

Another claſs of writers contend that the lyre of Mercury had ſeven ſtrings. Nicomachus, a follower of Pythagoras, and the chief of them, gives the following account of the matter: "The lyre made of the ſhell was invented by Mercury; and the knowledge of it, as it was conſtructed by him of ſeven ſtrings, was tranſmitted to Orpheus: Orpheus taught the uſe of it to Thamyris and Linus; the latter of whom taught it to Hercules, who communicated it to Amphion the Theban, who built the ſeven gates of Thebes to the ſeven ſtrings of the lyre." The ſame author proceeds to relate "That Orpheus was afterwards killed by the Thracian women; and that they are reported to have caſt his lyre into the ſea, which was afterwards thrown up at Antiſſa, a city of Leſbos: that certain fiſhers finding it, they brought it to Terpander, who carried it to Egypt, exquiſitely improved, and, ſhewing it to the Egyptian prieſts, aſſumed to himſelf the honour of its invention."

This difference among authors ſeems to have ariſen from their confounding together the Egyptian and the Grecian Mercuries.—The invention of the primitive lyre with three ſtrings was due to the firſt Egyptian HERMES, as mentioned under that article.—The lyre attributed to the Grecian Mercury is deſcribed by almoſt all the poets to be an inſtrument of ſeven ſtrings*. Vincenzio Galilei has collected the various opinions of the ſeveral Greek writers who have mentioned the invention of the chelys or teſtudo; and the late Mr Spence has done the ſame in a very circumſtantial, but ludicrous manner. "Horace talks of Mercury as a wonderful muſician, and repreſents him with a lyre. There is a ridiculous old legend relating to this invention, which informs us, that Mercury, after ſtealing ſome bulls from Apollo, retired to a ſecret grotto, which he uſed to frequent, at the foot of a mountain in Arcadia. Juſt as he was going in, he found a tortoiſe feeding at the entrance of his cave: he killed the poor creature, and, perhaps, eat the fleſh of it. As he was diverting himſelf with the ſhell, he was mightily pleaſed with the noiſe it gave from its concave figure. He had poſſibly been cunning enough to find out, that a thong pulled ſtrait and faſtened at each end, when ſtruck by the finger, made a ſort of muſical ſound. However that was, he went immediately to work, and cut ſeveral thongs out of the hides he had lately ſtolen, and faſtened them as tight as he could to the ſhell of this tortoiſe; and, in playing with them, made a new kind of muſic with them to divert himſelf in his retreat. This, conſidered only as an account of the firſt invention of the lyre, is not altogether ſo unnatural."

The moſt ancient repreſentations of this inſtrument agree very well with the account of its invention: the lyre, in particular on the old celeſtial globes, was repreſented as made of one entire ſhell of a tortoiſe; and that Amphion in the celebrated group of the Dirce, or Toro, in the Farneſe palace at Rome, which is of Greek ſculpture, and very high antiquity, is figured in the ſame manner. See Plate CLXI. fig. 9.

There have, however, been many other claimants to the ſeven-ſtringed lyre. For though Mercury invented this inſtrument in the manner already related, it is ſaid he afterwards gave it to Apollo, who was the firſt that played upon it with method, and made it the conſtant companion of poetry. According to Homer's account of this tranſaction, in his hymn to Mercury, it was given by that god to Apollo, as a peace-offering and indemnification for the oxen which he had ſtolen from him:

> To Phœbus Maia's ſon preſents the lyre,
> A gift intended to appeaſe his ire.
> The god receives it gladly, and eſſays
> The novel inſtrument a thouſand ways:
> With dext'rous ſkill the plectrum wields; and ſings,
> With voice accordant to the trembling ſtrings,
> Such ſtrains as gods and men approv'd, from whence
> The ſweet alliance ſprung of ſound and ſenſe.

Diodorus informs us, that Apollo ſoon repenting of the cruelty with which he had treated MARSYAS in conſequence of their muſical conteſt, broke the ſtrings of the lyre, and by that means put a ſtop for a time to any further progreſs in the practice of that new inſtrument. "The muſes (adds he) afterwards added to this inſtrument the ſtring called *meſe;* Linus, that of *lichanos;* and Orpheus and Thamyras, thoſe ſtrings which are named *hypate* and *parhypate* (A).

Again, many ancient and reſpectable authors tell us, that, before the time of Terpander, the Grecian lyre had only four ſtrings; and, if we may believe Suidas, it remained in this ſtate 856 years, from the time of Amphion, till Terpander added to it three new ſtrings, which extended the muſical ſcale to a heptachord, or ſeventh, and ſupplied the player with two conjoint tetrachords. It was about 150 years after this period, that Pythagoras is ſaid to have added an eighth ſtring to the lyre, in order to complete the octave, which conſiſted of two disjunct tetrachords.

Boethius gives a different hiſtory of the ſcale, and tells us, that the ſyſtem did not long remain in ſuch narrow limits as a tetrachord. Choræbus, the ſon of Athis, or Atys, king of Lydia, added a fifth ſtring; Hyagnis, a ſixth; Terpander, a ſeventh; and, at length, Lychaon of Samos, an eighth. But all theſe accounts are irreconcileable with Homer's hymn to Mercury, where the chelys, or teſtudo, the invention of which he aſcribes to that god, is ſaid to have had ſeven ſtrings. There are many claimants among the muſicians of ancient Greece, to the ſtrings that were afterwards added to theſe, by which the ſcale, in the time of Ariſtoxenus, was extended to two octaves. Athenæus, more than once, ſpeaks of the nine-ſtringed inſtrument; and Ion of Chios, a tragic and lyric poet and philoſopher, who firſt recited his pieces in the 82d olympiad, 452 B. C. mentions, in ſome verſes quoted by Euclid, the ten-ſtringed lyre; a proof that the third conjoint tetrachord was added to the ſcale in his time, which was about 50 years after Pythagoras is ſuppoſed to have conſtructed the octachord.

The different claimants among the Greeks to the ſame muſical diſcoveries, only prove, that muſic was cultivated in different countries; and that the inhabitants of each country invented and improved their own inſtruments, ſome of which happening to reſemble thoſe of other parts of Greece, rendered it difficult for hiſtorians to avoid attributing the ſame invention to different perſons. Thus the ſingle flute was given to Minerva, and to Marſyas; the ſyrinx, or fiſtula, to Pan, and to Cybele; and the lyre, or cithara, to Mercury, Apollo, Amphion, Linus, and Orpheus. Indeed, the mere addition of a ſtring or two to an inſtrument without a neck, was ſo obvious and eaſy, that it is ſcarce poſſible not to conceive many people to have done it at the ſame time.

With reſpect to the form of the ancient lyre; as little agreement is to be found among authors as about the number of ſtrings. The beſt evidences concerning it are the repreſentations of that inſtrument in the hands of ancient ſtatues, bas-reliefs, &c. See Plate CLXI.

(A) It has been already related, that the lyre invented by the Egyptian Mercury had but three ſtrings; and by putting theſe two circumſtances together, Dr Burney obſerves, we may perhaps acquire ſome knowledge of the progreſs of muſic, or, at leaſt, of the extenſion of its ſcale, in the higheſt antiquity.

Meſe, in the Greek muſic, is the fourth ſound of the ſecond tetrachord of the great ſyſtem, and firſt tetrachord invented by the ancients, anſwering to our A, on the fifth line in the baſe. If this ſound then was added to the former three, it proves two important points: firſt, that the moſt ancient tetrachord was that from E in the baſe to A; and that the three original ſtrings in the Mercurian and Apollonian lyre were tuned E, F, G, which the Greeks called *Hypate Meſon, Parhypate Meſon, Meſon Diatonos*. The addition therefore of *Meſe* to theſe, completed the firſt and moſt ancient tetrachord, E, F, G, A.

The ſtring *lichanos*, then, being added to theſe, and anſwering to our D on the third line in the baſe, extended the compaſs downwards, and gave the ancient lyre a regular ſeries of five ſounds in the Dorian mode, the moſt ancient of all the Greek modes; and the two ſtrings called *Hypate* and *Parhypate*, correſponding with our B and C in the baſe, completed the heptachord, or ſeven ſounds, B, C, D, E, F, G, A, a compaſs that received no addition till after the time of Pindar, who calls the inſtrument then in uſe the *ſeven-tongued lyre*.

where,

Fig. 9. is a repreſentation of the teſtudo, or lyre of Amphion, in front, as it appears on the baſe of the celebrated Toro Farneſe at Rome. This admirable work, conſiſting of four figures bigger than the life, beſides the toro, or bull, was found in Caracalla's baths, where the Farneſe Hercules was likewiſe diſcovered; and, except the Laocoon, is the only piece of Greek ſculpture mentioned by Pliny, that is now remaining. The two projections near the bottom ſeem to have been faſtenings for the ſtrings, and to have anſwered the purpoſe of tail-pieces in modern inſtruments.

10. The lyre held by Terpſichore, in the picture of that muſe dug out of Herculaneum.

11. The Abyſſinian teſtudo or lyre in uſe at preſent in the province of Tigre, from a drawing of Mr Bruce's, communicated to Dr Burney. "This inſtrument, (ſays he) has ſometimes five, ſometimes ſix, but moſt frequently ſeven ſtrings, made of the thongs of raw ſheep or goat ſkins, cut extremely fine, and twiſted; they rot ſoon, are very ſubject to break in dry weather, and have ſcarce any ſound in wet. From the idea, however, of this inſtrument being to accompany and ſuſtain a voice, one would think that it was better mounted formerly.

"The Abyſſinians have a tradition, that the ſiſtrum, lyre, and tambourine, were brought from Egypt into Ethiopia, by Thot, in the very firſt ages of the world. The flute, kettle-drum, and trumpet, they ſay, were brought from Paleſtine, with Menelek, the ſon of their queen of Saba by Solomon, who was their firſt Jewiſh king.

"The lyre in Amharic is called *beg*, 'the ſheep;' in Ethiopic, it is called *meſinko;* the verb *ſinko* ſignifies to ſtrike ſtrings with the fingers: no plectrum is ever uſed in Abyſſinia; ſo that meſinko, being literally interpreted, will ſignify the 'ſtringed inſtrument played upon with the fingers.'

"The ſides which conſtitute the frame of the lyre were anciently compoſed of the horns of an animal of the goat kind, called *agazan*, about the ſize of a ſmall cow, and common in the province of Tigre. I have ſeen ſeveral of theſe inſtruments very elegantly made of ſuch horns, which nature ſeems to have ſhaped on purpoſe. Some of the horns of an African ſpecies of this animal may be ſeen in M. Buffon's hiſtory of the king of France's cabinet. They are bent, and leſs regular than the Abyſſinian; but after fire-arms became common in the province of Tigre, and the woods were cut down, this animal being more ſcarce, the lyre has been made of a light red wood; however, it is always cut into a ſpiral twiſted form, in imitation of the ancient materials of which the lyre was compoſed. The drawing I ſend you was one of theſe inſtruments made of wood.

"The kingdom of Tigre, which is the largeſt and moſt populous province of Abyſſinia, and was, during many ages, the ſeat of the court, was the firſt which received letters, and civil and religious government; it extended once to the Red Sea: various reaſons and revolutions have obliged the inhabitants to reſign their ſea-coaſt to different barbarous nations, Pagan and Mahometans: while they were in poſſeſſion of it, they ſay that the Red Sea furniſhed them with tortoiſe-ſhells, of which they made the bellies of their lyres, as the Egyptians did formerly, according to Apollodorus and Lucian; but having now loſt that reſource, they have adopted, in its place, a particular ſpecies of gourd, or pumpkin, very hard and thin in the bark, ſtill imitating with the knife the ſquares, compartments, and figure of the ſhell of the tortoiſe.

"The lyre is generally from three feet, to three feet ſix inches high; that is, from a line drawn thro' the point of the horns, to the lower part of the baſe of the ſounding-board. It is exceedingly light, and eaſy of carriage, as an inſtrument ſhould naturally be in ſo rugged and mountainous a country.

"When we conſider the parts which compoſe this lyre, we cannot deny it the earlieſt antiquity. Man in his firſt ſtate, was a hunter and a fiſher, and the oldeſt inſtrument was that which partakes moſt of that ſtate. The lyre, compoſed of two principal pieces, owes the one to the horns of an animal, the other to the ſhell of a fiſh.

"It is probable, that the lyre continued with the Ethiopians in this rude ſtate, as long as they confined themſelves to their rainy, ſteep, and rugged mountains; and afterwards, when many of them deſcended along the Nile in Egypt, its portability would recommend it in the extreme heats and wearineſs of their way. Upon their arrival in Egypt, they took up their habitation in caves, in the ſides of mountains, which are inhabited to this day. Even in theſe circumſtances, an inſtrument larger than the lyre muſt have been inconvenient and liable to accidents in thoſe caverns; but when theſe people increaſed in numbers and courage, they ventured down into the plain, and built Thebes. Being now at their eaſe, and in a fine climate, all nature ſmiling around them, muſic, and other arts, were cultivated and refined, and the imperfect lyre was extended into an inſtrument of double its compaſs and volume. The ſize of the harp could be now no longer an objection; the Nile carried the inhabitants every where eaſily, and without effort; and we may naturally ſuppoſe in the fine evenings of that country, that the Nile was the favourite ſcene upon which this inſtrument was practiſed; at leaſt the ſphinx and lotus upon its head, ſeem to hint that it was ſomeway connected with the overflowings of that river." See Harp.

12. An Etruſcan lyre, with ſeven ſtrings, in the collection of Etruſcan, Greek, and Roman antiquities, publiſhed from the cabinet of the Hon. Sir William Hamilton, Vol. I. Naples 1766. Pl. cix. With reſpect to this inſtrument, it is worthy of obſervation, that though the vaſe upon which it is repreſented is of ſuch indiſputable and remote antiquity, the tail-piece, bridge, belly, and ſound-holes, have a very modern appearance, and manifeſt a knowledge in the conſtruction of muſical inſtruments among the Etruſcans ſuperior to that of the Greeks and Romans in much later times. The lower part of the inſtrument has much the appearance of an old baſs-viol, and it is not difficult to diſcover in it more than the embryo of the whole violin family. The ſtrings lie round, as if intended to be played on with a bow; and even the croſs lines on the tail-piece are ſuch as we frequently ſee on the tail-pieces of old viols.

13. The tripodian lyre of Pythagoras the Zacynthian, from a bas-relief in the Maffei palace at Rome repreſenting the whole choir of the muſes. Athenæus gives the following account of this extraordinary inſtrument, *lib.* xiv. *cap.* 15. *p.* 637. "Many ancient

inſtruments are recorded, (ſays Artemon), of which we have ſo little knowledge, that we can hardly be certain of their exiſtence; ſuch as the tripod of Pythagoras the Zacynthian, which, on account of its difficulty, continued in uſe but a ſhort time. It reſembled in form the Delphic tripod, whence it had its name. The legs were equidiſtant, and fixed upon a moveable baſe that was turned by the foot of the player; the ſtrings were placed between the legs of the ſtool; the vaſe at the top ſerved for the purpoſe of a ſound-board, and the ſtrings of the three ſides of the inſtrument were tuned to three different modes, the Doric, Lydian, and Phrygian. The performer ſat on a chair made on purpoſe; ſtriking the ſtrings with the fingers of the left hand, and uſing the plectrum with the right, at the ſame time turning the inſtrument with his foot to whichever of the three modes he pleaſed; ſo that by great practice he was enabled to change the modes with ſuch velocity, that thoſe who did not ſee him, would imagine they heard three different performers playing in three different modes. After the death of this admirable muſician, no other inſtrument of the ſame kind was ever conſtructed."

14. A lyre in the famous ancient picture dug out of Herculaneum, upon which Chiron is teaching the young Achilles to play. See CHIRON.

LYRE, in aſtronomy. See ASTRONOMY, n° 206.

LYRIC, in general, ſignifies ſomething ſung to or played on the lyre: but it is more particularly applied to the ancient odes and ſtanzas anſwering to our airs and ſongs, and may be played on inſtruments. See POETRY, n° 52.

LYSANDER, a famous Spartan general. See SPARTA.

LYSIMACHIA, LOOSETRIFE; a genus of the monogynia order, belonging to the pentandria claſs of plants. There are ten ſpecies, but only four are commonly cultivated in gardens. Theſe are hardy, herbaceous perennials and biennials, riſing with erect ſtalks from 18 inches to two or three feet high; garniſhed with narrow entire leaves; and terminated by ſpikes and cluſters of monopetalous, rotated, five-parted ſpreading flowers of white and yellow colours.—They are eaſily propagated by ſeeds, and will thrive in any ſoil or ſituation.

LYSIPPUS, a celebrated Greek ſtatuary, was born at Sicyone, and at firſt followed the buſineſs of a lockſmith, which he quitted in order to practiſe painting. But he afterwards applied himſelf entirely to ſculpture; in which he acquired an immortal reputation, and made a great number of ſtatues that were the admiration of the people of Athens and Rome. His grand ſtatue of the ſun repreſented in a car drawn by four horſes, was worſhipped at Rhodes: he made ſeveral ſtatues of Alexander and his favourites, which were brought to Rome by Metellus after he had reduced the Macedonian empire; and the ſtatue of a man wiping and anointing himſelf after bathing, being particularly excellent, was placed by Agrippa before his baths in that city. He lived in the time of Alexander the Great, about 334 B. C.; and left three ſons, who were all famous ſtatuaries.

LYTHRUM, PURPLE LOOSESTRIFE; a genus of the monogynia order, belonging to the dodecandria claſs of plants. There are ten ſpecies, of which the moſt remarkable are, 1. The ſalicaria, or common purple looſeſtriſe, with oblong leaves, is a native of Britain, and grows naturally by the ſides of ditches and rivers. It hath a perennial root, from which come forth ſeveral upright angular ſtalks, riſing from three to four feet high, garniſhed with oblong leaves placed ſometimes by pairs; but ſometimes there are three leaves at each joint ſtanding round the ſtalk. The flowers are purple, and produced in a long ſpike at the top of the ſtalk; ſo make a fine appearance. 2. The hyſpanum, or Spaniſh looſeſtriſe, with an hyſſop leaf, grows naturally in Spain and Portugal. It hath a perennial root. The ſtalks are ſlender, not more than nine or ten inches long, ſpreading out on every ſide. The lower part of the ſtalks is garniſhed with oblong oval leaves placed oppoſite. The flowers come out ſingly from the ſide of the ſtalks at each joint; they are larger than thoſe of the common ſort, and make a fine appearance in the month of July when they are in beauty. The firſt kind is propagated by parting the roots in autumn, but requires a moiſt ſoil;—the ſecond is propagated by ſeeds brought from thoſe countries where it is native.

LYTTELTON (Edward), lord Lyttelton, keeper of the great ſeal in the reign of Charles I. was eminent for his probity and his moderation at the commencement of that monarch's diſputes with his ſubjects. Without forfeiting his fidelity to the king, he preſerved the eſteem of the parliament till 1644, when he was made colonel of a regiment in the king's army at York. He died in 1645. Beſides ſeveral of his ſpeeches which have been printed, he wrote reports in the common pleas and exchequer printed at London in 1683, in folio; ſeveral arguments and diſcourſes, &c.

LYTTELTON (George lord) eldeſt ſon of Sir Thomas Lyttelton, bart. deſcended from the great judge Littleton, was born in 1700, at ſeven months; and the midwife ſuppoſing him to be dead, threw him careleſsly into the cradle; where, had not ſome ſigns of life been taken notice of by one of the attendants, he might never have recovered. He received the elements of his education at Eaton-ſchool, where he ſhewed an early inclination to poetry. His paſtorals and ſome other light pieces were originally written in that ſeminary of learning; from whence he was removed to the univerſity of Oxford, where he purſued his claſſical ſtudies with uncommon avidity, and ſketched the plan of his Perſian Letters, a work which afterwards procured him great reputation, not only from the elegance of the language in which they were compoſed, but from the excellent obſervations they contained on the manners of mankind.

In the year 1728, he ſet out on the tour of Europe; and, on his arrival at Paris, accidentally became acquainted with the honourable Mr Poyntz, then our miniſter at the court of Verſailles; who was ſo ſtruck with the extraordinary capacity of our young traveller, that he invited him to his houſe, and employed him in many political negociations, which he executed with great judgment and fidelity.

Mr Lyttelton's conduct, while on his travels, was a leſſon of inſtruction to the reſt of his countrymen. Inſtead of lounging away his hours at the coffee-houſes frequented by the Engliſh, and adopting the faſhionable follies and vices of France and Italy, his time was paſſed alternately in his library, and in the ſociety of men of rank and literature. In this early part of his life, he wrote a poetical epiſtle to Dr Ayſcough, and another to Mr Pope, which ſhew ſingular taſte and correctneſs.

After continuing a conſiderable time at Paris with Mr Poyntz, who, to uſe his own words, behaved like a ſecond father to him, he proceeded to Lyons and Geneva; and from thence to Turin, where he was honoured with great marks of friendſhip by his Sardinian majeſty. He then viſited Milan, Venice, Genoa, and Rome, where he applied himſelf cloſely to the ſtudy of the fine arts; and was, even in that celebrated metropolis, allowed a perfect judge of painting, ſculpture, and architecture.

During his continuance abroad, he conſtantly correſponded with Sir Thomas, his father. Several of his letters are yet remaining, and place his filial affection in a very diſtinguiſhed light. He ſoon after returned to his native country, and was elected repreſentative for the borough of Okehampton in Devonſhire; and behaved ſo much to the ſatisfaction of his conſtituents, that they ſeveral times re-elected him for the ſame place, without putting him to the leaſt expence.

About this period, he received great marks of friendſhip from Frederic prince of Wales, father of his preſent majeſty; and was, in the year 1737, appointed principal ſecretary to his royal highneſs, and continued in the ſtricteſt intimacy with him till the time of his death. His attention to public buſineſs did not, however, prevent him from exerciſing his poetical talent. A moſt amiable young lady, Miſs Forteſcue, inſpired him with a paſſion, which produced a number of little pieces, remarkable for their tenderneſs and elegance; and he had a happy facility of ſtriking out an extempore compliment, which obtained him no ſmall ſhare of reputation. One evening being in company with lord Cobham and ſeveral of the nobility at Stowe, his lordſhip mentioned his deſign of putting up a buſt of lady Suffolk in his beautiful gardens; and, turning to Mr Lyttelton, ſaid, "George, you muſt furniſh me with a motto for it." "I will, my lord,' anſwered Mr Lyttelton; and directly produced the following couplet:

> Her wit and beauty for a court were made,
> But truth and goodneſs fit her for a ſhade.

When Mr Pitt, the late earl of Chatham, loſt his commiſſion in the guards, in conſequence of his ſpirited behaviour in parliament, Mr Lyttelton was in waiting at Leiceſter-houſe, and, on hearing the circumſtance, immediately wrote theſe lines:

> Long had thy virtue mark'd thee out for fame,
> Far, far ſuperior to a cornet's name;
> This generous Walpole ſaw, and griev'd to find
> So mean a poſt diſgrace that noble mind;
> The ſervile ſtandard from thy free-born hand
> He took, and bade thee lead the patriot-band.

In the year 1742, he married Lucy, the daughter of Hugh Forteſcue, Eſq; of Filleigh in the county of Devon, the lady abovementioned, whoſe exemplary conduct, and uniform practice of religion and virtue, eſtabliſhed his conjugal happineſs upon the moſt ſolid baſis.

In 1744, he was appointed one of the lords commiſſioners of the treaſury; and, during his continuance in that ſtation, conſtantly exerted his influence in rewarding merit and ability. He was the friend and patron of the late Henry Fielding, James Thomſon author of the Seaſons, Mr Mallet, Dr Young, Mr Hammond, Mr Weſt, Mr Pope, and Voltaire. On the death of Thomſon, who left his affairs in a very embarraſſed condition, Mr Lyttelton took that poet's ſiſter under his protection. He reviſed the tragedy of Coriolanus, which that writer had not put the laſt hand to; and brought it out at the theatre-royal, Covent-garden, with a prologue of his own writing, in which he ſo affectingly lamented the loſs of that delightful bard, that not only Mr Quin, who ſpoke the lines, but almoſt the whole audience, ſpontaneouſly burſt into tears.

In the beginning of the year 1746, his felicity was interrupted by the loſs of his wife, who died in the 29th year of her age; leaving him one ſon, Thomas, the late lord Lyttelton; and a daughter, Lucy, who ſome time ſince married lord viſcount Valentia. The remains of his amiable lady were depoſited at Over-Arley, in Worceſterſhire; and an elegant monument was erected to her memory in the church of Hagley, which contains the following inſcription written by her huſband:

> Made to engage all hearts, and charm all eyes:
> Tho' meek, magnanimous; tho' witty, wiſe;
> Polite, as all her life in courts had been;
> Yet good, as ſhe the world had never ſeen:
> The noble fire of an exalted mind,
> With gentleſt female tenderneſs combin'd.
> Her ſpeech was the melodious voice of love,
> Her ſong the warbling of the vernal grove;
> Her eloquence was ſweeter than her ſong,
> Soft as her heart, and as her reaſon ſtrong.
> Her form each beauty of her mind expreſs'd,
> Her mind was virtue by the graces dreſs'd.

Beſides theſe beautiful lines, Mr Lyttelton wrote a monody on the death of his lady, which will be remembered while conjugal affection and a taſte for poetry exiſt in this country.

His maſterly obſervations on the converſion and apoſtleſhip of St Paul, were written at the deſire of Gilbert Weſt, Eſq; in conſequence of Mr Lyttelton's aſſerting, that, beſide all the proofs of the Chriſtian religion, which might be drawn from the prophecies of the Old Teſtament, from the neceſſary connection it has with the whole ſyſtem of the Jewiſh religion, from the miracles of Chriſt, and from the evidence given of his reſurrection by all the other apoſtles, he thought the converſion of St Paul alone, duly conſidered, was of itſelf a demonſtration ſufficient to prove Chriſtianity to be a divine revelation. Mr Weſt was ſtruck with the thought; and aſſured his friend, that ſo compendious a proof would be of great uſe to convince thoſe unbelievers that will not attend to a longer ſeries of arguments; and time has ſhown he was not out in his conjecture, as the tract is eſteemed one of the beſt defences of Chriſtianity which has hitherto been publiſhed.

In 1754, he reſigned his office of lord of the treaſury, and was made cofferer to his majeſty's houſehold, and ſworn of the privy-council: previous to which, he married, a ſecond time, Elizabeth, daughter of field-marſhal Sir Robert Rich, whoſe indiſcreet conduct gave him great uneaſineſs, and from whom he was ſeparated, by mutual conſent, a few years after his marriage.

After being appointed chancellor and under-treaſurer of the court of exchequer, he was, by letters-patent dated the 19th of November 1757, 31 Geo. II. created a peer of Great Britain, by the ſtyle and title of *Lord Lyttelton, baron of Frankley, in the county of Worceſter*. His ſpeeches on the Scotch and mutiny bills in the year 1747, on the Jew bill in 1753, and on the privilege of parliament in 1763, ſhowed ſound judgment, powerful eloquence, and inflexible integrity. During the laſt 10 years he lived chiefly in retirement, in the continual exerciſe of all the virtues which can ennoble private life. His laſt work was Dialogues of the Dead, in which the morality of Cambray and the ſpirit of Fontenelle are happily united.

He was ſuddenly ſeized with an inflammation of the bowels, in the middle of July 1773, at his ſeat at Hagley; which terminated in his death, on the 22d of that month. His laſt moments were attended with unimpaired underſtanding, unaffected greatneſs of mind, calm reſignation, and humble but confident hopes in the mercy of God. As he had lived univerſally eſteemed, he died lamented by all parties. A complete collection of his works has been publiſhed ſince his deceaſe, by his nephew George Ayſcough, Eſq.

M.

M, A LIQUID conſonant, and the 12th letter of the alphabet.

The ſound of this letter is formed by ſhutting the lips, and thereby intercepting the breath, as it is ſtrongly expreſſed through the mouth and noſtrils jointly. Its ſound is always the ſame in Engliſh; it ſuffers no conſonant after it in the beginning of words and ſyllables, unleſs in ſome derived from the Greek, as *amneſty*, &c.

M, in preſcription, ſignifies a *maniple*, or handful; and at the end of a receipt it imports *miſce*, or mingle.

M, in aſtronomy, &c. denotes *meridional*, *ſouthern*; ſometimes *meridies*, or mid-day.

M, in law, the brand of a perſon convicted of manſlaughter, and admitted to the benefit of clergy; it is burnt on the brawn of the left thumb.

M, among the ancients, was a numeral letter, ſignifying *one thouſand*; and when a daſh was added at the top of it, as $\overline{M}$, it ſignified *a thouſand times a thouſand*.

MABILLON (John), a very learned writer of France in the 17th century, was born at Perre-monte, on the frontiers of Champagne, in 1632. He was educated in the univerſity of Rheims, and afterwards entered into the abbey of the Benedictines of St Remy. In the year 1663, he was appointed keeper of the treaſures and monuments of France at St Dennis: but having unfortunately broke a looking-glaſs there, which was pretended to have belonged to Virgil, he deſired leave of his ſuperiors to quit an employment which frequently obliged him to tell things he did not believe. Next year he went to Paris; and was very ſerviceable to father d'Acheri, who was deſirous of having ſome young monk who could aſſiſt him in compiling his *Spicilegium*. This made him known. Soon after, the congregation of St Maur having formed a deſign of publiſhing new editions of the fathers, reviſed from the MSS. in the libraries of the Benedictines, Mabillon was charged with the edition of St Bernard, which he prepared with extraordinary diligence. After that, he publiſhed many other works, which are evidences of his vaſt capacity and induſtry. In 1682, he was employed by Mr Colbert in examining ſome ancient titles relating to the royal family. The year following he ſent him into Germany, to ſearch the archives and libraries of the ancient abbeys, for what was moſt curious and proper to illuſtrate the hiſtory of the church in general, and that of France in particular. He has publiſhed an account of this journey. In 1685, he undertook another journey into Italy, by order of the king of France; and returned the year following with a very noble collection. He placed in the king's library above 3000 volumes of rare books, printed and in MSS. and compoſed two volumes of the pieces which he had diſcovered in that country. He was highly eſteemed for his virtues as well as his learning.

MACACO, or MACAUCO. See LEMUR.

MACAO, a town of China, in the province of Canton, ſeated in an iſland at the mouth of the river Tae. The Portugueſe have been in poſſeſſion of the harbour for 150 years. Formerly they had a great trade here; but now they have only a fort with a ſmall garriſon. The houſes aae built after the European manner; and there is a Chineſe mandarin, as well as a Portugueſe governor, to take care of the town and the neighbouring country. E. Long. 112. 13. N. Lat. 22. 12.

MACAO, in ornithology. See PSITTACUS.

MACARONI. See FOLENGIO, and the next article.

MACARONIC, or MACARONIAN, a kind of burleſque poetry, conſiſting of a jumble of words of different languages, with words of the vulgar tongue Latinized, and Latin words modernized. *Maccarone*, among the Italians, as has been obſerved by Cælius Rhodiginus, ſignifies *a coarſe clowniſh man*; and becauſe this kind of poetry is patched out of ſeveral languages, and full of extravagant words, &c. the Italians, among whom it had its riſe, gave it the name of *maccaronian*, or *maccaronic* poetry. Others chooſe to derive it *à macaronibus*, from *macaroons*, a kind of confection made of meal not boulted, ſweet-almonds, ſugar, and the white of eggs, accounted a great dainty among the country-people in Italy; which, from their being compoſed of various ingredients, occaſioned this kind of poetry, which conſiſts of Latin, Italian, Spaniſh, French, Engliſh, &c. to be called by their name.

Example.—A bold fellow, in the *macaronic* ſtyle, ſays,

Enſilavi omnes ſcadrones & regimandos, &c.

Another example:

Archelos piſtoliferos furiamque manantum,
Et grandem eſmeutam quæ inopinum facta ruellæ eſt:
Toxinumque alto troublantem corda clochero, &c.

Theoph. Folengius, a Benedictine monk of Mantua, was the firſt who invented, or at leaſt cultivated, this kind of verſe. See FOLENGIO.

The beſt pieces of this kind are, the *Baldus* of Folengio, and *Macaronis Forza* by Steſonio a Jeſuit, among the Italians; and the *Reatus veritabilis ſuper terribili eſmeuta paiſanarum de Ruellis*, among the French. The famous Rabelais firſt transferred the *macaronic* ſtyle out of the Italian verſe into French proſe; and on the model thereof formed ſome of the beſt things in his *Pantagruel*. We have little in Engliſh in the *macaronian* way; nothing ſcarce, but ſome little looſe pieces collected in Camden's remains. But the Germans and Netherlanders have had their *macaronic* poets; witneſs the *Certamen Catholicum cum Calviniſtis*, of one Martinius Hamconius Friſius, which contains about 1200 verſes, all the words whereof begin with the letter *C*.

MACARSKA, a town of Dalmatia, and capital of Primogria, with a pretty good harbour, and a biſhop's ſee, ſeated on the gulph of Venice. E. Lon. 17. 57. N. Lat. 43. 42.

MACASSAR, a conſiderable kingdom of the iſland of Celebes, in the Eaſt-Indies. The climate is very hot; and would be intolerable, were it not for the rains which fall when the ſun is directly over their heads. The ſoil is extremely fertile, and there are ripe fruits at all times of the year. There are great numbers of monkies, who are devoured by monſtrous ſerpents; ſome of which are ſo large, that they will ſwallow one of theſe animals entire. The Macaſſars are large, robuſt, courageous, and greatly addicted to war. They profeſs the Mahometan religion.

MACASSAR, a large, ſtrong, and handſome town of the iſland of Celebes, and capital of the kingdom of the iſland of Celebes, where the king reſides. The houſes are all built of wood, and ſupported by thick poſts; and they have ladders to go up into them, which they draw up as ſoon as they have entered. The roofs are covered with very large leaves, which prevent the rain from entering. It is ſeated near the mouth of a large river, which runs through the kingdom from north to ſouth. E. Long. 117. 55. S. Lat. 5. 0.

MACCABÆUS (Judas). See JUDAS.

MACCABEES, two apocryphal books of Scripture; ſo called from Judas the ſon of Mattathias, ſurnamed *Maccabæus*, either on account of his valour, or becauſe he bore on his ſtandard the firſt letters of a ſentence in Exodus, which, joined together, form the name *Maccabee*. The Hebrews call them *The books of the Aſſamonæans*, becauſe (according to Joſephus and Euſebius) Mattathias was the ſon of *Haſmonéus*, or *Aſſamonéus*, which was the name of the family. The firſt book of the Maccabees is an excellent hiſtory; and comes neareſt to the ſtyle and manner of the ſacred hiſtorians of any extant. It contains the hiſtory of 40 years, from the reign of Antiochus Epiphanes, to the death of Simon the high-prieſt; that is, from the year of the world 3829, to the year 3869, or 131 B. C. The ſecond book of the Maccabees begins with two epiſtles ſent from the Jews of Jeruſalem to the Jews of Egypt and Alexandria, to exhort them to obſerve the feaſt of the dedication of the new altar erected by Judas on his purifying the temple. After theſe epiſtles follows the preface of the author to his hiſtory; which is an abridgment of a larger work, compoſed by one Jaſon, a Jew of Cyrene, who wrote the hiſtory of Judas Maccabæus and his brethren, and the wars againſt Antiochus Epiphanes, and Eupator his ſon. This ſecond book does not by any means equal the accuracy and excellency of the firſt. It contains a hiſtory of about 15 years, from the execution of Heliodorus's commiſſion, who was ſent by Seleucus to fetch away the treaſures of the temple, to the victory obtained by Judas Maccabæus over Nicanor; that is, from the year of the world 3828, to the year 3843, or 147 B. C.

MACBETH, a Scots nobleman in the 11th century, nearly allied to Duncan king of Scotland.—Not contented with curbing the king's authority, he carried his peſtilent ambition ſo far as to put him to death; and, chaſing Malcolm Kenmure his ſon and heir into England, uſurped the crown. Siward earl of Northumberland, whoſe daughter Duncan had married, undertook, by the order of Edward the Confeſſor, the protection of the fugitive prince.—He marched with an army into Scotland; defeated and killed Macbeth in Scotland; and reſtored Malcolm to the throne of his anceſtors. Shakeſpeare hath made this tranſaction the ſubject of one of his beſt tragedies.

MACCLESFIELD, a town of Cheſhire in England, ſeated on the edge of a foreſt of the ſame name, upon a high bank, near the river Bollin. It is a large handſome town, with a fine church, and a very high ſteeple. It has manufactures in mohair, twiſt, hat-bands, buttons, and thread. Of late there have been ſeveral ſmall ſilk-mills erected there. W. Long. 2. 10. N. Lat. 53. 15.

MACE, the ſecond coat or covering of the kernel of the nutmeg, is a thin and membranaceous ſubſtance, of an oleaginous nature, and a yellowiſh colour; being met with in flakes of an inch or more in length, which are divided into a multitude of ramifications. It is of an extremely fragrant, aromatic, and agreeable flavour; and of a pleaſant, but acrid, oleaginous taſte.

Mace is carminative, ſtomachic, and aſtringent; and poſſeſſes all the virtues of nutmeg, but has leſs aſtringency.—The oils of mace and nutmeg, whether prepared by diſtillation or expreſſion, are ſo much of the ſame nature, that they may be indiſcriminately uſed

ſed for one another on all occaſions. They give eaſe in cholics, and often in nephritic caſes, taken internally from one drop to five or ſix of the diſtilled oil, or an equal quantity of the expreſſed; and externally, they are of uſe to rub paralytic limbs: they alſo aſſiſt digeſtion; and will often ſtop vomitings and hiccoughs, only by being rubbed on the region of the ſtomach. The nurſes have a cuſtom of applying oil of mace by expreſſion to childrens navels to eaſe their gripes, and that often with ſucceſs; and we are aſſured, by authors of credit, that, when rubbed on the temples, it promotes ſleep.

1
gin of
name.

MACEDON, or Macedonia, a moſt celebrated kingdom of antiquity, was bounded on the eaſt by the Ægean ſea; on the ſouth, by Theſſaly and Epirus; on the weſt, by the Adriatic, or the Ionian ſea; and on the north, by the river Strymon and the Scardian mountains, but afterwards by the river Neſſus or Neſtus. Its moſt ancient name was *Æmathia*, which it had from Æmathius, a prince of great antiquity. The name of *Macedon* was derived, according to ſome, from king *Macedo*, a deſcendant of Deucalion; but, according to others, this name is only a corruption of the word *Mygdonia*, one of its provinces.

2
nus the
king.

In times of the remoteſt antiquity, Macedonia, as well as the reſt of Europe, was parcelled out into a vaſt multitude of petty ſtates, the names of which are now almoſt forgotten, and their hiſtory entirely unknown. About 795 B. C. one Caranus, an Argive, and a deſcendant of Hercules, left his country at the head of a conſiderable body of troops, in order to found a new colony. According to the prevailing ſuperſtition, he conſulted the oracle before he ſet out, and was commanded to eſtabliſh his empire according to the direction of the goats. Caranus proceeded for ſome time without knowing what to make of the oracle's anſwer. However, having entered the little kingdom of Æmathia, one of the ancient diviſions of Macedonia, he obſerved a herd of goats running for ſhelter from a ſudden ſtorm towards the capital, then called *Edeſſa*, and governed by king Midas. Upon this, recollecting the anſwer, he immediately poſſeſſed himſelf of the city by ſurprize; and ſoon after, the whole kingdom ſubmitted to his government. In gratitude to his conductors the goats, Caranus named his city *Ægæa*, and called his people *Ægiates*; and, in order to perpetuate the memory of this extraordinary event, he likewiſe made uſe of the figure of a goat in his ſtandard.

3
ed by
ly.

The founder of the Macedonian monarchy left his kingdom to his ſon Cænus, after a reign of three years, during which he conſiderably enlarged his dominions. After him followed Thurymas and Perdiccas I. during whoſe reigns we find nothing memorable. In the reign of Argæus, who aſcended the throne about 691 B. C. the Illyrians, a fierce and barbarous nation in the neighbourhood, firſt invaded Macedonia, and did conſiderable miſchief; but the king having decoyed them by a ſtratagem, put them to flight with great ſlaughter, and thus delivered his kingdom from them for the preſent. The reign of his ſucceſſor Philip, however, was much diſturbed by the incurſions of theſe people and the Thracians, as well as that of Æropas; who ſucceeded Philip.

4
Becomes
dependent
on Perſia.

In the mean time, the ſtates of Greece had begun to emerge from their barbariſm, and the eaſtern part of the world was almoſt totally ſubjected to Cyrus the firſt monarch of Perſia. At this critical period Alcetas began to reign over Macedon; but had the good fortune to preſerve his dominions from the encroachments of the Greeks on the one hand, and the uſurpation of the Perſians on the other. In the reign of Amyntas his ſucceſſor, Megabizus ſent ſeven of the principal commanders of his army, requiring him to acknowledge king Darius for his ſovereign. Theſe ambaſſadors, however, were all murdered by the contrivance of Alexander the king of Macedon's ſon, on account of their attempting to violate ſome of the Macedonian women. This raſh action threatened the entire ruin of the kingdom; but Alexander found means to pacify the Perſian general ſent againſt him, by giving him in marriage his ſiſter Gygæa, a very beautiful woman, with whom the Perſian fell in love as ſoon as he ſaw her. Thenceforward the Macedonian kings became dependent on the emperors of Perſia, and were always regarded as faithful friends and allies.

The alliance of Amyntas with Bubaris, the Perſian general, who had married his daughter, proved of great ſervice to the Macedonians. Through the intereſt of his ſon-in-law, Amyntas obtained the country lying near mount Hæmus and Olympus; and at the ſame time the city of Alabanda in Phrygia was given to one Amyntas, the nephew of Alexander. After the battle of Salamis, Mardonius was left with an army of 400,000 men to attempt the conqueſt of Greece by land; and at that time Macedon and the neighbouring countries are ſaid to have augmented the Perſian army with 200,000 recruits. Some cities, however, adhered to the Grecian intereſt, particularly Potidea, Olynthus, and Pallene. The two laſt were taken, and the inhabitants maſſacred by the Perſians; but Potidea eſcaped, by the ſea breaking into the Perſian camp, and there making great devaſtation. Alexander afterwards gained the favour of the Greeks by giving them intelligence of the time when Mardonius deſigned to attack them; and thus freed his country from any danger that might have happened on account of the aſſiſtance which had been given to the Perſians. The other tranſactions of his reign, however, are totally unknown.

5
Decline of
the kingdom of Macedon.

Perdiccas II. the ſon of Alexander, began his reign in a very embarraſſed ſituation. The Thracians and other barbarous nations looked with a jealous eye on his increaſing kingdom; the Perſians treated him as their vaſſal; and the Athenians were become ſo powerful by their colonies and allies on the ſea-coaſt, that he was in no ſmall danger from them. The king, however, was a man of great abilities and prudence. For ſome time he amuſed the Athenians with a ſhew of friendſhip; but, finding, that they treated him with haughtineſs, he reſolved to check their riſing power in that part of the world. An occaſion for this ſoon offered, and a war enſued; which, however, was not attended with any material advantage on either ſide, and Perdiccas died without being able to accompliſh his ſchemes. After his death, the kingdom of Macedon ſeemed to decline; inſomuch, that the ſtates of Greece became arbiters with regard to its affairs; and we find Perdiccas III. raiſed to the throne by the deciſion of Pelopidas the Theban. Philip, the new king's brother,

6
Perdiccas
defeated
and killed.

ther, went along with Pelopidas to Thebes; where he was educated by the celebrated Epaminondas, and where he became ſuch a proficient in the arts of policy as well as war, that all the powers of Greece were not able to reſiſt him. Perdiccas in the mean time governed the Macedonians with tolerable good fortune; till he engaged in a war with the Illyrians, by whom he was defeated and killed, and the kingdom left ſeemingly on the verge of deſtruction.

7
Philip
takes upon
him the
govern-
ment.

Perdiccas left an infant-ſon, named Amyntas: but the emergency of public affairs required that ſome able and experienced perſon ſhould hold the reins of government; and therefore Philip, whoſe ambition at any rate was boundleſs, ſet out immediately from Thebes, in order to take poſſeſſion of the kingdom. Though only 22 years of age, he was far from ſinking under the load of public affairs, even in their moſt deſperate ſtate. In order to eſtabliſh himſelf firmly on the throne, he firſt applied to the army, whom he careſſed with the ſtrongeſt expreſſions of friendſhip; and then to the nobility, whom he gained over to his intereſt by the ſtrongeſt teſtimonies of confidence, and by vaſt promiſes. He next gave a check to the Athenian power, by declaring Amphipolis, over which the Athenians claimed a juriſdiction, to be a free city. The chief men in Pæonia he gained by preſents; and in the ſame way he perſuaded his rival Pauſanias to drop his claim to the crown of Macedon; after which, having entirely ſet aſide Amyntas, whoſe guardian he had hitherto pretended to be, he cauſed himſelf to be declared king of Macedon.

8
Defeats the
Athenians.

The next care of Philip was to introduce a more ſtrict diſcipline among the troops; which he had partly learned from the Thebans, and partly invented himſelf. He particularly inſtituted, or rather modelled, the phalanx; taught the ſoldiers how to become more formidable from order, and a juſt conception of the rules of war, than they could be from mere force; and by the help of frequent inſtructions, kind language, and ſometimes ſeverity, he at length attained his end.—An opportunity ſoon offered of trying how much his ſoldiers had profited by his inſtructions. Argæus, an Athenian commander, had advanced with an army of mercenaries as far as Ægæ, but was obliged by the inhabitants to retire. Philip purſued him, and defeated his troops with great ſlaughter: and this firſt inſtance of ſucceſs greatly revived the ſpirits of the Macedonians; while the king ſecured to himſelf the reputation of clemency, by admitting to a capitulation a conſiderable body of the enemy that had retired to an eminence.

9
Reduces
Pæonia,
and defeats
the Illyri-
ans.

10
Takes A
phipolis,
Pydna,
Potidæa

This victory, together with Philip's renouncing his right to Amphipolis, procured a peace with the Athenians; and ſoon after Agis, king of Pæonia, another of his enemies, was taken off by death. This news no ſooner reached the ears of the Macedonian monarch, than he invaded Pæonia, took moſt of the cities, and obliged the inhabitants to own themſelves his ſubjects. After this ſucceſs he marched without delay againſt the Illyrians, defeated them with great ſlaughter, and obliged them to abandon all their conqueſts. No ſooner was this important victory gained, than Philip began to meditate greater things, and to put them in execution almoſt as ſoon as they came into his mind. He ſuddenly ſat down with his army before the city of Amphipolis, in order to lay ſiege to it. The inhabitants ſent deputies to Athens, to implore the protection of that ſtate; but, as Philip pretended that he would deliver up the city to the Athenians as ſoon as he had taken it, the requeſt of the Amphipolitans was diſregarded. The town was ſoon taken by ſtorm, and Philip put to death or baniſhed ſuch as were not in his intereſt; and then, inſtead of delivering it to the Athenians, he attacked Pydna and Potidæa, in the laſt of which was an Athenian garriſon. This garriſon he diſmiſſed with honour, and then delivered the city to the Olynthians; according to a maxim he very frequently made uſe of, namely, that thoſe are to be obliged whom we cannot overcome.

11
Reduces
the cou
between
Strymon
and the
Neſſus.

After theſe victories, Philip determined to make himſelf maſter of the country between the river Strymon and the Neſſus, on account of the gold with which it abounded. At that time it was poſſeſſed by the Thracians, who had fortified *Crenides* its capital city; but Philip took the city by ſurpriſe, and quickly made himſelf maſter of the whole diſtrict. The name of the city he changed to *Philippi;* and gave directions for working the gold mines to greater advantage than before, by which means he eſtabliſhed a revenue from that country of 1000 talents per annum.

12
Origin
the Pho
cian or
cred wa

At this time all Greece was in confuſion on account of the *Phocian*, or (as it was called) the *ſacred*, war; the occaſion of which was as follows. The Phocians had ploughed ſome of the lands belonging to the Delphic Apollo; for which they were fined by the Amphictyons, or ſtates-general of Greece: but, inſtead of ſubmitting to the judgment of that court, the Phocians, at the inſtance of Philomelus, a bold and daring ſpeaker, ſeized on the temple itſelf, and all the riches belonging to Apollo. This immediately ſet all Greece in a flame. The Locrians and Bœotians made war on the Phocians; and to countenance their cauſe, called it *ſacred*. The Phocians, on the other hand, pretended that they were far from being ſacrilegious perſons; for that they meddled not at all with the riches of the temple, but only reſumed the honour of protecting it, which had belonged to their anceſtors: and the better to ſupport their arguments, they prevailed on the Athenians and Lacedemonians to become their allies. The war was carried on a long time with various ſucceſs; ſometimes the Phocians, and ſometimes the Thebans prevailing. However, it was generally thought that the Athenians acted unworthily in ſending ſuch great ſupplies as they did to the Phocians, (at one time 5000 foot and 300 horſe); and this the rather, becauſe it was known that they had few other motives than the great pay which was given to their troops; and as the money expended on this occaſion was raiſed either by the coinage or ſale of the dedicated things in the temple of Delphos, it was conſidered as ſacrilege to receive any part of this theft, eſpecially for defending the robbers.—Of this war Philip took the advantage in order to extend his territories without interruption. It alſo produced various applications from the contending parties in order to procure his aſſiſtance, which ſoon produced a very conſiderable alteration in favour of the Macedonian affairs.

1
Philip
vades
ſaly.

Philip's firſt enterprize was the reduction of the city of Methone; after which he entered Theſſaly,

being

cedon.

14
wice de-
ed, but
ſt gains
ctory.

being invited thither by the petty princes of the country, who were oppreſſed by the tyranny of Lycophron the brother of Alexander of Pheræa. The tyrant demanded aſſiſtance from Onomarchus the Phocian general; but notwithſtanding their aſſiſtance, both he and his allies were driven out of Theſſaly. Upon this, Onomarchus marched againſt Philip with all his forces, defeated him in two engagement, and drove him out of Theſſaly in his turn in great diſtreſs. After this diſaſter, Philip applied himſelf with all poſſible diligence to the recruiting of his army; and having prevailed on the Theſſalians to exert themſelves in his favour, at laſt defeated and killed Onomarchus with the loſs of great part of his army. Philip cauſed the body of the ſlain general to be hung up with ignominy; and denied alſo funeral rites to all that were ſlain, looking upon them as ſacrilegious perſons on account of the violence offered to the poſſeſſions of Apollo. Lycophron, and his brother Pitholaus, ſeeing no hopes of retaining their principality, were content to reſign it; and being diſmiſſed on giving their oaths to be quiet, they delivered up the city of Pheræa into the hands of Philip: who, as he had promiſed to the Theſſalians, reſtored all the cities to liberty; and having thereby ſecured the friendſhip of ſo powerful a nation, he attempted to paſs through the Pylæ, in order to make war on the Phocians.

15
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nians
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ce.

This was a very bold attempt, and failed not to alarm all Greece; for ſince the defeat of the Perſians at Platæa, no Macedonian prince had ever ſet his foot in Greece. The Athenians, therefore, being informed of his deſign, marched with the utmoſt expedition, ſeized the paſſes, and obliged him for that time to abandon his purpoſe, and return into Macedon.—This produced an implacable hatred between Philip and the Athenians; for the ruin of whoſe power he inſtantly began to form ſchemes, as he ſaw they were the only people in Greece who were capable of oppoſing his deſigns. He began with reducing ſome neutral cities; and at laſt laid ſiege to Olynthus, a place of very great importance, and which he himſelf had hitherto owned to be free and independent. This city held the balance of power between Athens and Macedon; and therefore Demoſthenes, the celebrated Athenian orator, uſed all his influence with his countrymen to ſend ſufficient aſſiſtance to the Olynthians. Through the negligence or volatility of that people, however, theſe ſuccours were delayed till the city was taken by treachery, the houſes plundered, and the inhabitants ſold for ſlaves.

16
O-
us.

Philip's chief hope was in putting an end to the Phocian war; for which purpoſe he affected a neutrality, that he might thereby become the arbiter of Greece. His hopes were well founded; for the Thebans, who were at the head of the league againſt the Phocians, ſolicited him on the one ſide, and the ſtates confederate with the Phocians did the like on the other. He anſwered neither, yet held both in dependence. In his heart he favoured the Thebans, or rather placed his hopes of favouring his own cauſe on that ſtate; for he well knew, that the Athenians, Spartans, and other ſtates allied with Phocis, would never allow him to paſs Thermopylæ, and lead an army into their territories. So much reſpect, however, did he ſhew to the ambaſſadors from theſe ſtates, particularly Cteſiphon and Phrynon, who came from Athens, that they believed him to be in their intereſt, and reported as much to their maſters. The Athenians, who were now diſſolved in eaſe and luxury, received this news with great ſatisfaction; and named immediately ten plenipotentiaries to go and treat of a full and laſting peace with Philip. Among theſe plenipotentiaries were Demoſthenes and Æſchines, the moſt celebrated orators in Athens. Philip gave directions, that theſe ambaſſadors ſhould be treated with the utmoſt civility; naming, at the ſame time, three of his miniſters to confer with them, viz. Antipater, Parmenio, and Eurylochus. Demoſthenes being obliged to return to Athens, recommended it to his colleagues not to carry on their negotiations with Philip's deputies; but to proceed with all diligence to court, there to confer with the king himſelf. The ambaſſadors, however, were ſo far from following his inſtructions, that they ſuffered themſelves to be put off for three months by the arts of Philip and his miniſters.

Macedon.

17
Over-reaches the Athenians, and at laſt concludes a peace.

In the mean time, the king took from the Athenians ſuch places in Thrace as might beſt cover his frontiers; giving their plenipotentiaries, in their ſtead, abundance of fair promiſes, and the ſtrongeſt aſſurances that his good-will ſhould be as beneficial to them as ever their colonies had been. At laſt a peace was concluded; but then the ratification of it was deferred till Philip had poſſeſſed himſelf of Pheræa in Theſſaly, and ſaw himſelf at the head of a numerous army: then he ratified the treaty; and diſmiſſed the plenipotentiaries with aſſurances, that he would be ready at all times to give the Athenians proofs of his friendſhip. On their return to Athens, when this matter came to be debated before the people, Demoſthenes plainly told them, that, in his opinion, the promiſes of Philip ought not to be relied on, becauſe they appeared to be of little ſignificance in themſelves, and came from a prince of ſo much art, and ſo little fidelity, that they could derive no authority from their maker. Æſchines, on the other hand, gave it as his ſentiment, that the king of Macedon's aſſurances ought to give them full ſatisfaction. He ſaid, that, for his part, he was not politician enough to ſee any thing of diſguiſe or diſſimulation in the king's conduct; that there was great danger in diſtruſting princes; and that the ſureſt method of putting men upon deceit, was to ſhew that we ſuſpected them of it. The reſt of the plenipotentiaries concurred with Æſchines; and the people, deſirous of quiet, and addicted to pleaſure, eaſily gave credit to all that was ſaid, and decreed that the peace ſhould be kept. All this was the eaſier brought about, becauſe Phocion, the worthieſt man in the republic, did not oppoſe Philip; which was owing to his having a juſt ſenſe of the ſtate his country was in. He conceived, that the Athenians of thoſe times were nothing like their anceſtors; and therefore, as he expreſſed himſelf on another occaſion, he was deſirous, ſince they would not be at the head of Greece themſelves, that they would at leaſt be upon good terms with that power which would be ſo.

18
Paſſes Thermopylæ, and ends the Phocian war.

Philip, who knew how to uſe as well as to procure opportunity, while the Athenians were in this good humour, paſſed Thermopylæ, without their knowing whether he would fall on Phocis or Thebes; but he quickly undeceived them, by commanding his ſoldiers to put on crowns of laurel, declaring them thereby the troops of Apollo, and himſelf the lieutenant-general of that god. He then entered Phocis with an air of triumph; which ſo terrified the Phocians, whom he had cauſed to be proclaimed ſacrilegious perſons, that they immediately diſmiſſed all thoughts of defence, and without more ado ſubmitted to his mercy. Thus the Phocian war, which had ſo long employed all Greece, was ended without a ſtroke; and the judgment on the Phocians remitted to the Amphictyons, or grand council of Greece. By their decree the walls of three Phocian cities were demoliſhed, the people were forbid to inhabit in any but villages, to pay a yearly tribute of 60 talents, and never to make uſe either of houſes or arms, till they had repaid to the temple of Apollo the money they had ſacrilegiouſly carried from thence. Their arms were taken from them, broken to pieces, and burnt; their double voice in the council was taken from them, and given to the Macedonians. Other orders were made for ſettling the affairs both of religion and ſtate throughout Greece: all of which were executed by Philip with great exactneſs and moderation; he paying the moſt profound reſpect to the council; and, when he had performed its commands, retiring peaceably with his army back to Macedon, which gained him great reputation.

19
Is again oppoſed by the Athenians.

At Athens alone, the juſtice and piety of Philip was not underſtood. The people began to ſee, though a little too late, that they had been abuſed and deceived by thoſe who had negotiated the late peace. They ſaw, that, through their acceptance of it, the Phocians were deſtroyed; that Philip was become maſter of Thermopylæ, and might enter Greece when he pleaſed; that, in abandoning their allies, they had abandoned themſelves; and that, in all probability, they might ſoon feel the weight of his power, whom they had ſo fooliſhly truſted: they therefore began to take new and hoſtile meaſures; they ordered, that the women ſhould retire out of the villages into the city, their walls to be repaired, and their forts new ſtrengthened. They ſeemed inclined to queſtion Philip's election into the council of the Amphictyons, becauſe it had been done without their conſent; and even to proceed to an open war. In all likelihood they had carried things to extravagancy, if Demoſthenes had not interpoſed. He told them, that though he was not for making the peace, he was however for keeping it; and that he ſaw no manner of occaſion for their maintaining into ſo unequal a conteſt as would needs enſue, if they took up arms, not only againſt Philip, but againſt all the ſtates concurring with him in the late tranſactions. This ſeems to have cooled the rage of the Athenians; and to have brought them to think of *ruining* Philip by degrees, as by degrees they had *raiſed* him.

20
Purſues his conqueſts in Thrace.

The fame of his atchievements without the bounds of Macedon having diſpoſed the ſubjects of Philip to hope every thing from his conduct, and the ſeveral ſtates of Greece to deſire above all things his friendſhip; that prudent monarch laid hold of this favourable ſituation to fix his dominion on ſuch a ſtable foundation as that a reverſe of fortune ſhould not immediately deſtroy it. To this end, while he carried on his negotiations through Greece, he likewiſe kept his army in exerciſe, by taking ſeveral places in Thrace, which terribly incommoded the Athenians. Diopithes, who had the government of the Athenian colonies in thoſe parts, perceiving well what end Philip had in view, did not ſtay for inſtructions from home; but having raiſed with much expedition a conſiderable body of troops, taking advantage of the king's being abſent with his army, entered the adjacent territories of Philip, and waſted them with fire and ſword.

21
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The king, who on account of the operations of the campaign in the Cherſoneſe, was not at leiſure to repel Diopithes by force, nor indeed could divide his army without imminent hazard, choſe, like an able general, rather to abandon his provinces to inſults, which might be afterwards revenged, than, by following the dictates of an ill-timed paſſion, to hazard the loſs of his veteran army, whereon lay all his hopes. He contented himſelf, therefore, with complaining to the Athenians of Diopithes's conduct, who in a time of peace had entered his dominions, and committed ſuch devaſtations as could ſcarce have been juſtified in a time of war. His partiſans ſupported this application with all their eloquence. They told the Athenians, that unleſs they recalled Diopithes, and brought him to a trial for this infringement of the peace, they ought not to hope either for the friendſhip of Philip, or of any other prince or ſtate; neither could they juſtly complain, if, prompted by ſuch a precedent, others ſhould break faith with them, and fall without the leaſt notice upon their dominions. Demoſthenes defended Diopithes; and undertook to ſhew, that he deſerved the praiſe and not the cenſure of the Athenians. Thoſe of the other party began then to charge him with crimes of a different nature; they alleged, that he oppreſſed the ſubjects and maltreated the allies of Athens. Demoſthenes replied, that of theſe things there were as yet no proofs; that when ſuch ſhould appear, a ſingle galley might be ſent to bring over Diopithes to abide their judgment, but that Philip would not come if they ſent a fleet; whence he inferred, that they ought to be cautious, and to weigh well the merits of this cauſe before they took any reſolution. He ſaid, that it was true, Philip had not as yet attacked Attica, or pretended to make a deſcent on their territories in Greece, or to force his way into their ports; when it came to that, he was of opinion they would be hardly able to defend themſelves; wherefore he thought ſuch men were to be eſteemed as ſought to protect their frontiers, in order to keep Philip as long as might be at a diſtance: whereupon he moved, that, inſtead of diſowning what Diopithes had done, or directing him to diſmiſs his army, they ſhould ſend him over recruits, and ſhow the king of Macedon, they knew how to protect their territories, and to maintain the dignity of their ſtate, as well as their anceſtors. Theſe arguments had ſuch an effect, that a decree was made conformable to his motion.

22
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While affairs ſtood thus, the Illyrians recovering courage, and ſeeing Philip at ſuch a diſtance, haraſſed the frontiers of Macedon, and threatened a formidable invaſion: but Philip, by quick marches, arrived on the borders of Illyrium; and ſtruck this barbarous people with ſuch a panic, that they were glad to compound for their former depredations at the price he was pleaſed to ſet. Moſt of the Greek cities in Thrace now

23 lip's mes de- ed.

now ſought the friendſhip of the king, and entered into a league with him for their mutual defence. As it cannot be ſuppoſed, that each of theſe free cities had a power equal to that of Philip, we may therefore look upon him as their protector. About this time, Philip's negotiations in Peloponneſus began to come to light: the Argives and Meſſenians, growing weary of that tyrannical authority which the Spartans exerciſed over them, applied to Thebes for aſſiſtance; and the Thebans, out of their natural averſion to Sparta, ſought to open a paſſage for Philip into Peloponneſus, that, in conjunction with them, he might humble the Lacedæmonians. Philip readily accepted the offer; and reſolved to procure a decree from the Amphictyons, directing the Lacedæmonians to leave Argos and Meſſene free; which if they complied not with, he, as the lieutenant of the Amphictyons, might, with great appearance of juſtice, march with a body of troops to enforce their order. When Sparta had intelligence of this, ſhe immediately applied to Athens, earneſtly intreating aſſiſtance, as in the common cauſe of Greece. The Argives and Meſſenians, on the other hand, laboured aſſiduouſly to gain the Athenians to their ſide; alleging, that, if they were friends to liberty, they ought to aſſiſt thoſe whoſe only aim was to be free. Demoſthenes, at this juncture, outwreſtled Philip, if we may borrow that king's expreſſion: for, by a vehement harangue, he not only determined his own citizens to become the avowed enemies of the king; but alſo made the Argives and Meſſenians not over-fond of him for an ally; which when Philip perceived, he laid aſide all thoughts of this enterprize for the preſent, and began to practiſe in Eubœa.

This country, now called *Negropont*, is ſeparated from Greece by the Euripus, a ſtrait ſo narrow, that Eubœa might eaſily be united to the continent. This ſituation made Philip call it *the fetters of Greece*, which he therefore ſought to have in his own hands. There had been for ſome years great diſturbances in that country; under colour of which, Philip ſent forces thither, and demoliſhed Porthmos, the ſtrongeſt city in thoſe parts, leaving the country under the government of three lords, whom Demoſthenes roundly calls *tyrants* eſtabliſhed by Philip. Shortly after, the Macedonians took Oreus, which was left under the government of five magiſtrates, ſtyled alſo *tyrants* at Athens. Thither Plutarch of Eretria, one of the moſt eminent perſons in Eubœa, went to repreſent the diſtreſſes of his country, and to implore the Athenians to ſet it free. This ſuit Demoſthenes recommended warmly to the people; who ſent thither their famous leader Phocion, ſupported by formidable votes, but a very ſlender army: yet ſo well did he manage the affairs of the commonwealth and her allies, that Philip quickly found he muſt for a time abandon that project; which, however, he did not till he had formed another no leſs beneficial to himſelf, or leſs dangerous to Athens. It was, the proſecution of his conqueſts in Thrace, which he thought of puſhing much farther than he had hitherto done, or could be reaſonably ſuſpected to have any intention of doing.

Extraordinary preparations were made by the Macedonian monarch for this campaign. His ſon Alexander was left regent of the kingdom; and he himſelf with 30,000 men laid ſiege to Perinthus, one of the ſtrongeſt cities in the country. At preſent, however, all his arts of cajoling and pretending friendſhip were inſufficient to deceive the Athenians. They gave the command of their army and fleet to Phocion; a general of great abilities, and with whom Philip would have found it very hard to contend. On the other hand, the king of Perſia began to turn jealous of the growing power of the Macedonian monarch. The Perſian kings had been accuſtomed to regard thoſe of Macedon as their faithful allies; but the good fortune of Philip, the continual clamour of the Athenians againſt him, and his dethroning at pleaſure the petty princes of Thrace, made him now regarded in another light. When therefore he led his troops againſt Perinthus, the Great King, as he was ſtyled by the Greeks, ſent his letters mandatory to the governors of the maritime provinces, directing them to ſupply the place with all things in their power; in conſequence of which they filled it with troops, granted ſubſidies in ready money, and ſent beſides great convoys of proviſion and ammunition. The Byzantines alſo, ſuppoſing their own turn would be next, exerted their utmoſt endeavours for the preſervation of Perinthus; ſending thither the flower of their youth, with all other neceſſaries for an obſtinate defence. The conſequence of all this was, that Philip found himſelf obliged to raiſe the ſiege with great loſs.

24 How he at laſt gained his point.

That the reputation of the Macedonian arms might not ſink by this diſgrace, Philip made war on the Scythians and Triballi, both of whom he defeated; and then formed a deſign of invading Attica, though he had no fleet to tranſport his troops, and knew very well that the Theſſalians were not to be depended upon if he attempted to march through the Piſæ, and that the Thebans would even then be ready to oppoſe his march. To obviate all theſe difficulties, he had recourſe to Athens itſelf; where, by means of his partiſans, he procured his old friend Æſchines to be ſent their deputy to the Amphictyons. This ſeemed a ſmall matter, and yet was the hinge on which his whole project turned. By that time Æſchines had taken his ſeat, a queſtion was ſtirred in the council, whether the Locrians of Amphiſia had not been guilty of ſacrilege in ploughing the fields of Cyrrha in the neighbourhood of the temple of Delphi. The aſſembly being divided in their opinions, Æſchines propoſed to take a view, which was accordingly decreed. But when the Amphictyons came in order to ſee how things ſtood, the Locrians, either jealous of their property, or ſpurred thereto by the ſuggeſtions of ſome who ſaw farther than themſelves, fell upon thoſe venerable perſons ſo rudely, that they compelled them to ſecure themſelves by flight. The Amphictyons decreed, that an army ſhould be raiſed, under the command of one of their own number, to chaſtiſe the delinquents; but as this army was to be compoſed of troops ſent from all parts of Greece, the appearance at the rendezvous was ſo inconſiderable, that the Amphictyons ſent to command them durſt undertake nothing. The whole matter being reported to the council, Æſchines, in a long and eloquent harangue, ſhewed how much the welfare and even the ſafety of Greece depended on the deference paid to their decrees; and after inveighing againſt the want of public ſpirit in ſuch as had not ſent their quotas at the time appointed by the council,

cil, he moved that they ſhould elect Philip for their general, and pray him to execute their decree. The deputies from the other ſtates, conceiving that by this expedient their reſpective conſtituents would be free from any farther trouble or expence, came into it at once; whereupon a decree was immediately drawn up, purporting that ambaſſadors ſhould be ſent to Philip of Macedon in the name of Apollo and the Amphictyons, once more to require his aſſiſtance, and to notify to him, that the ſtates of Greece had unanimouſly choſen him their general, with full power to act as he thought fit againſt ſuch as had oppoſed the authority of the Amphictyons. Thus of a ſudden Philip acquired all that he ſought; and having an army ready in expectation of this event, he immediately marched to execute the commands of the Amphictyons in appearance, but in reality to accompliſh his own deſigns. For having paſſed into Greece with his army, inſtead of attacking the Locrians, he ſeized immediately upon Elatea a great city of Phocis upon the river Cephiſus.

25 Is choſen general by the Amphictyons.

26 Is oppoſed by the Athenians and Thebans.

The Athenians in the mean time were in the utmoſt confuſion on the news of Philip's march. However, by the advice of Demoſthenes, they invited the Thebans to join them againſt the common enemy of Greece. Philip endeavoured as much as poſſible to prevent this confederacy from taking place; but all his efforts proved ineffectual. The Athenians raiſed an army, which marched immediately to Eleuſis, where they were joined by the Thebans. The confederates made the beſt appearance that had ever been ſeen in Greece, and the troops were exceedingly good; but unfortunately the generals were men of no conduct, or ſkill in the military art. An engagement enſued at Cheronæa; wherein Alexander commanded one wing of the Macedonian army, and his father Philip the other. The confederate army was divided according to the different nations of which it conſiſted; the Athenians having the right, and the Bœotians the left. In the beginning of the battle the confederates had the better; whereupon Stratocles an Athenian commander cried out, "Come on, brother ſoldiers, let us drive them back to Macedon:" which being overheard by the king, he ſaid very coolly to one of his officers, "Theſe Athenians do not know to conquer." Upon this he directed the files of the phalanx to be ſtraitened; and, drawing his men up very cloſe, retired to a neighbouring eminence; from whence, when the Athenians were eager in their purſuit, he ruſhed down with impetuoſity, broke, and routed them with prodigious ſlaughter. The orator Demoſthenes behaved very unbecomingly in this engagement; for he deſerted his poſt, and was one of the firſt that fled: nay, we are told, that a ſtake catching hold of his robe, he, not doubting but it was an enemy, cried out, "Alas! ſpare my life."

27 Whom he defeats at Cheronæa.

28 Is appointed general againſt the Perſians.

This victory determined the fate of Greece, and from this time we muſt reckon Philip ſupreme lord of all the Grecian ſtates. The firſt uſe he made of his power was to convoke a general aſſembly, wherein he was recognized generaliſſimo, and with full power appointed their leader againſt the Perſians. Having, by virtue of his authority, ſettled a general peace among them, and appointed the quota that each of the ſtates ſhould furniſh for the war, he diſmiſſed them; and returning to Macedon, began to make great preparations for this new expedition. His pretence for making war on the Perſians at this time was the aſſiſtance given by the Perſians to the city of Perinthus, as already mentioned. In the mean time, however, the king, by reaſon of the diſſenſions which reigned in his family, was made quite miſerable. He quarrelled with his wife Olympias to ſuch a degree, that he divorced her, and married another woman named *Cleopatra*. This produced a quarrel between him and his ſon Alexander; which alſo came to ſuch an height, that Alexander retired into Epirus with his mother. Some time afterwards, however, he was recalled, and a reconciliation took place in appearance; but in the mean time a conſpiracy was formed againſt the king's life, the circumſtances and cauſes of which are very much unknown. Certain it is, however, that it took effect, as the king was exhibiting certain ſhows in honour of his daughter's marriage with the king of Epirus. Philip, having given a public audience to the ambaſſadors of Greece, went next day in ſtate to the theatre. All the ſeats were early taken up; and the ſhews began with a ſplendid proceſſion, wherein the images of the 12 ſuperior deities of Greece were carried, as alſo the image of Philip, habited in like manner, as if he now made the 13th, at which the people ſhouted aloud. Then came the king alone, in a white robe, crowned, with his guards at a conſiderable diſtance, that the Greeks might ſee he placed his ſafety only in his confidence of the loyalty of his ſubjects. Pauſanias, the aſſaſſin, however, had fixed himſelf cloſe by the door of the theatre; and obſerving that all things fell out as he had foreſeen they would, took his opportunity when the king drew near him, and, plunging his ſword in his left ſide, laid him dead at his feet. He then fled, as faſt as he was able, towards the place where his horſes were; and would have eſcaped, had not the twig of a vine catched his ſhoe, and thrown him down. This gave time to thoſe who purſued him to come up with him; but inſtead of ſecuring him, in order to extort a diſcovery of his accomplices, they put an end to his life.

29 Is murdered.

30 Extrava gant joy of the Athenia

No ſooner did this news reach Athens, than, as if all danger had been paſt, the inhabitants ſhewed the moſt extravagant ſigns of joy. Demoſthenes and his party put on chaplets of flowers, and behaved as if they had gained a great victory. Phocion reproved them for this madneſs; bidding them remember, that "the army which had beaten them at Cheronæa was leſſened but by one." This reproof, however, had very little effect. The people heard with pleaſure all the harſh things which the orators could ſay of the young Alexander king of Macedon, whom they repreſented as a giddy wrong-headed boy, ready to graſp all things in his imagination, and able to perform nothing. The affairs of Macedon indeed were in a very diſtracted ſtate on the acceſſion of Alexander: for all the neighbouring nations had the ſame notion of the young king with the Athenians; and being irritated by the uſurpations of Philip, immediately revolted; and the ſtates of Greece entered into a confederacy againſt him. The Perſians had been contriving to transfer the war into Macedon; but as ſoon as the news of Philip's death reached them, they behaved as if all danger had been over. At the ſame time Attalus, one of the Macedonian commanders, aſpired to the crown, and ſought to draw off the ſoldiers from their allegiance.

In the councils held on this occaſion, Alexander's beſt friends adviſed him rather to make uſe of diſſimulation than force, and to cajole thoſe whom they thought he could not ſubdue. Theſe advices, however, were ill-ſuited to the temper of their monarch. He thought that vigorous meaſures only were proper, and therefore immediately led his army into Theſſaly. Here he harangued the princes ſo effectually, that he thoroughly gained them over to his intereſt, and was by them declared general of Greece; upon which he returned to Macedon, where he cauſed Attalus to be ſeized and put to death.

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In the ſpring of the next year (335 B. C.) Alexander reſolved to ſubdue the Triballians and Illyrians, who inhabited the countries now called *Bulgaria* and *Sclavonia*, and had been very formidable enemies to the Macedonian power. In this expedition he diſcovered, though then but 20 years of age, a ſurpriſing degree of military knowledge. Having advanced to the paſſes of Mount Hæmus, he found that the barbarians had poſted themſelves in the moſt advantageous manner. On the tops of the cliffs, and at the head of every paſſage, they had placed their carriages and waggons in ſuch a manner as to form a kind of parapet with their ſhafts inwards, that, when the Macedonians ſhould have half aſcended the rock, they might be able to puſh theſe heavy carriages down upon them. They reckoned the more upon this contrivance, becauſe of the cloſe order of the phalanx, which, they imagined, would be terribly expoſed by the ſoldiers wanting room to ſtir, and thereby avoid the falling waggons. But Alexander, having directed his heavy-armed troops to march, gave orders, that, where the way would permit, they ſhould open to the right and left, and ſuffer the carriages to go through; but that, in the narrow paſſes, they ſhould throw themſelves on their faces with their ſhields behind them, that the carts might run over them. This had the deſired effect; and the Macedonians reached the enemies works without the loſs of a man. The diſpute was then quickly decided; the barbarians were driven from their poſts with great ſlaughter, and left behind them a conſiderable booty for the conquerors.

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The next exploits of Alexander were againſt the Getæ, the Taulantii, and ſome othernations inhabiting the country on the other ſide of the Danube. Them he alſo overcame; ſhowing in all his actions the moſt perfect ſkill in military affairs, joined with the greateſt valour. In the mean time, however, all Greece was in commotion by a report which had been confidently ſpread abroad, that the king was dead in Illyria. The Thebans, on this news, ſeized Amyntas and Timolaus, two eminent officers in the Macedonian garriſon which held their citadel, and dragged them to the market-place, where they were put to death without either form or proceſs, or any crime alleged againſt them. Alexander, however, did not ſuffer them to remain long in their miſtake. He marched with ſuch expedition, that in ſeven days he reached Pallene in Theſſaly; and in ſix days more he entered Bœotia, before the Thebans had any intelligence of his paſſing the ſtraits of Thermopylæ. Even then they would not believe that the king was alive; but inſiſted that the Macedonian army was commanded by Antipater, or by one Alexander the ſon of Æropus. The reſt of the Greeks, however, were not ſo hard of belief; and therefore ſent no aſſiſtance to the Thebans, who were thus obliged to bear the conſequences of their own folly and obſtinacy. The city was taken by ſtorm, and the inhabitants were for ſome hours maſſacred without diſtinction of age or ſex; after which the houſes were demoliſhed, all except that of Pindar the famous poet, which was ſpared out of reſpect to the merit of its owner, and becauſe he had celebrated Alexander I. king of Macedon. The lands, excepting thoſe deſtined to religious uſes, were ſhared among the ſoldiers, and all the priſoners ſold for ſlaves; by which 440 talents were brought into the king's treaſury.

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34
Thebes taken and deſtroyed.

By this ſeverity the reſt of the Grecian ſtates were ſo thoroughly humbled, that they thought no more of making any reſiſtance, and Alexander had nothing further to hinder him from his favourite project of invading Aſia. Very little preparation was neceſſary for the Macedonian monarch, who went out as to an aſſured conqueſt, and reckoned upon being ſupplied only by the ſpoils of his enemies. Hiſtorians are not agreed as to the number of his army. Arrian ſays, that there were 30,000 foot and 5000 horſe. Diodorus Siculus tells us, that there were 13,000 Macedonian foot, 7000 of the confederate ſtates, and 5000 mercenaries. Theſe were under the command of Parmenio. Of the Odriſians, Triballians, and Illyrians, there were 5000; and of the Agrians, who were armed only with darts, 1000. As for the horſe, he tells us there were 1800 commanded by Philotas; and as many Theſſalians, under the command of Callas: out of the confederate ſtates of Greece, were 600 commanded by Eurygius; and 900 Thracians and Peonians, who led the van under Caſſander. Plutarch tells us, that, according to a low computation, he had 30,000 foot and 5000 horſe; and, according to the largeſt reckoning, he had 34,000 foot and 4000 horſe. As to his fund for the payment of the army, Ariſtobulus ſays it was but 70 talents; and Oneſicritus, who was alſo in this expedition, not only takes away the 70 talents, but affirms that the king was 200 in debt. As for proviſions, there was juſt ſufficient for a month and no more; and to prevent diſturbances, Antipater was left in Macedon with 12,000 foot and 1500 horſe.

35
Number of the army with which he invaded Aſia.

The army having aſſembled at Amphipolis, he marched from thence to the mouths of the river Strymon; then croſſing mount Pangæus, he took the road to Abdera. Croſſing the river Ebrus, he proceeded through the country of Pætis, and in 20 days reached Seſtos; thence he came to Eleus, where he ſacrificed on the tomb of Proteſilaus, becauſe was the firſt among the Greeks who, at the ſiege of Troy, ſet foot on the Aſiatic ſhore. He did this, that his landing might be more propitious than that of the hero to whom he ſacrificed, who was ſlain ſoon after. The greateſt part of the army, under the command of Parmenio, embarked at Seſtos, on board a fleet of 160 galleys of three benches of oars, beſides ſmall craft. Alexander himſelf ſailed from Eleus; and, when he was in the middle of the Helleſpont, offered a bull to Neptune and the Nereids, pouring forth at the ſame time a libation from a golden cup. When he drew near the ſhore, he lanched a javelin, which ſtuck in the earth: then, in com-

36
Sets out on his expedition.

complete armour, he leaped upon the ſtrand; and, having erected altars to Jupiter, Minerva, and Hercules, he proceeded to Ilium. Here again he ſacrificed to Minerva; and taking down ſome arms which had hung in the temple of that goddeſs ſince the time of the Trojan war, conſecrated his own in their ſtead. He ſacrificed alſo to the ghoſt of Priam, to avert his wrath on account of the deſcent which he himſelf claimed from Achilles.

In the mean time the Perſians had aſſembled a great army in Phrygia; among whom was one Memnon a Rhodian, the beſt officer in the ſervice of Darius. Alexander, as ſoon as he had performed all the ceremonies which he judged neceſſary, marched directly towards the enemy. Memnon gave it as his opinion, that they ſhould burn and deſtroy all the country round, that they might deprive the Greeks of the means of ſubſiſting, and then tranſport a part of their army into Macedon. But the Perſians, depending on their cavalry, rejected this ſalutary advice; and poſted themſelves along the river Granicus, in order to wait the arrival of Alexander. In the engagement which happened on the banks of that river, the Perſians were defeated *, and Alexander became maſter of all the neighbouring country; which he immediately began to take care of, as if it had been part of his hereditary dominions. The city of Sardis was immediately delivered up; and here Alexander built a temple to Jupiter Olympias. After this, he reſtored the Epheſians to their liberty; ordered the tribute which they formerly paid to the Perſians to be applied towards the rebuilding of the magnificent temple of Diana; and having ſettled the affairs of the city, marched againſt Miletus. This place was defended by Memnon with a conſiderable body of troops who had fled thither after the battle of Granicus, and therefore made a vigorous reſiſtance. The fortune of Alexander, however, prevailed; and the city was ſoon reduced, though Memnon with part of the troops eſcaped to Halicarnaſſus. After this, the king diſmiſſed his fleet, for which various reaſons have been aſſigned; though it is probable, that the chief one was to ſhow his army that their only reſource now was in ſubverting the Perſian empire.

* See *Granicus*.

37
Conſequences of his firſt victory.

Almoſt all the cities between Miletus and Halicarnaſſus ſubmitted as ſoon as they heard that the former was taken; but Halicarnaſſus, where Memnon commanded with a very numerous garriſon, made an obſtinate defence. Nothing, however, was able to reſiſt the Macedonian army. Memnon was at laſt obliged to abandon the place: upon which Alexander took and razed the city of Tralles in Phrygia; received the ſubmiſſion of ſeveral princes tributary to the Perſians; and having deſtroyed the Marmarians, a people of Lycia who had fallen upon the rear of his army, put an end to the campaign: after which he ſent home all the new-married men; in obedience, it would ſeem, to a precept of the Moſaic law, and which endeared him more to his ſoldiers than any other action of his life.

As ſoon as the ſeaſon would permit, Alexander quitted the province of Phaſelus; and having ſent part of his army through the mountainous country to Perga, by a ſhort but difficult road, took his route by a certain promontory, where the way is altogether impaſſable, except when the north winds blow. At the time of the king's march the ſouth wind had held for long time; but of a ſudden it changed, and blew from the north ſo violently, that, as he and his followers declared, they obtained a ſafe and eaſy paſſage through the divine aſſiſtance. By many this march is held to be miraculous, and compared to that of the children of Iſrael through the Red Sea; while, on the other hand, it is the opinion of others, that there was nothing at all extraordinary in it. He continued his march towards Gordium, a city of Phrygia; the enemy having abandoned the ſtrong paſs of Telmiſſus, through which it was neceſſary for him to march. When he arrived at Gordium, and finding himſelf under a neceſſity of ſtaying ſome time there till the ſeveral corps of his army could be united, he expreſſed a ſtrong deſire of ſeeing Gordius's chariot, and the famous knot in the harneſs, of which ſuch ſtrange ſtories had been publiſhed to the world. The cord in which this knot was tied, was made of the inner rind of the cornel-tree; and no eye could perceive where it had begun or ended. Alexander, when he could find no poſſible way of untying it, and yet was unwilling to leave it tied leſt it ſhould cauſe ſome fears in the breaſts of his ſoldiers, is ſaid by ſome authors to have cut the cords with his ſword, ſaying, "It matters not how it is undone." But Ariſtobulus aſſures us, that the king wreſted a wooden pin out of the beam of the waggon, which, being driven in acroſs the beam, held it up; and ſo took the yoke from under it. Be this as it will, however, Arrian informs us, that a great tempeſt of thunder, lightning, and rain, happening the ſucceeding night, it was held declarative of the true ſolution of this knot, and that Alexander ſhould become lord of Aſia.

38
Unties Gordia
knot.

The king having left Gordium, marched towards Cilicia; where he was attended with his uſual good fortune, the Perſians abandoning all the ſtrong paſſes as he advanced. As ſoon as he entered the province, he received advice that Arſames, whom Darius had made governor of Tarſus, was about to abandon it, and that the inhabitants were very apprehenſive that he intended to plunder them before he withdrew. To prevent this, the king marched inceſſantly, and arrived juſt in time to ſave the city. But his ſaving it had well nigh coſt him his life: for, either through the exceſſive fatigue of marching, as ſome ſay, or, according to others, by his plunging when very hot into the river Cydnus, which, as it runs through thick ſhades, has its waters exceſſively cold, he fell into ſuch a diſtemper as threatened his immediate diſſolution. His army loſt their ſpirits immediately; the generals knew not what to do; and his phyſicians were ſo much affrighted, that the terror of his death hindered them from uſing the neceſſary methods for preſerving his life. Philip the Acarnanian alone preſerved temper enough to examine the nature of the king's diſeaſe; the worſt ſymptom of which was a continual waking, and which he took off by means of a potion, and in a ſhort time the king recovered his uſual health.

39
His ſic
neſs an
covery.

Soon after Alexander's recovery, he received the agreeable news that Ptolemy and Aſander had defeated the Perſian generals, and made great conqueſts on the Helleſpont; a little after that, he met the Perſian army at Iſſus, commanded by Darius himſelf. A bloody engagement enſued, in which the Perſians were defeated with great ſlaughter, as related under the article Issus. The conſequences of this victory were very advantageous to the Macedonians. Many governors of provinces and petty princes ſubmitted themſelves to the conqueror; and ſuch as did ſo were treated, not as a newly-conquered people, but as his old hereditary ſubjects; being neither burthened with ſoldiers, nor oppreſſed with tribute. Among the number of thoſe places which, within a ſhort ſpace after the battle of Iſſus, ſent deputies to ſubmit to the conqueror, was the city of Tyre. The king, whoſe name was Azelmicus, was abſent in the Perſian fleet; but his ſon was among the deputies, and was very favourably received by Alexander. The king probably intended to confer particular honours on the city of Tyre; for he acquainted the inhabitants that he would come and ſacrifice to the Tyrian Hercules, the patron of their city, to whom they had erected a moſt magnificent temple. But theſe people, like moſt other trading nations, were too ſuſpicious to think of admitting ſuch an enterpriſing prince with his troops within their walls. They ſent therefore their deputies again to him, to inform him, that they were ready to do whatever he ſhould command them; but, as to his coming and ſacrificing in their city, they could not conſent to that, but were poſitively determined not to admit a ſingle Macedonian within their gates. Alexander immediately diſmiſſed their deputies in great diſpleaſure. He then aſſembled a council of war, wherein he inſiſted ſtrongly on the diſaffected ſtate of Greece, (for moſt of the Grecian ſtates had ſent ambaſſadors to Darius, to enter into a league with him againſt the Macedonians,) the power of the Perſians by ſea, and the folly of carrying on the war in diſtant provinces, while Tyre was left unreduced behind them: he alſo remarked, that if once this city was ſubdued, the ſovereignty of the ſea would be transferred to them, becauſe it would fix their poſſeſſion of the coaſts; and as the Perſian fleet was compoſed chiefly of tributary ſquadrons, thoſe tributaries would fight the battles, not of their late, but of their preſent maſters. For theſe reaſons the ſiege of Tyre was reſolved on. The town was not taken, however, without great difficulty; which provoked Alexander to ſuch a degree, that he treated the inhabitants with the greateſt cruelty. See Tyre.

After the reduction of Tyre, Alexander, though the ſeaſon was already far advanced, reſolved to make an expedition into Syria; and in his way thither propoſed to chaſtiſe the Jews, who had highly offended him during the ſiege of Tyre: for when he ſent to them to demand proviſions for his ſoldiers, they anſwered, That they were the ſubjects of Darius, and bound by oath not to ſupply his enemies. The king, however, was pacified by their ſubmiſſion; and not only pardoned them, but conferred many privileges upon them, as related under the article Jews.

From Jeruſalem Alexander marched directly to Gaza, the only place in that part of the world which ſtill held out for Darius. This was a very large and ſtrong city, ſituated on an high hill, about five miles from the ſea ſhore. One *Batis*, or *Betis*, an eunuch, had the government of the place; and had made every preparation neceſſary for ſuſtaining a long and obſtinate ſiege. The governor defended the place with great valour, and ſeveral times repulſed his enemies: but at laſt it was taken by ſtorm, and all the garriſon ſlain to a man; and this ſecured to Alexander an entrance into Egypt, which having before been very impatient of the Perſian yoke, admitted the Macedonians peaceably.

42
Alexander viſits the temple of Jupiter Ammon.

Here the king laid the foundations of the city of Alexandria, which for many years after continued to be the capital of the country. While he remained here, he alſo formed the extraordinary deſign of viſiting the temple of Jupiter Ammon. As to the motives by which he was induced to take this extraordinary journey, authors are not agreed; but certain it is, that he hazarded himſelf and his troops in the higheſt degree; there being two dangers in this march, which, with the example of Cambyſes, who loſt the greateſt part of his army in it, might have terrified any body but Alexander. The firſt was the want of water, which, in the ſandy deſarts ſurrounding the the temple, is no where to be found: the other, the uncertainty of the road from the fluctuation of the ſands; which, changing their ſituation every moment, leave the traveller neither a road to walk in, nor mark to march by. Theſe difficulties, however, Alexander got over; though not without a miraculous interpoſition, as is pretended by all his hiſtorians.

Alexander having conſulted the oracle, and received a favourable anſwer, returned to purſue his conqueſts. Having ſettled the government of Egypt, he appointed the general rendezvous of his forces at Tyre. Here he met with ambaſſadors from Athens, requeſting him to pardon ſuch of their countrymen as he found ſerving the enemy. The king, being deſirous to oblige ſuch a famous ſtate, granted their requeſt; and ſent alſo a fleet to the coaſt of Greece, to prevent the effects of ſome commotions which had lately happened in Peloponneſus. He then directed his march to Thapſacus; and having paſſed the Euphrates and Tigris, met with Darius near Arbela, where the Perſians were again overthrown with prodigious ſlaughter *, and Alexander in effect became maſter of the Perſian empire.

43
Reduces Babylon, Suſa, and Perſepolis.

After this important victory, Alexander marched directly to Babylon, which was immediately delivered up; the inhabitants being greatly diſaffected to the Perſian intereſt. After 30 days ſtay in this country, the king marched to Suſa, which had already ſurrendered to Philoxenus; and here he received the treaſures of the Perſian monarch, amounting, according to the moſt generally received account, to 50,000 talents. Having received alſo at this time a ſupply of 6000 foot and 500 horſe from Macedon, he ſet about reducing the nations of Media, among whom Darius was retired. He firſt reduced the Uxians: and having forced a paſſage to Perſepolis the capital of the empire, he like a barbarian deſtroyed the ſtately palace there, a pile of building not to be equalled in any part of the world; after having given up the city to be plundered by his ſoldiers. In the palace he found 120,000 talents, which he appropriated to his own uſe, and cauſed immediately to be carried away upon mules and camels; for he had ſuch an extreme averſion to the inhabitants of Perſepolis, that he determined to leave nothing valuable in the city.

During the time that Alexander remained at Perſepolis

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* See *Arbela*.

44 He purſues Darius.

ſepolis, he received intelligence that Darius remained at Ecbatana the capital of Media; upon which he purſued him with the greateſt expedition, marching at the rate of near 40 miles a-day. In 15 days he reached Ecbatana, where he was informed that Darius had retired from thence five days before, with an intent to paſs into the remoteſt provinces of his empire. This put ſome ſtop to the rapid progreſs of the Macedonian army; and the king perceiving that there was no neceſſity for hurrying himſelf and his ſoldiers in ſuch a manner, began to give the orders requiſite in the preſent ſituation of his affairs. The Theſſalian horſe, who had deſerved exceedingly well of him in all his battles, he diſmiſſed according to his agreement; gave them their whole pay, and ordered 2000 talents over and above to be diſtributed among them. He then declared that he would force no man: but if any were willing to ſerve him longer for pay, he deſired they would enter their names in a book, which a great many of them did; the reſt ſold their horſes, and prepared for their departure. The king appointed Epocillus to conduct them to the ſea, and aſſigned him a body of horſe as an eſcort: he likewiſe ſent Menetes with them, to take care of their embarkation, and that they were ſafely landed in Euboea without any expence to themſelves.

On receiving freſh information concerning the ſtate of Darius's affairs, the king ſet out again in purſuit of him, advancing as far as Rhages, a city one day's journey from the Caſpian ſtraits: there he underſtood that Darius had paſſed thoſe ſtraits ſome time before; which information leaving him again without hopes, he halted for five days. Oxidates, a Perſian whom Darius had left priſoner at Suſa, was made governor of Media, while the king departed on an expedition into Parthia. The Caſpian ſtraits he paſſed immediately, without oppoſition; and then gave directions to his officers to collect a quantity of proviſions ſufficient to ſerve his army on a long march through a waſted country. But before his officers could accompliſh thoſe commands, the king received intelligence that Darius had been murdered by Beſſus, one of his own ſubjects, and governor of Bactria, as is related at length under the article PERSIA.

45 Who is murdered.

46 Alexander reduces Hyrcania.

As ſoon as Alexander had collected his forces together, and ſettled the government of Parthia, he entered Hyrcania; and having, according to his uſual cuſtom, committed the greateſt part of his army to the care of Craterus, he, at the head of a choice body of troops, paſſed through certain craggy roads, and before the arrival of Craterus, who took an open and eaſy path, ſtruck the whole provinces with ſuch terror, that all the principal places were immediately put into his hands, and ſoon after the province of Aria alſo ſubmitted, and the king continued Satibarzanes the governor in his employment.—The reduction of this province finiſhed the conqueſt of Perſia; but the ambition of Alexander to become maſter of every nation of which he had the leaſt intelligence, induced him to enter the country of the *Mardi*, merely becauſe its rocks and barrenneſs had hitherto hindered any body from conquering, or indeed from attempting to conquer it. This conqueſt, however, he eaſily accompliſhed, and obliged the whole nation to ſubmit to his pleaſure. But in the meantime diſturbances began to ariſe in Alexander's new empire, and among his troops, which all his activity could not thoroughly ſuppreſs. He he ſcarcely left the province of Aria, when he received intelligence, that the traitor Beſſus had cauſed himſelf to be proclaimed king of Aſia by the name of *Artaxerxes*; and that Satibarzanes had joined him, after having maſſacred all the Macedonians who had been left in the province. Alexander appointed one *Arſames*, governor in the room of Satibarzanes; and marched thence with his army againſt the *Zarangæ*, who under the command of Barzaentes, one of thoſe who had conſpired againſt Darius, had taken up arms, and threatened to make an obſtinate defence. But, their numbers daily falling off, Barzaentes being afraid they would purchaſe their own ſafety at the expence of his, privately withdrew from his camp, and, croſſing the river Indus, ſought ſhelter among the nations beyond it. But they, either dreading the power of Alexander, or deteſting the treachery of this Perſian towards his former maſter, ſeized and delivered him up to Alexander, who cauſed him immediately to be put to death.

47 The Ma donians give the ſelves u luxury.

The immenſe treaſure which the Macedonians had acquired in the conqueſt of Perſia began now to corrupt them. The king himſelf was of a moſt generous diſpoſition, and liberally beſtowed his gifts on thoſe around him; but they made a bad uſe of his bounty, and fooliſhly indulged thoſe vices by which the former poſſeſſors of that wealth had loſt it. The king did all in his power to diſcourage the lazy and inactive pride which now began to ſhew itſelf among his officers; but neither his diſcourſes nor his example had any conſiderable effect. The manners of his courtiers from bad became worſe, in ſpite of all he could ſay or do to prevent it; and at laſt they proceeded to cenſure his conduct, and to expreſs themſelves with ſome bitterneſs on the ſubject of his long continuance of the war, and his leading them conſtantly from one labour to another. This came to ſuch an height, that the king was at laſt obliged uſe ſome ſeverity in order to keep his army within the limits of their duty.

48 Alexan conform the Per cuſtom

From this time forward, however, Alexander himſelf began to alter his conduct; and by giving a little into the cuſtoms of the Orientals, endeavoured to ſecure that obedience from his new ſubjects which he found ſo difficult to be preſerved among his old ones. He likewiſe endeavoured, by various methods, to blend the cuſtoms of the Aſiatics and the Greeks. The form of his civil government reſembled that of the ancient Perſian kings: in the military affairs, however, he preſerved the Macedonian diſcipline; but then he made choice of 30,000 boys out of the provinces, whom he cauſed to be inſtructed in the Greek language, and directed to be brought up in ſuch a manner as that from time to time he might with them fill up the phalanx. The Macedonians ſaw with great concern theſe extraordinary meaſures which ſuited very ill with their groſs underſtandings; for they thought, after all the victories they had gained, to be abſolute lords of Aſia, and to poſſeſs not only the riches of its inhabitants, but to rule the inhabitants themſelves: whereas they now ſaw, that Alexander meant no ſuch thing; but that, on the contrary, he conferred governments, offices at court, and all other marks of confidence and favour, indiſcricriminately both on Greeks and Perſians.—From this time alſo the king ſeems to have given inſtances of a cruelty he had never ſhown before. Philotas his moſt intimate friend was ſeized, tortured, and put to death for a conſpiracy of which it could never be proven that he was guilty; and ſoon after Parmenio and ſome others were executed without any crime at all real or alleged. Theſe things very much diſturbed the army. Some of them wrote home to Macedonia of the king's ſuſpicions of his friends, and his diſpoſition to hunt out enemies at the very extremities of the world. Alexander having intercepted ſome of theſe letters, and procured the beſt information he could concerning their authors, picked out theſe diſſatisfied people, and having diſpoſed them into one corps, gave it the title of the *turbulent battalion;* hoping by this means to prevent the ſpirit of diſaffection from pervading the whole army.

As a farther precaution againſt any future conſpiracy, Alexander thought fit to appoint Hephæſtion and Clytus generals of the auxiliary horſe; being apprehenſive, that if this authority was lodged in the hands of a ſingle perſon, it might prompt him to dangerous undertakings, and at the ſame time furniſh him with the means of carrying them into execution. To keep his forces in action, he ſuddenly marched into the country of the Euergetæ, i. e. *Benefactors;* and found them full of that kind and hoſpitable diſpoſition, for which that name had been beſtowed on their anceſtors: he therefore treated them with great reſpect; and, at his departure added ſome lands to their dominions, which lay contiguous, and which for that reaſon they had requeſted of him.

Turning then to the eaſt, he entered Arachoſia, the inhabitants of which ſubmitted without giving him any trouble. While he paſſed the winter in theſe parts, the king received advice, that the Arians, whom he had ſo lately ſubdued, were again up in arms, Satibarzanes being returned into that country with two thouſand horſe aſſigned him by Beſſus. Alexander inſtantly diſpatched Artibazus the Perſian, with Erigyus and Caranus, two of his commanders, with a conſiderable body of horſe and foot: he likewiſe ordered Phrataphernes, to whom he had given the government of Parthia, to accompany them. A general engagement enſued, wherein the Arians behaved very well, as long as their commander Satibarzanes lived: but he engaging Erigyus, the Macedonian ſtruck him firſt into the throat, and then, drawing forth his ſpear again, through the mouth; ſo that he immediately expired, and with him the courage of his ſoldiers, who inſtantly begun to fly; whereupon Alexander's commanders made an eaſy conqueſt of the reſt of the country, and ſettled it effectually under his obedience.

9
rza-
feat-
d kill-

The king, notwithſtanding the inclemency of the ſeaſon, advanced into the country of Paropamiſus, ſo called from the mountain Paropamiſus, which the ſoldiers of Alexander called *Caucaſus.* Having croſſed the country in 16 days, he came at length to an opening leading into Media; which finding of a ſufficient breadth, he directed a city to be built there, which he called *Alexandria,* as alſo ſeveral other towns about a day's journey diſtant from thence: and in theſe places he left 7000 perſons, part of them ſuch as had hitherto followed his camp, and part of the mercenary ſoldiers, who, weary of continual fatigue, were content to dwell there. Having thus ſettled things in this province, ſacrificed ſolemnly to the gods, and appointed Proexes the Perſian preſident thereof, with a ſmall body of troops under the command of Niloxenus to aſſiſt him, he reſumed his former deſign of penetrating into Bactria.

50
Beſſus reduced and put to death.

Beſſus, who had aſſumed the title of *Artaxerxes,* when he was aſſured that Alexander was marching towards him, immediately began to waſte all the country between Paropamiſus and the river Oxus; which river he paſſed with his forces, and then burnt all the veſſels he had made uſe of for tranſporting them, retiring to Nautaca a city of Sogdia; fully perſuaded, that, by the precautions he had taken, Alexander would be compelled to give over his purſuit. This conduct of his, however, diſheartened his troops, and gave the lie to all his pretenſions; for he had affected to cenſure Darius's conduct, and had charged him with cowardice, in not defending the rivers Euphrates and Tigris, whereas he now quitted the banks of the moſt defenſible river perhaps in the whole world. As to his hopes, tho' it cannot be ſaid they were ill founded, yet they proved abſolutely vain; for Alexander, continuing his march, notwithſtanding all the hardſhips his ſoldiers ſuſtained, reduced all Bactria under his obedience, particularly the capital Bactria and the ſtrong caſtle Aornus: in the latter he placed a garriſon under the command of Archelaus; but the government of the province he committed to Artabazus. He then continued his march to the river Oxus: on the banks of which, when he arrived, he found it three quarters of a mile over, its depth more than proportionable to its breadth, its bottom ſandy, its ſtream ſo rapid as to render it almoſt unnavigable, and neither boat nor tree in its neighbourhood; ſo that the ableſt commanders in the Macedonian army were of opinion that they ſhould be obliged to march back. The king, however, having firſt ſent away, under a proper eſcort, all his infirm and worn-out ſoldiers, that they might be conducted ſafe to the ſea-ports, and from thence to Greece, deviſed a method of paſſing this river without either boat or bridge, by cauſing the hides which covered the ſoldiers tents and carriages to be ſtuffed with ſtraw, and then tied together and thrown into the river. Having croſſed the Oxus, he marched directly towards the camp of Beſſus, where, when he arrived, he found it abandoned; but received at the ſame time letters from Spitamenes and Dataphernes, who were the chief commanders under Beſſus, ſignifying, that, if he would ſend a ſmall party to receive Beſſus, they would deliver him into his hands; which they did accordingly, and the traitor was put to death in the manner related in the hiſtory of PERSIA.

A ſupply of horſes being now arrived, the Macedonian cavalry were remounted. Alexander continued his march to Maracanda, the capital of Sogdia, from whence he advanced to the river Iaxartes. Here he performed great exploits againſt the Scythians; from whom, however, tho' he overcame them, his army ſuffered much; and the revolted Sogdians being headed by Spitamenes, gave him a great deal of trouble. Here he married Roxana the daughter of Oxyartes, a prince of the country whom he had ſubdued. But du-

51
Alexander marries Roxana.

ring theſe expeditions, the king greatly diſguſted his army by the murder of his friend Clytus in a drunken quarrel at a banquet, and by his extravagant vanity in claiming divine honours.

25
Paſſes the Indus.

At laſt he arrived at the river Indus, where Hephæſtion and Perdiccas had already provided a bridge of boats for the paſſage of the army. The king refreſhed his troops for 30 days in the countries on the other ſide of the river, which were thoſe of his friend and ally Taxiles, who gave him 30 elephants, and joined his army now with 700 Indian horſe, to which, when they were to enter upon action, he afterwards added 5000 foot. The true reaſon of this ſeems to have been his enmity to Porus, a famous Indian prince, whoſe territories lay on the other ſide of the river Hydaſpes. During this receſs, the king ſacrificed with great ſolemnity; receiving alſo ambaſſadors from Ambiſurus a very potent prince, and from Doxareas, who was likewiſe a king in thoſe parts, with tenders of their duty, and conſiderable preſents. Theſe ceremonies over, Alexander appointed Philip governor of Taxila, and put a Macedonian garriſon into the place, becauſe he intended to erect an hoſpital there for the cure of his ſick and wounded ſoldiers. He then ordered the veſſels, of which his bridge had been compoſed when he paſſed the Indus, to be taken to pieces, that they might be brought to the Hydaſpes, where he was informed that Porus with a great army lay encamped to hinder his paſſage. When he approached the banks of this river with his army and the auxiliaries under the command of Taxiles, he found that the people he had to do with were not ſo eaſily to be ſubdued as the Perſians and other Aſiatics. The Indians were not only a very tall and robuſt, but alſo a very hardy and well-diſciplined people; and their king Porus, was a prince of high ſpirit, invincible courage, and great conduct.

It was about the ſummer-ſolſtice when Alexander reached the Hydaſpes, and conſequently its waters were broader, deeper, and more rapid, than at any other time; for in India the rivers ſwell as the ſun's increaſing heat melts the ſnow, and ſubſide again as winter approaches. Alexander therefore had every difficulty to ſtruggle with. Porus had made his diſpoſitions ſo judiciouſly, that Alexander found it impoſſible to practiſe upon him as he had done upon others, and to paſs the river in his view: wherefore he was conſtrained to divide his army into ſmall parties, and to practiſe other arts, in order to get the better of ſo vigilant a prince. To this end he cauſed a great quantity of corn and other proviſions to be brought into his camp; giving out, that he intended to remain where he was till the river fell, and by becoming fordable ſhould give him an opportunity of forcing a paſſage: this did not, however, hinder Porus from keeping up very ſtrict diſcipline in his camp; which when Alexander perceived, he frequently made ſuch motions as ſeemed to indicate a change of his reſolution, and that he had ſtill thoughts of paſſing the river. The main thing the Macedonians ſtood in fear of were the elephants; for the bank being pretty ſteep on the other ſide, and it being the nature of horſes to ſtart at the firſt appearance of thoſe animals, it was foreſeen that the army would be diſordered, and incapable of ſuſtaining the charge of Porus's troops.

53
And the Hydaſpes with difficulty.

At length Alexander paſſed the river by the following contrivance. There was, at the diſtance of 150 ſtadia from his camp, a rocky promontory projecting into the river, thick covered with wood; and over-againſt this promontory there lay a pretty large uninhabited iſland almoſt overgrown with trees. The king therefore conceived within himſelf a project of conveying a body of troops from this promontory into that iſland; and upon this ſcheme he built his hopes of ſurpriſing Porus, vigilant as he was. To this end he kept him and his army conſtantly alarmed for many nights together, till he perceived that Porus apprehended it was only done to harraſs his troops, and therefore no longer drew out of his camp, but truſted to his ordinary guards: then Alexander reſolved to put his deſign in execution. A conſiderable body of horſe, the Macedonian phalanx, with ſome corps of light-armed foot, he left in his camp under the command of Craterus, as alſo the auxiliary Indians: giving theſe orders to be obſerved in his abſence, that if Porus marched againſt him with part of his army and left another part with the elephants behind in his camp, Craterus and his forces ſhould remain where they were; but if it ſo happened that Porus withdrew his elephants, then Craterus was to paſs the river, becauſe his cavalry might then do it ſafely. Alexander having marched half the way, or about nine of our miles, ordered the mercenary troops under the command of Attalus and other generals, to remain there; and directed them, that as ſoon as they knew he was engaged with the Indians on the other ſide, they ſhould paſs in veſſels provided for that purpoſe, in order to aſſiſt him. Then marching a long way about, that the enemy might not perceive his deſign of reaching the rock, he advanced as diligently as he could towards that poſt. It happened very fortunately for him, that a great ſtorm of thunder, lightning, and hail, roſe in the night, whereby his march was perfectly concealed, his veſſels of 30 oars put together, and his tents ſtuffed and ſtitched, ſo that they paſſed from the rock into the iſland, without being perceived, a little before break of day; the ſtorm ceaſing juſt as he and his ſoldiers were ready for their paſſage. When they had traverſed the iſland, they boldly ſet forward to gain the oppoſite ſhore in ſight of Porus's out-guards, who inſtantly poſted away to give their maſter an account of the attempt. Alexander landed firſt himſelf; and was followed as expeditiouſly as poſſible by his forces, whom he took care to draw up as faſt as they arrived. When they began their march again, they found that their good fortune was not ſo great as at firſt they eſteemed it; for it appeared now, that they had not reached the continent at all, but were in truth in another iſland much larger than the former. They croſſed it as faſt as they could, and found that it was divided from the *terra firma* by a narrow channel, which, however, was ſo ſwelled by the late heavy rain, that the poor ſoldiers were obliged to wade up to the breaſt. When they were on the other ſide, the king drew them up again carefully, ordering the foot to march ſlowly, they being in number about 6000, while himſelf with 5000 horſe advanced before. As ſoon as Porus received intelligence that Alexander was actually paſſing the river, he ſent his ſon with 2000 horſe, and 120 armed chariots, to oppoſe him. But they came too late: Alexander was already got on ſhore, and even on his march.

When the Macedonian ſcouts perceived them advance, they informed the king, who ſent a detachment to attack them, remaining ſtill at the head of his cavalry in expectation of Porus. But when he found that this party was unſupported, he inſtantly attacked with all his horſe, and defeated them with the ſlaughter of many, and the loſs of all their armed chariots, the ſon of Porus being ſlain in the fight. The remainder of the horſe returning to the camp with this diſaſtrous account, Porus was in ſome confuſion: however, he took very quickly the beſt and wiſeſt reſolutions his circumſtances would allow; which were, to leave a part of his army, with ſome of his elephants, to oppoſe Craterus, who was now about to paſs the river alſo; and, with the reſt, to march againſt Alexander and his forces, who were already paſſed. This reſolution once taken, he marched immediately out of his camp, at the head of 4000 horſe, 30,000 foot, 300 chariots, and 200 elephants. He advanced as expeditiouſly as he could, till he came into a plain which was firm and ſandy, where his chariots and elephants might act to advantage: there he halted, that he might put his army in order, knowing well that he need not go in queſt of his enemy. Alexander ſoon came up with his horſe, but he did not charge Porus; on the contrary, he halted, and put his troops in order, that they might be able to defend themſelves in caſe they were attacked. When he had waited ſome time, his foot arrived; whom he immediately ſurrounded with his horſe, that, after ſo fatiguing a march, they might have time to cool and breathe themſelves, before they were led to engage. Porus permitted all this, becauſe it was not his intereſt to fight, and becauſe he depended chiefly upon his order of battle, the elephants covering his foot, ſo that the Macedonians could not charge them.

When Alexander had diſpoſed his foot in proper order, he placed his horſe on the wings; and, obſerving that he was much ſuperior in them to the enemy, and that the cavalry of Porus were eaſy to be charged, he reſolved to let the foot have as little ſhare as poſſible in the battle. To this end, having given the neceſſary directions to Cœnus who commanded them, he went himſelf to the right, and with great fury fell upon the left wing of Porus. The diſpute, tho' ſhort, was very bloody: the cavalry of Porus, tho' they fought gallantly, were quickly broken; and the foot being by this means uncovered, the Macedonians charged them. But the Indian horſe rallying, came up to their relief, yet were again defeated. By this time the archers had wounded many of the elephants, and killed moſt of their riders, ſo that they did not prove leſs troubleſome and dangerous to their own ſide than to the Macedonians; whence a great confuſion enſued, and Cœnus, taking this opportunity, fell in with the troops under his command, and entirely defeated the Indian army. Porus himſelf behaved with the greateſt intrepidity, and with the moſt excellent conduct: he gave his orders, and directed every thing, as long as his troops retained their form; and, when they were broken, he retired from party to party as they made ſtands, and continued fighting till every corps of Indians was put to the rout. In the mean time Craterus had paſſed with the reſt of the Macedonian army; and theſe, falling upon the flying Indians, increaſed the ſlaughter of the day exceſſively, inſomuch that 20,000 foot and 3000 horſe were killed, all the chariots were hacked to pieces, and the elephants not killed were taken: two of Porus's ſons fell here, as alſo moſt of his officers of all ranks.

As for Porus, Alexander gave ſtrict directions that no injury might be done to his perſon: he even ſent Taxiles to perſuade him to ſurrender himſelf, and to aſſure him that he ſhould be treated with all the kindneſs and reſpect imaginable; but Porus, diſdaining this advice from the mouth of an old enemy, threw a javelin at him, and had killed him, but for the quick turn of his horſe. Meroe the Indian, who was alſo in the ſervice of Alexander, ſucceeded better: he had been the old acquaintance of Porus; and therefore, when he intreated that prince to ſpare his perſon, and to ſubmit himſelf to fortune and a generous victor, Porus followed his advice; and we may truly ſay, that the condition of this Indian king ſuffered nothing by the loſs of the battle. Alexander immediately gave him his liberty, reſtored him ſhortly after to his kingdom, to which he annexed provinces almoſt equal to it in value. Neither was Alexander a loſer by his munificence; for Porus remained his true friend and conſtant ally.

56
He ſubmits to Alexander.

To perpetuate the memory of this victory, Alexander ordered two cities to be erected; one on the field of battle, which he named *Nicæa;* the other on this ſide the river, which he called *Bucephala*, in honour of his horſe Bucephalus, who died here, as Arrian ſays, of mere old age, being on the verge of 30. All the ſoldiers, who fell in battle, he buried with great honours; offered ſolemn ſacrifices to the gods, and exhibited pompous ſhows on the banks of the Hydaſpes, where he had forced his paſſage. He then entered the territories of the Glauſæ, in which were 37 good cities, and a multitude of populous villages. All theſe were delivered up to him without fighting; and as ſoon as he received them, he preſented them to Porus; and having reconciled him to Taxiles, he ſent the latter home to his own dominions. About this time ambaſſadors arrived from ſome Indian princes with their ſubmiſſions; and Alexander, having conquered the dominions of another Porus, which lay on the Hydraotes a branch of the Indus, added them to thoſe of Porus his ally.

In the middle of all this ſucceſs, however, news arrived, that the Cathei, the Oxydracæ, and the Malli, the moſt warlike nations of India, were confederated againſt the Macedonians, and had drawn togther a great army. The king immediately marched to give them battle; and in a few days reached a city called *Sangala*, ſeated on the top of an hill, and having a fine lake behind it. Before this city the confederate Indians lay encamped, having three circular lines of carriages locked together, and their tents pitched in the centre. Notwithſtanding the apparent difficulty of forcing theſe intrenchments, Alexander reſolved immediately to attack them. The Indians made a noble defence; but at laſt the firſt line of their carriages was broken, and the Macedonians entered. The ſecond was ſtronger by far; yet Alexander attacked that too, and, after a deſperate reſiſtance, forced it. The Indians, without truſting to the third, retired into the city; which Alexander would have inveſted: but the foot

57
Sangala taken.

Macedon.

foot he had with him not being ſufficient for that purpoſe, he cauſed his works to be carried on both ſides as far as the lake; and, on the other ſide of that, ordered ſeveral brigades of horſe to take poſt; ordering alſo battering engines to be brought up, and in ſome places employing miners. The ſecond night, he received intelligence that the beſieged, knowing the lake to be fordable, intended to make their eſcape through it. Upon this the king ordered all the carriages which had been taken in forcing their camp to be placed up and down the roads, in hopes of hindering their flight; giving directions to Ptolemy, who commanded the horſe on the other ſide of the lake, to be extremely vigilant, and to cauſe all his trumpets to ſound, that the forces might repair to that poſt where the Indians made their greateſt effort. Theſe precautions had all the effect that could be deſired: for of the few Indians who got through the lake, and paſſed the Macedonian horſe, the greater part were killed on the roads; but the greateſt part of their army was conſtrained to retire again through the water into the city. Two days after, the place was taken by ſtorm. Seventeen thouſand Indians were killed; 70,000 taken priſoners; with 300 chariots, and 500 horſe. The Macedonians are ſaid to have loſt only 100 men in this ſiege; but they had 1200 wounded, and among theſe ſeveral perſons of great diſtinction.

The city was no ſooner taken, than Alexander diſpatched Eumenes his ſecretary, with a party of horſe, to acquaint the inhabitants of the cities adjacent with what had befallen the Sangalans; promiſing alſo, that they ſhould be kindly treated if they would ſubmit. But they were ſo much affrighted at what had happened to their neighbours, that, abandoning all their cities, they fled into the mountains; chooſing rather to expoſe themſelves to wild beaſts, than to theſe invaders, who had treated their countrymen ſo cruelly. When the king was informed of this, he ſent detachments of horſe and foot to ſcour the roads; and theſe, finding aged, infirm, and wounded people, to the number of about 500, put them to the ſword without mercy. Perceiving that it was impoſſible to perſuade the inhabitants to return, he cauſed the city of Sangala to be razed, and gave the territories to the few Indians who had ſubmitted to him.

58
And razed.

Alexander, ſtill unſated with conqueſt, now prepared to paſs the Hyphaſis. The chief reaſon which induced him to think of this expedition was, the information he had received of the ſtate of the countries beyond that river. He was told that they were in themſelves rich and fruitful; that their inhabitants were not only a very martial people, but very civilized; that they were governed by the nobility, who were themſelves ſubject to the laws; and that, as they lived in happineſs and freedom, it was likely they would fight obſtinately in defence of thoſe bleſſings. He was farther told, that, among theſe nations there were the largeſt, ſtrongeſt, and moſt uſeful elephants bred and tamed; and was therefore fired with an earneſt deſire to reduce ſuch a bold and brave people under his rule, and of attaining to the poſſeſſion of the many valuable things that were ſaid to be amongſt them. As exorbitant, however, as his perſonal ambition was, he found it impoſſible to infuſe any part of it into the minds of his ſoldiers; who were ſo far from wiſhing to triumph over new and remote countries, that they were highly deſirous of leaving thoſe that they had already conquered. When therefore they were informed of the king's intentions, they privately conſulted together in the camp about the ſituation of their own affairs. At this conſultation, the graveſt and beſt of the ſoldiers lamented that they were made uſe of by their king, not as lions, who fall fiercely upon thoſe who have injured them; but as maſtiffs, who fly upon and tear thoſe who are pointed out to them as enemies. The reſt were not ſo modeſt; but expreſſed themſelves roundly againſt the king's humour for leading them from battle to battle, from ſiege to ſiege, and from river to river; proteſting that they would follow him no further, nor laviſh away their lives any longer, to purchaſe fame for him.

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Alexander was a man of too much penetration not to be early in perceiving that his troops were very uneaſy. He therefore harangued them from his tribunal; but though his eloquence was great, and the love his army had for him was yet very ſtrong, they did not relent. For ſome time the ſoldiers remained ſullen and ſilent; and at laſt turned their eyes on Cœnus, an old and experienced general, whom Alexander loved, and in whom the army put great confidence.—He had the generoſity to undertake their cauſe; and told Alexander frankly, "that men endured toil in hopes of repoſe; that the Macedonians were already much reduced in their numbers; that of thoſe who remained, the greater part were invalids; and that they expected, in conſideration of their former ſervices, that he would now lead them back to their native country: an act, which, of all others, would moſt contribute to his own great deſigns; ſince it would encourage the youth of Macedon, and even of all Greece, to follow him in whatever new expedition he pleaſed to undertake." The king was far from being pleaſed with this ſpeech of Cœnus, and much leſs with the diſpoſition of his army, which continued in a deep ſilence. He therefore diſmiſſed the aſſembly: but next day he called another, wherein he told the ſoldiers plainly, that he would not be driven from his porpoſe; that he would proceed in his conqueſts with ſuch as ſhould follow him voluntarily: as for the reſt, he would not detain them, but would leave them at liberty to go home to Macedon, where they might publiſh, "that they had left their king in the midſt of his enemies." Even this expedient had no ſucceſs; his army was ſo thoroughly tired with long marches and deſperate battles, that they were determined to go no further, either for fair ſpeeches or foul. Upon this Alexander retired to his tent, where he refuſed to ſee his friends, and put on the ſame gloomy temper that reigned among his troops. For three days, things remained in this ſituation. At laſt the king ſuddenly appeared; and, as if he had been fully determined to purſue his firſt deſign, he gave orders for ſacrificing for the good ſucceſs of his new undertaking. Ariſtander the augur reported, that the omens were altogether inauſpicious; upon which the king ſaid, that ſince his proceeding farther was neither pleaſing to the gods, nor grateful to his army, he would return. When this was rumoured among the army, they aſſembled

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ſembled in great numbers about the royal tent, ſaluting the king with loud acclamations, wiſhing him ſucceſs in all his future deſigns; giving him, at the ſame time, hearty thanks, for that "he who was invincible had ſuffered himſelf to be overcome by their prayers."

A ſtop being thus put to the conqueſts of Alexander, he determined to make the Hyphaſis the boundary of his dominions; and having erected twelve altars of an extraordinary magnitude, he ſacrificed on them: after which he exhibited ſhows in the Grecian manner; and, having added all the conquered country in theſe parts to the dominions of Porus, he began to return. Having arrived at the Hydaſpes, he made the neceſſary preparations for ſailing down the Indus into the ocean. For this purpoſe, he ordered vaſt quantities of timber to be felled in the neighbourhood of the Hydaſpes, through which he was to ſail into the Indus; he cauſed the veſſels with which he had paſſed other rivers to be brought thither, and aſſembled a vaſt number of artificers capable of repairing and equipping his fleet; which, when finiſhed, conſiſted of 80 veſſels of three banks of oars, and 2000 leſſer ſhips and tranſports. Thoſe who were to manage this fleet were collected out from the Phœnicians, Cyprians, Carians, and Egyptians following his army, and who were reckoned perfectly well ſkilled in the naval art. When all things were ready, the army embarked about break of day; the king, in the mean time, ſacrificing to the gods according to the ceremonies uſed in his own country, and likewiſe according to thoſe of the country where he now was. Then he himſelf went on board; and cauſing the ſignal to be given by ſound of trumpet, the fleet ſet ſail. Craterus and Hephæſtion had marched ſome days before with another diviſion of the army; and in three days the fleet reached that part of the river which was oppoſite to their camps. Here he had information, that the Oxydracæ and Malli were raiſing forces to oppoſe him: upon which he immediately determined to reduce them; for, during this voyage, he made it a rule to compel the inhabitants on both ſides of the river to yield him obedience. But before he arrived on the coaſts of the people abovementioned, he himſelf ſuſtained no ſmall danger; for, coming to the confluence of the Aceſines with the Hydaſpes, from whence both rivers roll together into the Indus, the eddies, whirlpools, and rapid currents, ruſhing with tremendous noiſe from the reſpective channels of thoſe rivers into the great one formed by them both, at once terrified thoſe who navigated his veſſels, and actually deſtroyed many of the long veſſels, with all who were aboard of them; the king himſelf being in ſome danger, and Nearchus the admiral not a little at a loſs. As ſoon as this danger was over, Alexander went on ſhore; and having ordered his elephants with ſome troops of horſe and archers to be carried acroſs, and put under the command of Craterus, he then divided his army on the left-hand bank into three bodies; the firſt commanded by himſelf, the ſecond by Hephæſtion, and the third by Ptolemy. Hephæſtion had orders to move ſilently through the heart of the country, five days march before the king; that if, on Alexander's approach, any of the barbarians ſhould attempt to ſhelter themſelves by retiring into the country, they might fall into the hands of Hephæſtion. Ptolemy Lagus was ordered to march three days journey behind the king, that if any eſcaped his army, they might fall into Ptolemy's hands; and the fleet had orders to ſtop at the confluence of this river with the Hydraotes, till ſuch time as theſe ſeveral corps ſhould arrive.

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62
His expedition againſt the Malli.

Alexander himſelf, at the head of a body of horſe and light-armed foot, marched through a deſert country againſt the Malli; and, ſcarce affording any reſt to his ſoldiers, arrived in three days at a city into which the barbarians had put their wives and children, with a good garriſon for their defence. The country people, having no notion that Alexander would march through ſuch a deſert and barren region, were all unarmed, and in the utmoſt confuſion. Many of them therefore were ſlain in the field; the reſt fled into the city, and ſhut the gates. But this only protracted their fate for a ſhort time; for the king, having ordered the city to be inveſted by his cavalry, took it, as well as the caſtle, by ſtorm, and put all he found there to the ſword. He ſent at the ſame time Perdiccas with a conſiderable detachment, to inveſt another city of the Malli at a conſiderable diſtance; but when he came there, he found it abandoned. However, he purſued the inhabitants who had but lately left it, and killed great numbers of them on the road. After this the king took ſeveral other cities, but not without conſiderable reſiſtance; for the Indians ſometimes choſe to burn themſelves in their houſes rather than ſurrender. At laſt he marched to their capital city; and finding that abandoned, he proceeded to the river Hydraotes, where he found 50,000 men encamped on the oppoſite bank, in order to diſpute his paſſage. He did not heſitate, however, to enter the river with a conſiderable party of horſe, and ſo much were the Indians terrified at his preſence, that their whole army retired before him. In a ſhort time they returned and attacked him, being aſhamed to fly before ſuch an inconſiderable number; but in the mean time the reſt of the Macedonian forces came up, and the Indians were obliged to retire to a city which lay behind them, and which Alexander inveſted that very night. The next day he ſtormed the city with ſuch violence, that the inhabitants were compelled to abandon it, and to retire to the caſtle, where they prepared for an obſtinate defence. The king inſtantly gave orders for ſcaling the walls, and the ſoldiers prepared to execute theſe orders as faſt as they could; but the king being impatient, caught hold of a ladder and mounted it firſt himſelf, being followed by Leonatus, Peuceſtas, and Abreas, the latter a man of great valour, and who on that account had double pay allowed him. The king having gained the top of the battlements, cleared them quickly of the defendants, killing ſome of them with his ſword, and puſhing others over the walls: but after this was done, he was in more danger than ever; for the Indians galled him with their arrows from the adjacent towers, though they durſt not come near enough to engage him. His own battalion of targeteers mounting in haſte to ſecond him, broke the ladders; which, as ſoon as Alexander perceived, he threw himſelf down into the caſtle, as did alſo Peuceſtas, Leonatus, and Abreas. As ſoon as the king was on the ground,

63
His deſperate valour and danger.

the Indian general ruſhed forward to attack him; but Alexander inſtantly diſpatched him, as well as ſeveral others who followed him. Upon this the reſt retired, and contented themſelves with throwing darts and ſtones at him at a diſtance. Abreas was ſtruck into the head with an arrow, and died on the ſpot; and, ſhortly after, another pierced through the king's breaſtplate into his body. As long as he had ſpirits, he defended himſelf valiantly; but, through a vaſt effuſion of blood, loſing his ſenſes, he fell upon his ſhield. Peuceſtas then covered him with the ſacred ſhield of Pallas on one ſide, as did Leonatus with his own ſhield on the other, though they themſelves were dreadfully wounded. In the mean time, however, the ſoldiers on the outſide, eager to ſave their king, ſupplied their want of ladders by driving large iron pins into the walls. By the help of theſe many of them aſcended, and came to the aſſiſtance of Alexander and his companions. The Indians were now ſlaughtered without mercy; but Alexander continued for ſome time in a very dangerous way: however, he at laſt recovered his ſtrength, and ſhewed himſelf again to his army, which filled them with the greateſt joy.

64 Is with difficulty ſaved by his men.

The Malli, being now convinced that nothing but ſubmiſſion could ſave the remainder of them, ſent deputies to Alexander, offering him the dominion of their country; as did alſo the Oxydracæ: and the king having ſettled every thing in theſe countries agreeable to his mind, proceeded on his voyage down the river Indus. In this voyage he received the ſubmiſſion of ſome other Indian princes; and perceiving, that, at the point of iſland Pattala, the river divided itſelf into two vaſt branches, he ordered an haven and convenient docks to be made there for his ſhips; and when he had careened his fleet, he ſailed down the right-hand branch towards the ocean. In his paſſage he ſuſtained great difficulties by reaſon of his want of pilots, and at the mouth of the river very narrowly miſſed being caſt away: yet all this did not hinder him from purſuing his firſt deſign, though it does not appear that he had any other motive thereto than the vain deſire of boaſting that he had entered the ocean beyond the Indus: for, having conſecrated certain bulls to Neptune, and thrown them into the ſea, performed certain libations of golden cups, and thrown the cups alſo into the ſea, he came back again; having only ſurveyed two little iſlands, one at the mouth of the Indus, and one a little farther in the ocean.

65 He proceeds in his voyage down the Indus.

On the king's return to Pattala, he reſolved to ſail down the other branch of the Indus, that he might ſee whether it was more ſafe and commodious for his fleet than that which he had already tried; and for this he had very good reaſons. He had reſolved to ſend Nearchus with his fleet by ſea, through the Perſian gulf up the river Tygris, to meet him and his army in Meſopotamia; but as the poſſibility of this voyage depended on the ceaſing of the Eteſian winds, there was a neceſſity of laying up the fleet till the ſeaſon ſhould prove favourable. Alexander, therefore, ſailing through this branch of the Indus, ſought on the ſea-coaſt for bays and creeks, where his fleet might anchor in ſafety; he cauſed alſo pits to be ſunk, which might be filled with freſh water for the uſe of his people; and took all imaginable precautions for preſerving them in eaſe and ſafety till the ſeaſon would allow them to continue their voyage. In this he ſucceeded to his wiſh; for he found this branch of the river Indus, at its mouth, ſpread over the plain country and forming a kind of lake, wherein a fleet might ride with ſafety. He therefore appointed Leonatus, and a part of his army, to carry on ſuch works as were neceſſary; cauſing them to be relieved by freſh troops as often as there was occaſion: then having given his laſt inſtructions to Nearchus, he departed with the reſt of the army, in order to march back to Babylon.

66 Sets o Babylo

Before the king's departure, many of his friends adviſed him againſt the route which he intended to take. They told him, that nothing could be more raſh or dangerous than this reſolution. They acquainted him, that the country, thro' which he was to travel, was a wild uncultivated deſart; that Semiramis, when ſhe led her ſoldiers this way out of India, brought home but 20 of them; and that Cyrus, attempting to do the ſame, returned with only ſeven. But all this was ſo far from deterring Alexander, that it more than ever determined him to purſue no other road. As ſoon, therefore, as he had put things in order, he marched at the head of a ſufficient body of troops to reduce the Oritæ, who had never vouchſafed either to make their ſubmiſſion or to court his friendſhip. Their territories lay on the other ſide of a river called *Arabis*, which Alexander croſſed ſo ſpeedily, that they had no intelligence of his march; whereupon moſt of them quitted their country, and fled into the deſarts. Their capital he found ſo well ſituated, that he reſolved to take it out of their hands, and to cauſe a new and noble city to be founded there, the care of which he committed to Hephæſtion. Then he received the deputies of the Oritæ and Gedroſi; and having aſſured them, that if the people returned to their villages, they ſhould be kindly treated, and having appointed Apollophanes preſident of the Oritæ, and left a conſiderable body of troops under Leonatus to ſecure their obedience, he began his march thro' Gedroſia. In this march his troops ſuffered incredible hardſhips. The road was very uncertain and troubleſome, on account of its lying thro' deep and looſe ſands, riſing in many places into hillocks, which forced the ſoldiers to climb, at the ſame time that it ſunk under their feet; there were no towns, villages, nor places of refreſhment, to be met with; ſo that, after exceſſive marches, they were forced to encamp among theſe dry ſands. As to proviſions, they hardly met with any during their whole march. The ſoldiers were therefore obliged to kill their beaſts of carriage: and ſuch as were ſent to bring ſome corn from the ſea-ſide, were ſo grievouſly diſtreſſed, that, tho' it was ſealed with the king's ſignet, they cut open the bags; chooſing rather to die a violent death for diſobedience, than periſh by hunger. When the king, however, was informed of this, he freely pardoned the offenders; he was alſo forced to accept the excuſes that were daily made for the loſs of mules, horſes, &c. which were in truth eaten by the ſoldiers, and their carriages broken in pieces to avoid further trouble. As for water, their want of it was a great misfortune; and yet their finding it in plenty was ſometimes a greater: for, as by the firſt they periſhed with thirſt, ſo by the latter they were burſt,

6 His d ous m throu Gedro

thrown into dropſies, and rendered incapable of travel. Frequently they met with no water for the whole day together: ſometimes they were diſapppinted of it at night; in which caſe, if they were able, they marched on; ſo that it was common with them to travel 30, 40, 50, or even 60 miles without encamping. Numbers thro' theſe hardſhips were obliged to lag in the rear; and of theſe many were left behind, and periſhed; for indeed ſcarce any ever joined the army again. Their miſeries, however, they ſuſtained with incredible patience, being encouraged by the example of their king; who, on this occaſion, ſuffered greater hardſhips than the meaneſt ſoldier in his army. At laſt they arrived at the capital of Gedroſia, where they refreſhed themſelves, and ſtaid ſome time: after which, they marched into Caramania; which being a very plentiful country, they there made themſelves ample amends for the hardſhips and fatigues they had ſuſtained. Here they were joined firſt by Craterus with the troops under his command, and a number of elephants; then came Staſanor preſident of the Arians, and Phariſmanes the ſon of Phrataphernes governor of Parthia. They brought with them camels, horſes, and other beaſts of burden, in vaſt numbers; having foreſeen, that the king's march thro' Gedroſia would be attended with the loſs of the greateſt part, if not of all the cavalry and beaſts belonging to his army.

68 arrives Carama-

During Alexander's ſtay in Caramania, he redreſſed the injuries of his people, who had been grievouſly oppreſſed by their governors during his abſence. Here alſo he was joined by his admiral Nearchus, who brought him an account that all under his command were in perfect ſafety, and in excellent condition; with which the king was mightily pleaſed, and, after having beſtowed on him ſingular marks of his favour, ſent him back to the navy. Alexander next ſet out for Perſia, where great diſorders had been committed during his abſence. Theſe alſo he redreſſed, and cauſed the governor to be crucified; appointing in his room Peuceſtas, who ſaved his life when he fought ſingly againſt a whole garriſon as above related. The new governor was no ſooner inveſted with his dignity, than he laid aſide the Macedonian garb, and put on that of the Medes; being the only one of Alexander's captains, who, by complying with the manners of the people he governed, gained their affection.

69 reſſes grievan- of his ple.

While Alexander viſited the different parts of Perſia, he took a view, among the reſt, of the ruins of Perſepolis, where he is ſaid to have expreſſed great ſorrow for the deſtruction he had formerly occaſioned. From Perſepolis he marched to Suſa, where he gave an extraordinary looſe to pleaſure; reſolving to make himſelf and his followers ſome amends for the difficulties they had hitherto undergone; purpoſing at the ſame time ſo effectually to unite his new-conquered with his hereditary ſubjects, that the jealouſies and fears, which had hitherto tormented both, ſhould no longer ſubſiſt. With this view he married two wives of the blood-royal of Perſia; viz. Barſine, or Statira, the daughter of Darius, and Paryſatis the daughter of Ochus. Drypetis, another daughter of Darius, he gave to Hephæſtion; Amaſtrine, the daughter of Oxyartes the brother of Darius, married Craterus; and to the reſt of his friends, to the number of 80, he gave other women of the greateſt quality. All theſe marriages were celebrated at once, Alexander himſelf beſtowing fortunes upon them: he directed likewiſe to take account of the number of his officers and ſoldiers who had married Aſiatic wives; and tho' they appeared to be 10,000, yet he gratified each of them according to his rank. He next reſolved to pay the debts of his army, and thereupon iſſued an edict directing every man to regiſter his name and the ſum he owed; with which the ſoldiers complying ſlowly, from an apprehenſion that there was ſome deſign againſt them, Alexander ordered tables heaped with money to be ſet in all quarters of the camp, and cauſed every man's debts to be paid on his bare word, without even making any entry of his name; tho' the whole ſum came to 20,000 talents. On ſuch as had diſtinguiſhed themſelves in an extraordinary manner, he beſtowed crowns of gold. Peuceſtas had the firſt; Leonatus the ſecond; Nearchus the third; Oneſicritus the fourth; Hephæſtion the fifth; and the reſt of his guards had each of them one. After this he made other diſpoſitions for conciliating, as he ſuppoſed, the differences among all his ſubjects. He reviewed the 30,000 youths, whom at his departure for India he had ordered to be taught Greek, and the Macedonian diſcipline; expreſſing high ſatisfaction at the fine appearance they made, which rendered them worthy of the appellation he beſtowed on them, viz. that of *Epigoni*, i. e. ſucceſſors. He promoted alſo, without any diſtinction of nation, all thoſe who had ſerved him faithfully and valiantly in the Indian war. When all theſe regulations were made, he gave the command of his heavy-armed troops to Hephæſtion, and ordered him to march directly to the banks of the Tigris, while in the mean time a fleet was equipped for carrying the king and the troops he retained with him down to the ocean.

o es two

Macedon.

71 Pays the debts of his army.

Thus ended the exploits of Alexander; the greateſt conqueror that ever the world ſaw, at leaſt with reſpect to the rapidity of his conqueſts. In 12 years time he had brought under his ſubjection Egypt, Libya, Aſia Minor, Syria, Phœnicia, Paleſtine, Babylonia, Perſia, with part of India and Tartary. Still, however, he meditated greater things. He had now got a great taſte in maritime affairs; and is ſaid to have meditated a voyage to the coaſts of Arabia and Ethiopia, and thence round the whole continent of Africa to the Straits of Gibraltar. But of this there is no great certainty; though that he intended to ſubdue the Carthaginians and Italians, is more than probable. All theſe deſigns, however, were fruſtrated by his death, which happened at Babylon in 323 B. C. He is ſaid to have received ſeveral warnings of his approaching fate, and to have been adviſed to avoid that city; which advice he either deſpiſed or could not follow. He died of a fever after eight days illneſs, without naming any ſucceſſor; having only given his ring to Perdiccas, and left the kingdom, as he ſaid, *to the moſt worthy*.

72 He dies at Babylon.

With the death of Alexander fell alſo the glory of the Macedonians; who very ſoon relapſed into a ſituation as bad, or worſe than that in which they had been before the reign of Philip. This was occaſioned principally by his not having diſtinctly named a ſucceſſor; and having no child of his own come to the years of diſcretion, to whom the kingdom might ſeem naturally

73 Cauſes of the diſſolution of his empire.

naturally to belong. The ambition and jealouſy of his mother Olympias, his queen Roxana, and eſpecially of the great commanders of his army, not only prevented a ſucceſſor from being ever named, but occaſioned the death of every perſon, whether male or female, who was in the leaſt related to Alexander. To have a juſt notion of the origin of theſe diſturbances, it is neceſſary in the firſt place to underſtand the ſituation of the Macedonian affairs at the time of Alexander's death.

When Alexander ſet out for Aſia, he left Antipater, as we formerly obſerved, in Macedon, to prevent any diſturbances that might ariſe either there or in Greece. The Greeks, even during the lifetime of Alexander, bore the ſuperiority which he exerciſed over them with great impatience; and, though nothing could be more gentle than the government of Antipater, yet he was exceedingly hated, becauſe he obliged them to be quiet. One of the laſt actions of Alexander's life ſet all Greece in a flame. He had, by an edict, directed all the cities of Greece to recall their exiles; which edict, when it was publiſhed at the Olympic games, created much confuſion. Many of the cities were afraid, that, when the exiles returned, they would change the government; moſt of them doubted their own ſafety if the edict took place; and all of them held this peremptory decree to be a total abolition of their liberty. No ſooner therefore did the news of Alexander's death arrive, than they prepared for war.

74
Aridæus appointed king.

75
A party formed by Meleager, and another by Perdiccas.

In Aſia the ſtate of things was not much better; not indeed through any inclination of the conquered countries to revolt, but through the diſſenſions among the commanders.—In the general council which was called ſoon after the death of Alexander, after much confuſion and altercation, it was at laſt agreed, or rather commanded by the ſoldiers, that Aridæus the brother of Alexander, who had always accompanied the king, and had been wont to ſacrifice with him, ſhould aſſume the ſovereignty.—This Aridæus was a man of very ſlender parts and judgment, not naturally, but by the wicked practices of Olympias, who had given him poiſonous draughts in his infancy, leſt he ſhould ſtand in the way of her ſon Alexander, or any of his family; and for this, or ſome other reaſon, Perdiccas, Ptolemy, and moſt of the horſe-officers, reſented his promotion to ſuch a degree, that they quitted the aſſembly, and even the city. However, Meleager, at the head of the phalanx, vigorouſly ſupported their firſt reſolution, and threatened loudly to ſhed the blood of thoſe who affected to rule over their equals, and to aſſume a kingdom which no way belonged to them. Aridæus was accordingly arrayed in royal robes, had the arms of Alexander put upon him, and was ſaluted by the name of *Philip*, to render him more popular. Thus were two parties formed, at the head of whom were Meleager and Perdiccas; both of them pretending vaſt concern for the public good, yet, at bottom, deſiring nothing more than their own advantage. Perdiccas was a man of high birth, had had a ſupreme command in the army, was much in favour with Alexander, and one in whom the nobility had put great confidence. Meleager was become formidable by having the phalanx on his ſide, and having the nominal king entirely in his power: for Aridæus, or Philip, was obliged to comply with whatever he thought proper, and publicly declared, that whatever he did was by the advice of Meleager; ſo that he made his miniſter accountable for his own ſchemes, and no way endangered himſelf. The Macedonians alſo, beſides their regard for the deceaſed king, ſoon began to entertain a perſonal love for Philip, on account of his moderation.

76
Meleager murdered and the e pire divided.

It is remarkable, however, that notwithſtanding all the favours which Alexander had conferred upon his officers, and the fidelity with which they had ſerved him during his life, only two of them were attached to the intereſts of his family after his death. Theſe were Antipater, and Eumenes the Cardian, whom he had appointed his ſecretary. Antipater, as we have already ſeen, was embroiled with the Greeks, and could not aſſiſt the royal family who were in Aſia; and Eumenes had not as yet ſufficient intereſt to form a party in their favour. In a ſhort time, however, Perdiccas prevailed againſt Meleager, and got him murdered; by which means the ſupreme power for a time fell into his hands. His firſt ſtep, in conſequence of this power, was to diſtribute the provinces of the empire among the commanders in the following manner, in order to prevent competitors, and to ſatisfy the ambition of the principal commanders of the army. Aridæus, and the ſon of Roxana, born after the death of his father, were to enjoy the regal authority. Antipater had the government of the European provinces. Craterus had the title of *protector*. Perdiccas was general of the houſehold troops in the room of Hephæſtion. Ptolemy the ſon of Lagus had Egypt, Libya, and that part of Arabia which borders upon Egypt. Cleomenes, a man of infamous character, whom Alexander had made receiver-general in Egypt, was made Ptolemy's deputy. Leomedon had Syria; Philotas, Cilicia; Pithon, Media; Eumenes, Cappadocia, Paphlagonia, and all the country bordering on the Euxine Sea, as far as Trapezus; but theſe were not yet conquered, ſo that he was a governor without a province. Antigonus had Pamphylia, Lycia, and Phrygia Major; Caſſander, Caria; Menander, Lydia; Leonatus, Phrygia on the Helleſpont.

77
Alexander's bod neglected and his ſet aſide.

In the mean time, not only Alexander's will, but Alexander himſelf, was ſo much neglected, that his body was allowed to remain ſeven days before any notice was taken of it, or any orders given for its being embalmed. The only will he left was a ſhort memorandum of ſix things he would have done.—1. The building of a fleet of 1000 ſtout galleys, to be made uſe of againſt the Carthaginians and other nations, who ſhould oppoſe the reduction of the ſea-coaſts of Africa and Spain, with all the adjacent iſlands, as far as Sicily. 2. A large and regular highway was to be made along the coaſt of Africa, as far as Ceuta and Tangier. 3. Six temples of extraordinary magnificence were to be erected at the expence of 1500 talents each. 4. Caſtles, arſenals, havens, and yards, for building ſhips, to be ſettled in proper places throughout his empire. 5. Several new cities were to be built in Europe and Aſia; thoſe in Aſia to be inhabited by colonies from Europe, and thoſe in Europe to be filled with Aſiatics; that, by blending their people and their manners, that hereditary antipathy might be eradicated which had hitherto ſubſiſted between the inhabitants of the different continents. 6. Laſtly, he had projected the building of a pyramid, equal in bulk and beauty to the biggeſt in Egypt, in honour of his father Philip. All theſe deſigns, under pretence of their being expenſive, were referred to a council of Macedonians, to be held nobody knew when, or where.

The government, being now in the hands of Perdiccas and Roxana, grew quickly very cruel and diſtaſteful. Alexander was ſcarce dead when the queen ſent for Statira and Drypetis, the two daughters of Darius, one of whom had been married to Alexander, and the other to Hephæſtion; but as ſoon as they arrived at Babylon, cauſed them both to be murdered, that no ſon of Alexander by any other woman, or of Hephæſtion, might give any trouble to her or her ſon Alexander. Syſigambis, the mother of Darius, no ſooner heard that Alexander the Great was dead, than ſhe laid violent hands on herſelf, being apprehenſive of the calamities which were about to enſue.

78 daugh- of Da- put to h by ana.

War was firſt declared in Greece againſt Antipater in the year 321 B. C. Through the treachery of the Theſſalians, that general was defeated, with the army he had under his own command. Leonatus was therefore ſent from Aſia, with a very conſiderable army, to his aſſiſtance; but both were overthrown with great loſs by the confederates, and Leonatus himſelf was killed. In a ſhort time, however, Craterus arrived in Greece with a great army, the command of which he reſigned to Antipater. The army of the confederates amounted to 25,000 foot, and 3000 horſe; but Antipater commanded no fewer than 40,000 foot, 3000 archers, and 5000 horſe. In ſuch an unequal conteſt, therefore, the Greeks were defeated, and forced to ſue for peace; which they did not obtain but on condition of their receiving Macedonian garriſons into ſeveral of their cities. At Athens alſo the democratic government was abrogated; and ſuch a dreadful puniſhment did this ſeem to the Athenians, that 22,000 of them left their country, and retired into Macedon.

69 Greeks lt, but ſub- l.

While theſe things were doing in Greece, diſturbances began alſo to ariſe in Aſia and in Thrace. The Greek mercenaries, who were diſperſed through the inland provinces of Aſia, deſpairing of ever being allowed to return home by fair means, determined to attempt it by force. For this purpoſe, they aſſembled to the number of 20,000 foot, and 3000 horſe; but were all cut off to a man by the Macedonians. In Thrace, Lyſimachus was attacked by one Seuthes, a prince of that country who claimed the dominions of his anceſtors, and had raiſed an army of 20,000 foot and 8000 horſe. But though the Macedonian commander was forced to engage this army with no more than 4000 foot and 2000 horſe, yet he kept the field of battle, and could not be driven out of the country. Perdiccas, in the mean time, by pretending friendſhip to the royal family, had gained over Eumenes entirely to his intereſt; and at laſt put him in poſſeſſion of the province of Cappadocia by the defeat of Ariarathes king of that country, whom he afterwards cruelly cauſed to be crucified. His ambition, however, now began to lead him into difficulties. At the firſt diviſion of the provinces, Perdiccas, to ſtrengthen his own authority, had propoſed to marry Nicæa the daughter of Antipater; and ſo well was this propoſal reliſhed, that her brethren Jollas and Archias conducted her to him, in order to be preſent at the celebration of the nuptials. But Perdiccas now had other things in view. He had been ſolicited by Olympias to marry her daughter Cleopatra, the widow of Alexander king of Epirus, and who then reſided at Sardis in Lydia. Eumenes promoted this match to the utmoſt of his power, becauſe he thought it would be for the intereſt of the royal family; and his perſuaſions had ſuch an effect on Perdiccas, that he was ſent to Sardis to compliment Cleopatra, and to carry preſents to her in name of her new lover. In the abſence of Eumenes, however, Alcetas, the brother of Perdiccas, perſuaded him to marry Nicæa; but, in order to gratify his ambition, he reſolved to divorce her immediately after marriage, and marry Cleopatra. By this laſt marriage, he hoped to have a pretence for altering the government of Macedon; and, as a neceſſary meaſure preparative to theſe, he entered into contrivances for deſtroying Antigonus. Unfortunately for himſelf, however, he ruined all his ſchemes by his own jealouſy and precipitate cruelty. Cynane, the daughter of Philip by his ſecond wife, had brought her daughter named *Adda*, and who was afterwards named *Eurydice*, to court, in hopes that king Aridæus might marry her. Againſt Cynane, Perdiccas, on ſome political motives, conceived ſuch a grudge, that he cauſed her to be murdered. This raiſed a commotion in the army: which frightened Perdiccas to ſuch a degree, that he now promoted the match between Aridæus and Eurydice; to prevent which, he had murdered the mother of the young princeſs. But, in the mean time, Antigonus, knowing the deſigns of Perdiccas againſt himſelf, fled with his ſon Demetrius to Greece, there to take ſhelter under the protection of Antipater and Craterus, whom he informed of the ambition and cruelty of the regent.

80 urban- n Aſia Thrace.

81 ition cruel- Per- s.

82 A combination againſt him.

A civil war was now kindled. Antipater, Craterus, Neoptolemus, and Antigonus, were combined againſt Perdiccas; and it was the misfortune of the empire in general, that Eumenes, the moſt able general, as well as the moſt virtuous of all the commanders, was on the ſide of Perdiccas, becauſe he believed him to be in the intereſt of Alexander's family. Ptolemy, in the mean time, remained in quiet poſſeſſion of Egypt; but without the leaſt intention of owning any perſon for his ſuperior: however, he alſo acceded to the league formed againſt Perdiccas; and thus the only perſon in the whole empire who conſulted the intereſt of the royal family was Eumenes.

83 Alexander buried in Egypt.

It was now thought proper to bury the body of Alexander, which had been kept for two years, during all which time preparations had been making for it. Aridæus, to whoſe care it was committed, ſet out from Babylon for Damaſcus, in order to carry the king's body to Egypt. This was ſore againſt the will of Perdiccas; for it ſeems there was a ſuperſtitious report, that wherever the body of Alexander was laid, that country ſhould flouriſh moſt. Perdiccas, therefore, out of regard to his native ſoil, would have it conveyed to the royal ſepulchres in Macedon; but Aridæus, pleading the late king's expreſs direction, was determined to carry it into Egypt, from thence to be conveyed to the temple of Jupiter Ammon.—The funeral was accordingly conducted with all imaginable magnificence. Ptolemy came to meet the body as far as Syria: but, inſtead of burying it in the temple of Jupiter Ammon, erected a ſtately temple for it in the city of Alexandria; and, by the reſpect he ſhewed for his dead maſter, induced many of the Macedonian veterans to join him, and who were afterwards of the greateſt ſervice to him.

84 Perdiccas killed by his own men.

No ſooner was the funeral over, than both the parties above mentioted fell to blows. Perdiccas marched againſt Ptolemy; but was ſlain by his own men, who, after the death of their general, ſubmitted to his antagoniſt; and thus Eumenes was left alone to contend againſt all the other generals who had ſerved under Alexander. In this conteſt, however, he would by no means have been overmatched, had his ſoldiers been attached to him; but as they had been accuſtomed to ſerve under thoſe very generals againſt whom they were now to fight, they were on all occaſions ready to betray and deſert Eumenes. However, he defeated and killed Neoptolemus and Craterus, but then found himſelf obliged to contend with Antipater and Antigonus. Antipater was now appointed protector of the kings, with ſovereign power; and Eumenes was declared a public enemy. A new diviſion of Alexander's empire took place. Egypt, Libya, and the parts adjacent, were given to Ptolemy becauſe they could not be taken from him. Syria was confirmed to Leomedon. Philoxenus had Cilicia. Meſopotamia and Arbelitis were given to Amphimachus. Babylon was beſtowed on Seleucus. Suſiana fell to Antigenes, who commanded the Macedonian *Argyraſpidæ* or *Silver Shields*, becauſe he was the firſt who oppoſed Perdiccas. Peuceſtas held Perſia. Tlepolemus had Caramania. Pithon had Media as far as the Caſpian ſtraits. Staſander had Aria and Drangia. Philip, Parthia. Staſonor, Bactria and Sogdia. Sybirtius, Aracopa. Oxyartes, the father of Roxana, Parapomiſis. Another Pithon had the country between this province and India. Porus and Taxiles held what Alexander had given them, becauſe they would not part with any of their dominions. Cappadocia was aſſigned to Nicanor. Phrygia Major, Lycaonia, Pamphylia, and Lycia, were given to Antigonus. Caria to Caſſander, Lydia to Clytus, Phrygia the Leſs to Aridæus, Caſſander was appointed general of the horſe; while the command of the houſehold troops was given to Antigonus, with orders to proſecute the war againſt Eumenes.—Antipater having thus ſettled every thing as well as he could, returned to Macedon with the two kings, to the great joy of his countrymen, having left his ſon Caſſander to be a check upon Antigonus in Aſia.

85 A new diviſion of the empire.

Matters now ſeemed to wear a better aſpect than they had yet done; and, had Eumenes believed that his enemies really conſulted the intereſt of Alexander's family, there is not the leaſt doubt that the war would have been immediately terminated. He ſaw, however, that the deſign of Antigonus was only to ſet up for himſelf, and therefore he refuſed to ſubmit. From this time, therefore, the Macedonian empire ceaſed in Aſia; and an account of the tranſactions of this part of the world fall to be recorded under the article Syria. The Macedonian affairs are now entirely confined to the kingdom of Macedon itſelf, and to Greece.

Antipater had not long been returned to Macedon, when he died; and the laſt action of his life completed the ruin of Alexander's family. Out of a view to the public good, he had appointed Polyſperchon, the eldeſt of Alexander's captains at hand, to be *protector* and *governor* of Macedon. This failed not to diſguſt his ſon Caſſander; who thought he had a natural right to theſe offices, and of courſe kindled a new civil war in Macedon. This was indeed highly promoted by his firſt actions as a governor. He began with attempting to remove all the governors appointed in Greece by Antipater, and to reſtore democracy wherever it had been aboliſhed. The immediate conſequence of this was, that the people refuſed to obey their magiſtrates; the governors refuſed to reſign their places, and applied for aſſiſtance to Caſſander. Polyſperchon alſo had the imprudence to recall Olympias from Epirus, and allow her a ſhare in the adminiſtration; which Antipater, and even Alexander himſelf, had always refuſed her. The conſequence of all this was, that Caſſander invaded Greece, where he prevailed againſt Polyſperchon; Olympias returned to Macedon, where ſhe cruelly murdered Aridæus and his wife Eurydice; ſhe herſelf was put to death by Caſſander, who afterwards cauſed Roxana and her ſon to be murdered; and Polyſpherchon being driven into Etolia, firſt raiſed to the crown Hercules the ſon of Alexander by the daughter of Darius, and then by the inſtigation of Caſſander murdered him, by which means the line of Alexander the Great become totally extinct.

86 Total d ſtructio Alexander's family.

Caſſander having thus deſtroyed all the royal family, aſſumed the regal title, as he had for 16 years before had all the power. He enjoyed the title of *king of Macedon* only three years; after which he died, about 298 B.C. By Theſſalonica, the daughter of Philip king of Macedon, he left three ſons, Philip, Antipater, and Alexander. Philip ſucceeded him, but ſoon after died of a conſumption. A conteſt immediately began between the two brothers, Antipater and Alexander. Antipater ſeized the kingdom; and to ſecure himſelf in it, murdered his mother Theſſalonica, if not with his own hand, at leaſt the execrable fact was committed in his preſence. Alexander invited Pyrrhus king of Epirus, and Demetrius the ſon of Antigonus, to aſſiſt him and revenge the death of his mother. But Pyrrhus being bought off, and a peace concluded between the brothers, Alexander, being afraid of having too many protectors, formed a ſcheme of getting Demetrius aſſaſſinated. Inſtead of this, however, both he and Antipater were put to death; and Demetrius became king of Macedon four years after the death of Caſſander.

87 Various volution in the g vernmen

In 287 B.C. Demetrius was driven out by Pyrrhus, who was again driven out by Lyſimachus two years after, who was ſoon after killed by Seleucus Nicator; and Seleucns, in his turn, was murdered by Ptolemy Ceraunus, who became king of Macedon about 280 B.C. The new king was in a ſhort time cut off, with his whole army, by the Gauls; and Antigonus Gonatus, the ſon of Demetrius Poliorcetes, became king of Macedon in 278 B.C. He proved ſucceſsful againſt the Gauls, but was driven out by Pyrrhus king of Epirus; who, however, ſoon diſobliged his ſubjects to ſuch a degree, that Antigonus recovered a great part of his kingdom. But in a little time, Pyrrhus being killed at the ſiege of Argos in Greece, Antigonus was reſtored to the whole of Macedon; but ſcarcely was he ſeated on the throne, when he was driven from it by Alexander the ſon of Pyrrhus. This new invader was, in his turn, expelled by Demetrius the ſon of Antigonus; who, though at that time but a boy, had almoſt made himſelf maſter of Epirus. In this enterpriſe, however, he was diſappointed; but by his means Antigonus was reſtored to his kingdom, which he governed for many years in peace. By a ſtratagem he made himſelf maſter of the city of Corinth, and from that time began to form ſchemes for the thorough conqueſt of Greece. The method he took to accompliſh this was, to ſupport the petty tyrants of Greece againſt the free ſtates: which indeed weakened the power of the latter; but involved the whole country in ſo many calamities, that theſe tranſactions could not redound much to the reputation either of his arms or his honour. About 243 B. C. he died, leaving the kingdom to his ſon, Demetrius II.

Neither Demetrius, nor his ſucceſſor Antigonus Doſon, performed any thing remarkable. In 221 B. C. the kingdom fell to Philip, the laſt but one of the Macedonian monarchs. To him Hannibal applied for aſſiſtance after the battle of Cannæ, which he refuſed: and the ſame imprudence which made him refuſe this aſſiſtance prompted him to embroil himſelf with the Romans; and at laſt to conclude a treaty with them, by which he in effect became their ſubject, being tied up from making peace or war but according to their pleaſure. In 179 B. C. he was ſucceeded by his eldeſt ſon Perſes, under whom the war with the Romans was renewed. Even yet the Macedonians were terrible in war; and their phalanx, when properly conducted, ſeems to have been abſolutely invincible by any method of making war known at that time. It conſiſted of 16,000 men, of whom 1000 marched abreaſt, and thus was 16 men deep, each of whom carried a kind of pike 23 feet long. The ſoldiers ſtood ſo cloſe, that the pikes of the fifth rank reached their points beyond the front of the battle. The hindermoſt ranks leaned their pikes on the ſhoulders of thoſe who went before them, and, locking them faſt, preſſed briſkly againſt them when they made the charge; ſo that the firſt five ranks had the impetus of the whole phalanx, which was the reaſon why the ſhock was generally irreſiſtible. The Romans had never encountered ſuch a terrible enemy; and in the firſt battle, which happened 171 B. C. they were defeated with the loſs of 2200 men, while the Macedonians loſt no more than 60. The generals of Perſes now preſſed him to ſtorm the enemy's camp; but he being naturally of a cowardly diſpoſition refuſed to comply, and thus the beſt opportunity he ever had was loſt. Still, however, the Romans gained little or no advantage, till the year 168 B. C. when Paulus Æmilius, a moſt experienced commander, was ſent into Macedon. Perſes now put all upon the iſſue of a general engagement; and Æmilius, with all his courage and military experience, would have been defeated, had the Macedonians been commanded by a general of the ſmalleſt courage or conduct. The light-armed Macedonians charged with ſuch vigour, that, after the battle, ſome of their bodies were found within two furlongs of the Roman camp. When the phalanx came to charge, the points of their ſpears ſtriking into the Roman ſhields, kept the heavy-armed troops from making any motion; while, on the other hand, Perſes's light-armed men did terrible execution. On this occaſion, it is ſaid, that Æmilius tore his clothes, and gave up all hopes. However, perceiving that as the phalanx gained gronnd it loſt its order in ſeveral places, he cauſed his own light-armed troops to charge in thoſe places, whereby the Macedonians were ſoon put into confuſion. If Perſes with his horſe had on the firſt appearance of this charged the Romans briſkly, his infantry would have been able to recover themſelves; but, inſtead of this, he betook himſelf to flight, and the infantry at laſt did the ſame, but not till 20,000 of them had loſt their lives.

89 Macedonia becomes a Roman province.

This battle decided the fate of Macedonia, which immediately ſubmitted to the conqueror. The cowardly king took refuge in the iſland of Samothrace; but was at laſt obliged to ſurrender to the Roman conſul, by whom he was carried to Rome, led in triumph, and afterwards moſt barbarouſly uſed. Some pretenders to the throne appeared afterwards; but being unable to defend themſelves againſt the Romans, the country was reduced to a Roman province in 148 B. C. To them it continued ſubject till the year 1357, when it was reduced by the Turkiſh ſultan Bajazet, and hath remained in the hands of the Turks ever ſince.

MACEDONIANS, Chriſtian heretics, in the 4th century; followers of Macedonius, biſhop of Conſtantinople.

Macedonius was an Arian, and governed the church in a very tyrannical manner. He tranſlated the body of the emperor Conſtantine from the church of the Apoſtles to that of Acacius the martyr; which raiſed great tumults, and many were killed in the fray. He was depoſed by the council of Conſtantinople in 359.

Reſentment, it was thought, at being depoſed, occaſioned his forming a new hereſy, which conſiſted in denying the divinity of the Holy Ghoſt; for which reaſon his followers were likewiſe called *Pneumatomachi*, that is, *enemies of the Holy Ghoſt*. They taught that the Holy Ghoſt was a mere creature, but ſuperior in excellence to the angels.

The Macedonians make extraordinary profeſſions of auſterity; which induced great numbers to embrace their doctrine. Moſt of the malecontent biſhops ſubſcribed to it, and the Arians in general greedily ſwallowed it. Maratonus, biſhop of Nicomedia, a very rich man, contributed greatly by his wealth and authority to ſpread it far and wide; whence the Macedonians were ſometimes called *Maratonians*.

Athanaſius, who at that time lay concealed in the deſart, was the firſt who wrote againſt this hereſy, and confuted it; after which, the councils by their decrees, and the emperors by their edicts, proſecuted it with great vigour.

MACEDONIUS. See MACEDONIANS.

MACERATION, is an infuſion of, or ſoaking ingredients in water or any other fluid, in order either to ſoften them, or draw out their virtues.

MACERATA, a handſome and populous town of Italy, in the territory of the church, and in the Marche of Ancona, with a biſhop's ſee, and an univerſity.

verſity. It is ſeated near the mountain Chiento, in E. Long. 13. 37. N. Lat. 43. 15.

MACHIAN, one of the Molucca iſlands, in the Eaſt Indian Ocean, about 20 miles in circumference, and the moſt fertile of them all. It likewiſe produces the beſt cloves; and is in poſſeſſion of the Dutch, who have three ſtrong forts built on it.

MACHIAVEL (Nicholas), a famous political writer of the 16th century, was born of a diſtinguiſhed family at Florence. He wrote in his native language with great elegance and politeneſs, though he underſtood very little of the Latin tongue; but he was in the ſervice of Marcellus Virgilius, a learned man, who pointed out to him many of the beautiful paſſages in the ancients, which Machiavel had the art of placing properly in his works. He compoſed a comedy upon the ancient Greek model; in which he turned into ridicule many of the Florentine ladies, and which was ſo well received, that pope Leo X. cauſed it to be acted at Rome. Machiavel was ſecretary, and afterwards hiſtoriographer, to the republic of Florence. The houſe of Medicis procured him this laſt office, together with a handſome ſalary, in order to pacify his reſentment for his having ſuffered the torture upon ſuſpicion of his being an accomplice in the conſpiracy of the Soderini againſt that houſe, when Machiavel bore his ſufferings without making any confeſſion. The great encomiums he beſtowed upon Brutus and Caſſius, both in his converſations and writings, made him ſtrongly ſuſpected of being concerned in another conſpiracy againſt cardinal Julian de Medicis, who was afterwards pope under the name of *Clement VII.* However, they carried on no proceedings againſt him; but from that time he turned every thing into ridicule, and gave himſelf up to irreligion. He died in 1530, of a remedy which he had taken by way of prevention.—Of all his writings, that which has made the moſt noiſe, and has drawn upon him the moſt enemies, is a political treatiſe entitled the *Prince;* which has been tranſlated into ſeveral languages, and wrote againſt by many authors. The world is not agreed as to the motives of this work; ſome thinking, he meant to recommend tyrannical maxims; others, that he only delineated them to excite abhorrence. Machiavel alſo wrote Reflections on Titus Livy, which are extremely curious; The Hiſtory of Florence, from the year 1205 to 1494; and a quarto volume of poems and other pieces. Mr Harrington conſiders him as a ſuperior genius, and as the moſt excellent writer on politics and government that ever appeared.

MACHINE, MACHINA, in the general, ſignifies any thing that ſerves to augment, or to regulate moving powers: or it is any body deſtined to produce motion, ſo as to ſave either time or force. The word comes from the Greek μηχανη, "machine, invention, art:" And hence, in ſtrictneſs, a machine is ſomething that conſiſts more in art and invention, than in the ſtrength and ſolidity of the materials; and for this reaſon it is that the inventors of machines are called *ingenieurs* or *engineers*.

Machines are either ſimple or compound. The ſimple ones are the ſeven mechanical powers, viz. lever, ballance, pully, axis and wheel, wedge, ſcrew, and inclined plane.

From theſe the compound ones are formed by various combinations, and ſerve for different purpoſes. See MECHANICS and HYDROSTATICS; alſo the articles CENTRIFUGAL, FIRE, STEAM, FURNACE, BURROUGHS, RAMSDEN, &c.

MACHINERY, in epic and dramatic poetry, is when the poet introduces the uſe of machines; or brings ſome ſupernatural being upon the ſtage, in order to ſolve ſome difficulty, or to perform ſome exploit out of the reach of human power.

The ancient dramatic poets never made uſe of machines, unleſs where there was an abſolute neceſſity for ſo doing; whence the precept of Horace;

> *Nec Deus interſit, niſi dignus vindice nodus*
> *Inciderit.*

It is quite otherwiſe with epic poets, who introduce machines in every part of their poems; ſo that nothing is done without the intervention of the gods. In Milton's paradiſe loſt, by far the greater part of the actors are ſupernatural perſonages: Homer and Virgil do nothing without them; and, in Voltaire's Henriade, the poet has made excellent uſe of St Louis.

As to the manner in which theſe machines ſhould act, it is ſometimes inviſibly, by ſimple inſpirations and ſuggeſtions; ſometimes by actually appearing under ſome human form; and, laſtly, by means of dreams and oracles, which partake of the other two. However, all theſe ſhould be managed in ſuch a manner as to keep within the bounds of probability.

MACHINLETH, a town of Montgomeryſhire in North Wales, ſeated on the river Doway; over which is a large ſtone bridge that leads into Merioneth-ſhire. W. Long. 3. 55. N. Lat. 52. 34.

MACKENZIE, (Sir George), an able lawyer, a polite ſcholar, and a celebrated wit, was born at Dundee in the county of Angus in Scotland in 1636, and ſtudied at the univerſities of Aberdeen and St Andrews; after which he applied himſelf to the civil law, travelled into France, and proſecuted his ſtudy in that faculty for about three years. At his return to his native country, he became an advocate in the city of Edinburgh; and ſoon gained the character of an eminent pleader. He did not, however, ſuffer his abilities to be confined entirely to that province. He had a good taſte for polite literature; and he gave the public, from time to time, inconteſtable proofs of an uncommon proficiency therein. He had practiſed but a few years, when he was promoted to the office of a judge in the criminal court; and, in 1674, was made king's advocate, and one of the lords of the privy council in Scotland. He was alſo knighted by his majeſty. In theſe ſtations he met with a great deal of trouble, on account of the rebellions which happened in his time; and his office of avocate requiring him to act with ſeverity, he did not eſcape being cenſured, as if in the deaths of ſome particular perſons who were executed he had ſtretched the laws too far. But there does not ſeem to have been any juſt foundation for this clamour againſt him; and it is generally agreed, that he acquitted himſelf like an able and upright magiſtrate. Upon the abrogation of the penal laws by king James II. our advocate, tho' he had always been remarkable for his loyalty, and even cenſured for his zeal againſt traitors and fanatics, thought himſelf obliged to reſign his poſt; being convinced, that he could not diſcharge the duties of it in that point with a good conſcience. But he was ſoon after reſtored, and held his offices till the revolution; an event which, it ſeems, he could not bring himſelf to approve. He had hoped that the prince of Orange would have returned to his own country when matters were adjuſted between the king and his ſubjects; and upon its proving otherwiſe, he quitted all his employments in Scotland, and retired into England, reſolving to ſpend the remainder of his days in the univerſity of Oxford. He arrived there in September 1689, and proſecuted his ſtudies in the Bodleian library, being admitted a ſtudent there, by a grace paſſed in the congregation, June 2. 1690. In the ſpring following, he went to London; where he fell into a diſorder, of which he died in May 1691. His corpſe was conveyed by land to Scotland, and interred there with great pomp and ſolemnity.

" The politeneſs of his learning, and the ſprightlineſs of his wit, were (ſays the reverend Mr Granger) conſpicuous in all his pleadings, and ſhone in his ordinary converſation. Mr Dryden acknowledges, that he was unacquainted with what he calls the *beautiful turn of words and thoughts in poetry*, till they were explained and exemplified to him in a converſation with that noble wit of Scotland Sir George Mackenzie.—He wrote ſeveral pieces of hiſtory and antiquities; Inſtitutions of the laws of Scotland; Eſſays upon various ſubjects, &c. His works were printed together at Edinburgh in 1716, in vols folio.

MACKEREL, in ichthyology. See SCOMBER.

MACKEY (John), an Engliſhman, employed by the government as a ſpy upon James II. after the revolution, was author of Memoirs of James's court at St Germaine, and of the court of England in the reigns of William III. and queen Anne; in which are many curious anecdotes not to be met with in any other work. He died in 1726.

MACLAURIN (Colin), a moſt eminent mathematician and philoſopher, the ſon of a clergyman, and born at Kilmoddan in Scotland in 1698. He was ſent to the univerſity of Glaſgow in 1709, and took the degree of maſter of arts in his 15th year; on which occaſion he compoſed and defended a theſis on the power of gravity with great applauſe. In 1717, he obtained the profeſſorſhip of mathematics in the Mariſhal college of Aberdeen againſt a very able competitor; and, going afterwards to London, contracted an acquaintance with Sir Iſaac Newton, Dr Hoadley, Dr Clarke, Martin Folkes, eſq. with other eminent men; and was admitted a member of the Royal Society. In 1722 he travelled as tutor to the eldeſt ſon of lord Polwarth; and at Lorrain wrote his piece On the percuſſion of bodies, which gained the prize of the Royal Academy of Sciences in 1724; but, on the death of his pupil at Montpelier, he returned immediately to Aberdeen. He was hardly ſettled there, when he was choſen to ſupply the place of Mr James Gregory, as profeſſor at Edinburgh, where his mathematical ſcholars ſoon became very numerous. In 1745, having been very active in fortifying the city of Edinburgh againſt the rebel army, he was obliged to fly into the north of England; in which expedition he laid the foundation of an illneſs that put an end to his life in 1746. He publiſhed A complete ſyſtem of fluxions, 2 vols 4to; ſeveral curious papers in the Philoſophical Tranſactions, and in the Edinburgh Medical Eſſays; and after his death appeared his Algebra, and Account of Sir Iſaac Newton's philoſophical diſcoveries. His peculiar merit as a philoſopher was, that all his ſtudies were directed to general utility, and promoting mechanical arts.

MACRIN (Salmon), one of the beſt Latin poets of the 16th century, was born at Loudun. His true name was *John Salmon*; but he took that of *Macrin*, from his being frequently ſo called in ridicule by Francis I. on account of his extraordinary leanneſs. He was preceptor to Claudius of Savoy, count of Tende; and to Honorius the count's brother; and wrote ſeveral pieces of poetry in lyric verſe, which were ſo admired, that he was called *the Horace of his time*. He died of old age, at Loudun, in 1555.—Charles Macrin, his ſon, was not inferior to him as a poet, and ſurpaſſed him in his knowledge of the Greek tongue. He was preceptor to Catharine of Navarre, the ſiſter of Henry the Great; and periſhed in the maſſacre on St Bartholomew's day in 1572.

MACROBIUS (Aurelius), lived about the end of the fourth century. He was one of Theodoſius's chamberlains, or one of his wardrobe. His *Saturnalia* is a pleaſant mixure of criticiſm and antiquity. He alſo compoſed ſome commentaries upon that part of Cicero called *Scipio's dream*.

MACROCERCI, a name given to that claſs of animalcules which have tails longer than their bodies.

MACROCOSM, a word denoting the great world or univerſe. It is compounded of the Greek words μακρος, " great," and κοσμος, " world."

MACROPYRENIUM, in natural hiſtory, a genus of foſſils conſiſting of cruſtated ſeptariæ, with a long nucleus ſtanding out at each end of the maſs.

MACROTELOSTYLA, in natural hiſtory, the name of a genus of cryſtals, which are compoſed of two pyramids joined to the end of a column; both the pyramids, as alſo the column, being hexangular, and the whole body conſequently compoſed of 18 planes.

MACULÆ, in aſtronomy, dark ſpots appearing on the luminous ſurfaces of the ſun and moon, and even ſome of the planets. See ASTRONOMY, Sect. II. and III.

MAD-APPLE. See SOLANUM.

MADAGASCAR, or ST LAURENCE, the largeſt of the African iſlands, ſituated between 43° and 51° of E. Long. and between 12° and 26° of S. Lat. It extends near 1000 miles from north-north-eaſt to ſouth-ſouth-weſt, and about 300 in breadth where broadeſt. The whole coaſt is divided by rivers; and there are many bays and gulphs, with good roads and harbours. It abounds in corn, cattle, fowls, and all manner of animals and vegetables found on the continent of Africa; and affords an agreeable variety of hills, valleys, woods, and champaign. Great quantities of iron and ſteel are found throughout this iſland, which their artificers forge and purify with leſs difficulty and labour than Europeans. Their method is this: They reduce the ore, as brought from the mines, into powder, place it upon burning coals between four ſtones, which are clayed round for the purpoſe; and, by continual blowing underneath, with bellows made in the ſhape of gun-barrels or water-pumps, the ore runs in leſs than an hour; whence the metal being afterwards

wards extracted, by great heat, is formed into bars of three or four pounds weight. It is confidently affirmed, that the iſland has alſo mines of gold and ſilver, and of a white metal much like Britiſh tin. The rivers and brooks are rich in various kinds of precious ſtones, in cryſtals, topazes, amethyſts, eagle-ſtones, emeralds, ſapphires, hyacinths, jaſpers, blood-ſtones, &c.

The inhabitants are of different complexions and religions; ſome white, ſome negroes; ſome Mohammedans, ſome Pagans. The whites, and thoſe of a tawny complexion, who inhabit the coaſts, are deſcended from the Arabs, as is evident from their language and their religious rites: but here are no moſques, temples, nor any ſtated worſhip, except that they offer ſacrifices of beaſts on particular occaſions; as when ſick, when they plant yams or rice, when they hold their aſſemblies, circumciſe their children, declare war, enter into new-built houſes, and bury their dead. The country is divided into a great many petty princes, who are continually at war with one onother, as upon the continent; ſelling their priſoners or ſlaves to the ſhipping which touch there; and taking cloathing, utenſils, and other neceſſaries, in return. The French had once ſome ſettlements upon the iſland; but, at preſent, neither they nor any other European nation have any.

MADDER. See Rubia.

Madder is a plant, the uſes of which were well known to the ancients, both in reſpect to manufactures and phyſic. The Greek authors call this plant *erythrodanum*, from *erythros*, "red;" the Latins, on the ſame principle *rubia*; and it is ſtyled *rubia tinctorum*, from the uſe made of it in dyeing. Dioſcorides and Galen do not inſiſt upon its tinging quality. But the former deſcribes, and both ſo explain, its medicinal virtues, as to leave no doubt as to the plant. Pliny, who commonly agrees with Dioſcorides, mentions both its uſes, but in different books of his hiſtory. In reſpect to its medical qualities, they are followed by later authors; but the nature of the colour extracted from its roots was left to ſuch as wrote the hiſtory of the arts. With their roots they dyed wool and leather; and from theſe and other parts of the plant they formed a variety of medicines, to which great virtues were attributed by their ableſt phyſicians. They had it likewiſe both wild and cultivated, the beſt ſort of the latter growing, in the time of Pliny, in the neighbourhood of Rome.

As madder is a very valuable commodity, ſo the raiſing and curing it in perfection is a work of much time, trouble, and expence, for all which it pays abundantly at laſt. The ſoil beſt ſuited to this plant is a ſoft ſandy loam, which muſt be properly prepared by repeated and deep ploughings, ſo as to render it perfectly even and fine. The young ſhoots for the cultivated madder is not propagated by ſeed, but muſt be planted in the courſe of the month of April upon ridges at three feet diſtance, and the plants themſelves at a foot and an half diſtance from each other. They remain three ſummers in the ground; and during that ſpace are to be carefully hoed, kept clean from weeds, and properly earthed up. They are drawn about the month of September, and muſt be then conveyed immediately to the drying-houſe, built like thoſe uſed by the tanners for their ſkins, except that hurdles are uſed in them inſtead of floors, that the air may have free acceſs to the roots every way. After remaining there four or five days, and the earth perfectly cleared from them, they are carried to the cold ſtove, where they are farther, but very ſlowly, dried by the help of flues placed in the ſides of the building. This being done, the madder is carried next to the floor, where it is threſhed from its bark or outward rind; which, however, is ſwept together, barrelled up, and is what the Dutch call *mull*, which ſometimes ſells for eight pounds a ton, and thereby commonly defrays the expence of drying. The roots thus cleared are then conveyed to the warm ſtove, where the drying is gradually completed. From thence they are ſent to the mill, and there ground, ſorted, and packed up in caſks fit for ſale. In theſe ſeveral operations, which muſt all be performed with much care and exactneſs, the commodity loſes ſo much of its weight, that 700 or 800 of the green will ſeldom make more than 100 of the dry madder. The time, trouble, and expence attending the cultivation of madder in this method have induced ſome, particularly the French, to endeavour to find out ſome expedients to ſhorten the proceſs, and by ridding themſelves of ſtoves and mills to leſſen the charge. It is certainly right to examine and to conſider their attempts. But, on the other hand, there is, with all its prolixity and labour, ſomething very worthy of attention in this mode of the Dutch. The dyers uſe madder in different ways and for different purpoſes, which are all ſuited by the ſeveral diviſions of the madder, by which all is ſold, each fetches its juſt price, and the dyers find ſome or other of theſe ſorts adapted to every intention, which is a great and apparent conveniency.

The Dutch are at preſent poſſeſſed of an almoſt abſolute monopoly of this valuable commodity, the cultivation of which they were taught by the Flemings; who, perſecuted for their religion, long ſince took ſhelter amongſt them. In times paſt we imported madder by the way of Hamburgh from Sileſia, and alſo from Flanders; whereas we now have it only from Holland. This that people have brought about by their unwearied induſtry, their careful management, and indefatigable attention. It is in a particular manner the great ſtaple of Zealand; where, in the ſmall iſle of Schowen, they raiſe annually 1000 tons; for the curing of which there are about 20 ſtoves, each provided with a proper number of able workmen, by whom every thing is accurately and excellently performed at a ſettled and very moderate price, and under the moſt prudent and equitable regulations. When the work is finiſhed, the madder, according to its fineneſs, is divided into ſeveral ſorts; and, after being inſpected by perſons deputed by the magiſtrates, each ſort is put up in caſks with marks declaring its nature, and the arms of the town of Zirikzee painted on them, which authenticate their contents wherever they are exported. The aſſayers are ſworn duly to reſpect the ordinances of Zealand, of which there are ſeveral, very explicit and well conſidered. The caſks, beſides the arms of the town, have the name of the ſtove, where made, and the quality of the madder, painted on them; and thus the credit and the reputation of the different parties are ſtaked, which excites a conſtant attention and emulation amongſt them. This plant is alſo cultivated not only in the other iſlands which compoſe that province, but likewiſe in different parts of the dominions of the United Provinces, from whence it is ſent in immenſe quantities over all Europe.

In proportion as induſtry, arts, and commerce, came to prevail, and to be underſtood here, it was very clearly diſcerned that our dependance upon another nation, for an article ſo neceſſary to the progreſs of ſeveral manufactures, was pregnant with many inconveniences, beſides the conſtant drain of money, not only for the benefit, but even at the will of ſtrangers, who ſet what prices they pleaſed on what could not be wanted. In the reign of Charles I. a patent was granted to Mr Shipman the king's gardener for planting and curing of madder; which he did, and brought it to very great perfection, till, ruined by the confuſion of the times, he was conſtrained to part with his ſtock, and give over the trade. We have this fact from Mr Blyth, who having been an officer in the parliament army became afterwards a great promoter of agriculture and all ſorts of improvements, and is conſequently a competent and unſuſpected witneſs. He ſays, that Mr Shipman planted madder, and ſet up his works at Barn Elms, and that his commodity was highly commended by its only proper judges the dyers. It is evident therefore, that at this time we were poſſeſſed of this valuable article, which might have been ſoon had in plenty as well as in perfection. If this opportunity had been taken, and the cultivation of madder (as it might have been) univerſally introduced, it would be no difficult matter to demonſtrate, that this nation might have been the richer for it by ſome millions.

It was again attempted by Sir Nicholas Criſpe, a man of extraordinary abilities, and of great public ſpirit, as alſo by perſons well ſkilled therein at Wiſbech, who, notwithſtanding many obſtacles that were thrown in their way, would certainly have ſucceeded, had not the Dutch reduced, and for a time kept the price ſo low, that for want of ſupport they were conſtrained to give up the making of madder. This had ſo bad an effect, that notwithſtanding the growing of this plant for phyſical uſes and for curioſity in many private gardens, no thoughts were entertained of cultivating it to a large extent, and for the purpoſes of dyeing, till within theſe few years. It then appeared ſo reaſonable in itſelf, and of ſuch public utility, that an act of parliament was obtained to facilitate the deſign, which act hath been ſince continued, and many other marks have been given of public approbation. Stat. 31 G. II. in the preamble, the great advantages that would attend the cultivation of madder are ſuccinctly ſtated; and for promoting ſo important a deſign, the tythe of every acre on which it is planted is fixed at five ſhillings from Auguſt 2. 1758 for 14 years. Stat. 5. Geo. III. c. 18. after reciting, that the price of the commodity hath been raiſed, continues the tythe at five ſhillings an acre for 14 years farther from the expiration of the former act. The ſociety alſo for the encouraging arts, manufactures, and commerce, have promiſed very conſiderable and well conſidered premiums for the encouraging this very expenſive improvement, as alſo (which may be of no ſmall importance) for the cultivation of our own wild madder. It may be conſidered therefore at preſent as in a ſtate of progreſſion; and there is very little room to doubt, that, as experience in the management of it increaſes, this important enterprize will move faſter, till it reaches the point of perfection.

It certainly imports us, both in honour and in intereſt, to proſecute this improvement, now it is begun, with vigour. We have all the advantages we can reaſonably wiſh to prompt our endeavours, as we have a great variety of ſoils as fit for the cultivation of this plant as any in Zealand or Flanders, and are in no danger of being confined in point of room.

The root of madder impregnates water with a dull red colour, and ſpirit of wine with a deep bright red. This root, when eat by animals along with their food, tinges their urine, and their moſt ſolid bones, of a deep red. Wool previouſly boiled in a ſolution of alum and tartar, receives from a hot decoction of madder and tartar a very durable but not a very beautiful red colour. Mr Margraaf (Berlin Mem. 1771), ſhews how a very durable lake of a fine red colour, fit for the purpoſes of painting, may be obtained from madder. This proceſs is as follows: Take two ounces of the pureſt Roman alum, and diſſolve it in three French quarts of diſtilled water that has boiled, and in a clean glazed pot. Set the pot on the fire; and when the water begins to boil, withdraw it, and add two ounces of the beſt Dutch madder. Boil the mixture once or twice; then remove it from the fire, and filter it through a double filtre of paper not coloured. Let the liquor thus filtrated ſtand a night to ſettle, and pour off the clear liquor into the glazed pot previouſly well cleaned. Make the liquor hot, and add to it gradually a clear ſolution of ſalt of tartar in water, till all the madder is precipitated. Filtrate the mixture; and upon the red precipitate which remains upon the filter pour boiling diſtilled water, till the water no longer acquires a ſaline taſte. The red lake is then to be gently dried. No other water, neither rain nor river water, produces ſo good a colour as that which has been diſtilled, and the quantity required of this is conſiderable. The colour of the above precipitate is deep; but if two parts of madder be uſed to one part of alum, the colour will be ſtill deeper: one part of madder and four parts of alum produces a beautiful roſe colour.

MADEIRAS, a cluſter of iſlands ſituated in the Atlantic ocean in W. Long. 16°, and between 32° and 33° N. Lat.—The largeſt of them, called *Madeira*, from which the reſt take their name, is about 55 Engliſh miles long, and 10 miles broad; and was firſt diſcovered on the 2d of July, in the year 1419, by Joao Gonzales Zarco, there being no hiſtorical foundation for the fabulous report of its diſcovery by one Machin an Engliſhman. It is divided into two capitanias, named *Funchal* and *Maxico*, from the towns of thoſe names. The former contains two judicatures, viz. Funchal and Calhetta; the latter being a town with the title of a county, belonging to the family of Caſtello Melhor. The ſecond capitania likewiſe comprehends two judicatures, viz. Maxico (read Maſhico) and San Vicente.

Funchal is the only cidade or city in this iſland, which has alſo ſeven villas or towns; of which there are

Madeiras. are four, Calhetta, Camara de Lobos, Ribeira braba, and Ponta de Sol in the capitania of Funchal, which is divided into 26 pariſhes. The other three are in the capitania of Maxico, which conſiſt of 17 pariſhes; theſe towns are called *Maxico*, *San Vicente*, and *Santa Cruz*.

The governor is at the head of all the civil and military departments of this iſland, of Porto-Santo, the Salvages, and the Ilhas Deſartas; which laſt only contain the temporary huts of ſome fiſhermen, who reſort thither in purſuit of their buſineſs.

The law-department is under the corregidor, who is appointed by the king of Portugal, commonly ſent from Liſbon, and holds his place during the king's pleaſure. All cauſes come to him from inferior courts by appeal. Each judicature has a ſenate; and a *Juiz* or judge, whom they chooſe, preſides over them. At Funchal he is called *Juiz da Fora;* and in the abſence, or after the death of the corregidor, acts as his deputy. The foreign merchants elect their own judges, called the *Providor*, who is at the ſame time collector of the king's cuſtoms and revenues, which amount in all to about 12,000 l. Sterling. Far the greateſt part of this ſum is applied towards the ſalaries of civil and military officers, the pay of troops, and the maintenance of public buildings. This revenue ariſes, firſt from the tenth of all the produce of this iſland belonging to the king, by virtue of his office as grand maſter of the order of Chriſt; ſecondly, from ten per cent. duties laid on all imports, proviſions excepted; and laſtly, from the eleven per cent. charged on all exports.

The iſland has but one company of regular ſoldiers of 100 men: the reſt of the military force is a militia conſiſting of 3000 men, divided into companies, each commanded by a captain, who has one lieutenant under him, and one enſign. There is no pay given to either the private men, or the officers of this militia; and yet their places are much ſought after, on account of the rank which they communicate. Theſe troops are embodied once a-year, and exerciſed once a-month. All the military are commanded by the *Serjeante Mór*. The governor has two *Capitanos de Sal* about him, who do duty as aides-de-camp.

The ſecular prieſts on the iſland are about 1200, many of whom are employed as private tutors. Since the expulſion of the Jeſuits, no regular public ſchool is to be found here; unleſs we except a ſeminary, where a prieſt, appointed for that purpoſe, inſtructs and educates ten ſtudents at the king's expence. Theſe wear a red cloak over the uſual black gowns worn by ordinary ſtudents. All thoſe who intend to go into orders, are obliged to qualify themſelves by ſtudying in the univerſity of Coimbra, lately re-eſtabliſhed in Portugal. There is alſo a dean and chapter at Madeira, with a biſhop at their head, whoſe income is conſiderably greater than the governor's; it conſiſts of 110 pipes of wine, and of 40 muys of wheat, each containing 24 buſhels; which amounts in common years to 3000 l. Sterling. Here are likewiſe 60 or 70 Franciſcan friars, in four monaſteries, one of which is at Funchal. About 300 nuns live on the iſland, in four convents, of the order of Merci, Sta. Clara, Incarnacao, and Bom Jeſus. Thoſe of the laſt mentioned inſtitution may marry whenever they chooſe, and leave their monaſtery.

In the year 1768, the inhabitants living in the 43 pariſhes of Madeira, amounted to 63,913, of whom there were 31,341 males, and 32,572 females. But in that year 5243 perſons died, and no more than 2198 children were born; ſo that the number of the dead exceeded that of the born by 3045. It is highly probable that ſome epidemical diſtemper carried off ſo diſproportionate a number in that year, as the iſland would ſhortly be entirely depopulated if the mortality were always equal to this. Another circumſtance concurs to ſtrengthen this ſuppoſition, namely, the excellence of the climate. The weather is in general mild and temperate: in ſummer, the heat is very moderate on the higher parts of the iſland, whither the better ſort of people retire for that ſeaſon; and in the winter the ſnow remains there for ſeveral days, whilſt it is never known to continue above a day or two in the lower parts.

The common people of this iſland are of a tawny colour, and well ſhaped; though they have large feet, owing perhaps to the efforts they are obliged to make in climbing the craggy paths of this mountainous country. Their faces are oblong, their eyes dark; their black hair naturally falls in ringlets, and begins to criſp in ſome individuals, which may perhaps be owing to intermarriages with negroes; in general, they are hard-featured, but not diſagreeable. Their women are too frequently ill-favoured, and want the florid complexion, which, when united to a pleaſing aſſemblage of regular features, gives our northern fair ones the ſuperiority over all their ſex. They are ſmall, have prominent cheek-bones, large feet, an ungraceful gait, and the colour of the darkeſt brunette. The juſt proportion of the body, the fine form of their hands, and their large, lively eyes, ſeem in ſome meaſure to compenſate for thoſe defects. The labouring men, in ſummer, wear linen trowſers, a coarſe ſhirt, a large hat, and boots; ſome have a ſhort jacket made of cloth, and a long cloak, which they ſometimes carry over their arm. The women wear a petticoat, and a ſhort corſelet or jacket, cloſely fitting their ſhapes, which is a ſimple, and often not an inelegant dreſs. They have alſo a ſhort, but wide cloak; and thoſe that are unmarried, tie their hair on the crown of their head, on which they wear no covering.

The country-people are exceeding ſober and frugal; their diet in general conſiſting of bread and onions, or other roots, and little animal-food. However, they avoid eating tripe, or any offals, becauſe it is proverbially ſaid of a very poor man, "he is reduced to eat tripe." Their common drink is water, or an infuſion on the remaining rind or ſkin of the grape (after it has paſſed through the wine-preſs), which when fermented acquires ſome tartneſs and acdity, but cannot be kept very long. The wine for which the iſland is ſo famous, and which their own hands prepare, ſeldom if ever regales them.

Their principal occupation is the planting and raiſing of vines; but as that branch of agriculture requires little attendance during the greateſt part of the year, they naturally incline to idleneſs. The warmth of the climate, which renders great proviſion againſt the inclemencies of weather unneceſſary, and the eaſe with deiras. with which the cravings of appetite are ſatisfied, muſt tend to indolence, wherever the regulations of the legiſlature do not counteract it, by endeavouring, with the proſpect of increaſing happineſs, to infuſe the ſpirit of induſtry. It ſeems the Portugueſe government does not purſue the proper methods againſt this dangerous lethargy of the ſtate. They have lately ordered the plantation of olive-trees here, on ſuch ſpots as are too dry and barren to bear vines; but they have not thought of giving temporary aſſiſtance to the labourers, and have offered no premium by which theſe might be induced to conquer their reluctance to innovations and averſion to labour.

The vineyards are held only on an annual tenure, and the farmer reaps but four-tenths of the produce, ſince four other tenths are paid in kind to the owner of the land, one-tenth to the king, and one to the clergy. Such ſmall profits, joined to the thought of toiling merely for the advantage of others, if improvements were attempted, entirely preclude the hopes of a future increaſe. Oppreſſed as they are, they have however preſerved a high degree of cheerfulneſs and contentment; their labours are commonly alleviated with ſongs, and in the evening they aſſemble from different cottages to dance to the drowſy muſic of a guittar.

The inhabitants of the towns are more ill-favoured than the country-people, and often pale and lean. The men wear French clothes, commonly black, which do not ſeem to fit them, and have been in faſhion in the polite world about half a century ago. Their ladies are delicate, and have agreeable features; but the characteriſtic jealouſy of the men ſtill locks them up, and deprives them of a happineſs which the country-women, amidſt all their diſtreſſes, enjoy. Many of the better people are a ſort of *petite nobleſſe*, which we would call *gentry*, whoſe genealogical pride makes them unſociable and ignorant, and cauſes a ridiculous affectation of gravity. The landed property is in the hands of a few ancient families, who live at Funchal, and in the various towns on the iſland.

Madeira conſiſts of one large mountain, whoſe branches riſe every-where from the ſea towards the centre of the iſle, converging to the ſummit, in the midſt of which is a depreſſion or excavation, called the *Val* by the inhabitants, always covered with a freſh and delicate herbage. The ſtones on the iſle ſeem to have been in the fire, are full of holes, and of a blackiſh colour; in ſhort, the greater part of them are lava. A few of them are of the kind which the Derbyſhire miners call *dunſtone*. The ſoil of the whole iſland is a tarras mixed with ſome particles of clay, lime, and ſand, and has much the ſame appearance as ſome earths on the iſle of Aſcenſion. From this circumſtance, and from the excavation of the ſummit of the mountain, it is probable, that in ſome remote period, a volcano has produced the lava and the ochreous particles, and that the Val was formerly its crater.

Many brooks and ſmall rivulets deſcend from the ſummits in deep chaſms or glens, which ſeparate the various parts of the iſle. The beds of the brooks are in ſome places covered with ſtones of all ſizes, carried down from the higher parts by the violence of winter-rains or floods of melted ſnow. The water is conducted by wears and channels in the vineyards, where each proprietor has the uſe of it for a certain time; Madeiras. ſome being allowed to keep a conſtant ſupply of it, ſome to uſe it thrice, others twice, and others only once a-week. As the heat of the climate renders this ſupply of water to the vineyards abſolutely neceſſary, it is not without great expence that a new vineyard can be planted; for the maintenance of which, the owners muſt purchaſe water at a high price, from thoſe who are conſtantly ſupplied, and are thus enabled to ſpare ſome of it.

Wherever a level piece of ground can be contrived in the higher hills, the natives make plantations of eddoes encloſed by a kind of dike to cauſe a ſtagnation, as that plant ſucceeds beſt in ſwampy ground. Its leaves ſerve as food for hogs, and the country-people uſe the roots for their own nouriſhment.

The ſweet potatoe is planted for the ſame purpoſe, and makes a principal article of diet; together with cheſnuts, which grow in extenſive woods, on the higher parts of the iſland, where the vine will not thrive. Wheat and barley are likewiſe ſown, eſpecially in ſpots where the vines are decaying through age, or where they are newly planted. But the crops do not produce above three months proviſions; and the inhabitants are therefore obliged to have recourſe to other food, beſides importing conſiderable quantities of corn from North America in exchange for wine. The want of manure, and the inactivity of the people, are in ſome meaſure the cauſes of this diſadvantage; but ſuppoſing huſbandry to be carried to its perfection here, they could not raiſe corn ſufficient for their conſumption. They make their threſhing-floors of a circular form, in a corner of a field, which is cleared and beaten ſolid for the purpoſe. The ſheaves are laid round about it; and a ſquare board, ſtuck full of ſharp flints below, is dragged over them by a pair of oxen, the driver getting on it to increaſe its weight. This machine cuts the ſtraw as if it had been chopped, and frees the grain from the huſk, from which it is afterwards ſeparated.

The great produce of Madeira is the wine, from which it has acquired fame and ſupport. Where the ſoil, expoſure, and ſupply of water, will admit of it, the vine is cultivated. One or more walks, about a yard or two wide, interſect each vineyard, and are included by ſtone-walls two feet high. Along theſe walks, which are arched over with laths about ſeven feet high, they erect wooden pillars at regular diſtances, to ſupport a lattice-work of bamboos, which ſlopes down from both ſides of the walk, till it is only a foot and a half or two feet high, in which elevation it extends over the whole vineyard. The vines are in this manner ſupported from the ground, and the people have room to root out the weeds which ſpring up between them. In the ſeaſon of the vintage they creep under this lattice-work, cut off the grapes, and lay them into baſkets: ſome bunches of theſe grapes weigh ſix pounds and upwards. This method of keeping the ground clean and moiſt, and ripening the grapes in the ſhade, contributes to give the Madeira wines that excellent flavour and body for which they are remarkable. The owners of vineyards are however obliged to allot a certain ſpot of ground for the growth of bamboos; for the lattice-work cannot be made without them; and it is ſaid ſome vineyards lie quite neglected for want of this uſeful reed.

The wines are not all of equal goodneſs, and conſequently of different prices. The beſt, made of a vine imported from Candia by order of the Infante of Portugal, Don Henry, is called *Madeira Malmſey*, a pipe of which cannot be bought on the ſpot for leſs than 40 or 42 l. Sterling. It is an exceeding rich ſweet wine, and is only made in a ſmall quantity. The next ſort is a dry wine, ſuch as is exported for the London market, at 30 or 31 l. Sterling the pipe. Inferior ſorts for the Eaſt India, Weſt India, and North American markets, ſell at 28, 25, and 20 l. Sterling. About 30,000 pipes, upon a mean, are made every year, each containing 110 gallons. About 13,000 pipes of the better ſorts are exported; and all the reſt is made into brandy for the Brazils, converted into vinegar, or conſumed at home.

The incloſures of the vineyards conſiſt of walls, and hedges of prickly pear, pomegranates, myrtles, brambles, and wild roſes. The gardens produce peaches, apricots, quinces, apples, pears, walnuts, cheſnuts, and many other European fruits; together with now and then ſome tropical plants, ſuch as bananas, goavas, and pine-apples.

All the common domeſtic animals of Europe are likewiſe found at Madeira; and their mutton and beef, though ſmall, is very well taſted. Their horſes are ſmall, but ſure-footed; and with great agility climb the difficult paths, which are the only means of communication in the country. They have no wheel-carriages of any kind; but in the town they uſe a ſort of drays or ſledges, formed of two pieces of plank joined by croſs pieces, which make an acute angle before; theſe are drawn by oxen, and are uſed to tranſport caſks of wine, and other heavy goods, to and from the warehouſes.

The animals of the feathered tribe, which live wild here, are more numerous that the wild quadrupeds; there being only the common grey rabbit here, as a repreſentative of the laſt-mentioned claſs. Tame birds, ſuch as turkies, geeſe, ducks, and hens, are very rare, which is perhaps owing to the ſcarcity of corn.

There are no ſnakes whatſoever in Madeira; but all the houſes, vineyards, and gardens, ſwarm with lizards. The friars of one of the convents complained to Mr Forſter, that theſe vermin deſtroyed the fruit in their garden; they had therefore placed a braſs-kettle in the ground to catch them, as they are conſtantly running about in queſt of food. In this manner they daily caught hundreds, which could not get out on account of the ſmooth ſides of the kettle, but were forced to periſh.

The ſhores of Madeira, and of the neighbouring Salvages and Deſertas, are not without fiſh; but as they are not in plenty enough for the rigid obſervance of Lent, pickled herrings are brought from Gottenburg in Engliſh bottoms, and ſalted cod from New York and other American ports, to ſupply the deficiency.

MADNESS, a moſt dreadful kind of delirium, without a fever. See (the *Index* ſubjoined to) MEDICINE.

MADOX (Dr Iſaac), an ingenious and worthy prelate, born of obſcure parents about the year 1696, who placed him apprentice to a paſtry-cook; but not reliſhing this employment, and having an inclination to learning, he was put to ſchool by ſome friends, and completed his ſtudies at Aberdeen. He entered into orders; and having the good fortune to be made chaplain to Dr Bradford biſhop of Chicheſter, he married his niece, a very ſenſible and worthy lady. From this time his preferment may be dated: he was made king's chaplain, clerk of the cloſet to queen Caroline, and about the year 1736 biſhop of St Aſaph; from whence, in 1743, he was tranſlated to Worceſter. He was an excellent preacher, and a great promoter of public charities; particularly the Worceſter infirmary, and the hoſpital for inoculating the ſmall-pox at London: his ſermon in favour of this latter inſtitution, preached in 1752, was much admired, and contributed greatly to extend the practice of inoculation. He publiſhed ſome other ſingle ſermons, and *A defence of the doctrine and diſcipline of the church of England*, in anſwer to Mr Neale's *Hiſtory of the Puritans*. Dr Madox died in 1759.

MADRASS. See *St* GEORGE.

MADRE DE POPA, a town and convent of South America, in Terra Firma, ſeated on the river Grande. It is almoſt as much reſorted to by pilgrims of America, as Loretto is in Europe; and the image of the Virgin Mary is ſaid to have done many miracles in favour of the ſea-faring people. W. Lon. 76. 0. N. Lat. 11. 0.

MADRID, a town of New Caſtile in Spain, and capital of the whole kingdom, though it never had the title of a *city*, is ſituated in W. Lon. 3. 5. N. Lat. 40. 26. It ſtands in the centre of a large plain, ſurrounded with mountains, and in the very heart of Spain, on the banks of the little river Manzanares, which is always very low and ſhallow, except when it is ſwelled by the melting of the ſnow on the mountains. The ſtreets here are wide, ſtraight, and handſome, and adorned with ſeveral fine fountains; the houſes fair and lofty, but built of brick, with lattice-windows, excepting thoſe of the rich, who have glaſs in their windows; only, during the ſummer-heats, they uſe gauze, or ſome ſuch thin ſtuff, inſtead of it, to let in the freſh air. There are two ſtately bridges here over the Manzanares, ſeveral beautiful ſquares, a great many magnificent churches, convents, palaces, and hoſpitals: among the laſt is one for all nations and diſtempers, with a large revenue. Around the placa-mayor, or grand ſquare, are piazzas, with houſes all uniform, and a continued line of balconies, for viewing the bull-fights and other public ſhews exhibited in it. The royal palace, which ſtands on the weſt ſide of the town, on an eminence, is ſpacious and magnificent, conſiſting of three courts, and commanding a fine proſpect. At the eaſt end of the town is the prado, or pardo; which is a delightful plain, planted with regular rows of poplar trees, and watered with a great many fountains; where the nobility and gentry take the air on horſeback, or in their coaches, and the common people on foot, or divert themſelves with a variety of ſports and exerciſes. The compaſs of the whole town is computed at about nine miles, and the number of its inhabitants at about 150,000. It is well ſupplied with proviſions of all kinds, at reaſonable rates; and the court, with the reſort and reſidence of the quality, and the high colleges and offices that are kept here, occaſion a briſk trade and circulation of money. There are three royal academies; one for the improvement of the Spaniſh language, another for hiſtory, and another for medicine. Nothing, in ſhort, is wanting to make this place extremely commodious and agreeable, but cleanlineſs; which, it ſeems, is not ſuch a favourite with the inhabitants as it deſerves. The environs are very pleaſant, and contain ſeveral royal ſeats; among which are El Buen Retiro, Caſa del Campo, Florida, Le Pardo, Sarſuela, and St Ildefonſo; but the moſt magnificent, not only in this country, but perhaps in the whole world, is the Eſcurial, which takes its name from a ſmall village, near which it ſtands, about 22 miles north-weſt from Madrid; and of which a deſcription is given under the article Escurial. Another royal palace, greatly admired, particularly for its delicious gardens and ſurpriſing water-works, is Aranjuez, which is ſituated on the Tagus, about 30 miles ſouth of Madrid.

MADRIGAL, a ſhort amorous poem, compoſed of a number of free and unequal verſes, neither confined to the regularity of a ſonnet, nor to the point of an epigram; but only conſiſting of ſome tender and delicate thought, expreſſed with a beautiful, noble, and elegant ſimplicity.

Menage derives the word from *mandra*, which, in Latin and Greek, ſignifies "a ſheep-fold;" imagining it to have been originally a kind of paſtoral, or ſhepherd's ſong; whence the Italians formed their *madrigale*, and we *madrigal*. Others rather chooſe to derive it from the word *madrugar*, which, in the Spaniſh language, ſignifies "to riſe in the morning;" the *madrigales* being formerly ſung early in the morning by thoſe who had a mind to ſerenade their miſtreſſes.

MADURA, a province of Aſia, in the peninſula on this ſide the Ganges; bounded on the eaſt by Tanjour and Marava, on the ſouth-eaſt by the ſea, on the weſt by the Balagate mountains, which ſeparate it from Malabar, and on the north by Viſapour and Carnate. The inhabitants are Gentoos, and of a thieviſh diſpoſition. The commodities are rice, elephants teeth, and cotton-cloth; of which laſt a great deal is made here, and very fine. The Dutch have a pearl-fiſhery, which brings them in a large ſum annually.

MÆANDER, (anc. geog.), a river riſing in Phrygia from a common ſource with the Marſyas near Celænæ, according to Maximus Tyrius an eye-witneſs: remarkable for its windings, (Ovid); whence the proper name *Mæander* is become an appellative. It runs from eaſt to weſt, till it diſcharges itſelf into the Ægean ſea, about a mile from Miletus. A narrow river, but very deep, (Calaber); running calm, and fertilizing the country, as it paſſes along, with its mud, (Pliny).

MÆCENAS (Caius Cilnius), the great friend and counſellor of Auguſtus Cæſar, was himſelf a very polite ſcholar, but is chiefly memorable for having been the patron and protector of men of letters. He was deſcended from a moſt ancient and illuſtrious origin, even from the kings of Hetruria, as Horace often tells us; but his immediate forefathers were only of the equeſtrian order. He is ſuppoſed to have been born at Rome, becauſe his family lived there; but in what year, antiquity does not tell us. It ſays as little about his education; but we know it muſt have been of the moſt liberal kind, and perfectly agreeable to the dignity and ſplendor of his birth, ſince he excelled in every thing that related to arms, politics, and letters. How Mæcenas ſpent his younger years is alſo unknown to us, any farther than by effects; there being no mention made of him, by any writer, before the death of Julius Cæſar, which happened in the year of Rome 709. Then Octavius Cæſar, who was afterwards called *Auguſtus*, went to Rome, to take poſſeſſion of his uncle's inheritance; and then Mæcenas became firſt publicly known, though he appears to have been Auguſtus's intimate friend, and, as it ſhould ſeem, guardian, from his childhood. From that time he accompanied him through all his fortunes, and was his counſellor and adviſer upon all occaſions; ſo that Pedo Albinovanus juſtly called him *Cæſaris dextram*, "Cæſar's right-hand."

In A. R. 710, the year that Cicero was killed and Ovid born, Mæcenas diſtinguiſhed himſelf by his courage and military ſkill at the battle of Modena, where the conſuls Hirtius and Panſa were ſlain in fighting againſt Antony; as he did afterwards at Philippi. After this laſt battle began the memorable friendſhip between Mæcenas and Horace. Horace, as Suetonius relates, was a tribune in the army of Brutus and Caſſius, and, upon the defeat of thoſe generals, made a priſoner of war. Mæcenas, finding him an accompliſhed man, became immediately his friend and protector; and afterwards recommended him to Auguſtus, who reſtored to him his eſtate, with no ſmall additions. In the mean time, though Mæcenas behaved himſelf well as a ſoldier in theſe and other battles, yet his principal province was that of a miniſter and counſellor. He was the adviſer, the manager, the negociator, in every thing that related to civil affairs. When the league was made at Brunduſium between Antony and Auguſtus, Mæcenas was ſent to act on the part of Auguſtus. This we learn from Horace, in his journey to Brunduſium:

Hoc venturus erat Mæcenas optimus, atque
Cocceius, miſſi magnis de rebus uterque
Legati, averſos ſoliti componere amicos. Sat. v. l. 1.

And afterwards, when this league was near breaking, through the ſuſpicions of each party, Mæcenas was ſent to Antony, to ratify it anew.

In the year 717, when Auguſtus and Agrippa went to Sicily to fight Sextus Pompeius by ſea, Mæcenas went with them; but ſoon after returned, to appeaſe ſome commotions which were riſing at Rome: for though he uſually attended Auguſtus in all his military expeditions, yet, whenever there was any thing to be done at Rome, either with the ſenate or people, he was always diſpatched thither for that purpoſe.

Upon the total defeat of Antony at Actium, Mæcenas returned to Rome, to take the government into his hands, till Auguſtus could ſettle ſome neceſſary affairs in Greece and Aſia. Agrippa ſoon followed Mæcenas; and, when Auguſtus arrived, he placed theſe two great men and faithful adherents, the one over his civil, the other over his military concerns. While Auguſtus

guſtus was extinguiſhing the remains of the civil war in Aſia and Egypt, young Lepidus, the ſon of the triumvir, was forming a ſcheme to aſſaſſinate him at his return to Rome. This conſpiracy was diſcovered at once, by the extraordinary vigilance of Mæcenas; who, as Velleius Paterculus ſays, “ obſerving the raſh “ councils of the headſtrong youth with the ſame “ tranquillity and calmneſs as if nothing at all had “ been doing, inſtantly put him to death, without “ the leaſt noiſe and tumult; and by that means “ extinguiſhed another civil war in its very beginning.”

The civil wars being now at an end, Auguſtus returned to Rome; and from this time Mæcenas indulged himſelf, at vacant hours, in literary amuſements, and the converſation of men of letters. In the year 734 Virgil died, and left Auguſtus and Mæcenas heirs to what he had. Mæcenas was exceſſively fond of this poet, who, of all the wits of the Auguſtan age, ſtood higheſt in his eſteem; and, if the Georgics and the Æneid be owing to the good taſte and encouragement of this patron, as there is ſome reaſon to think, poſterity cannot commemorate him with too much gratitude. Horace may be ranked next to Virgil in Mæcenas's good graces: we have already mentioned, how and at what time their friendſhip commenced. Propertius alſo acknowledges Mæcenas for his favourer and protector, lib. ii. eleg. 7. Nor muſt Varius be forgot, though we have nothing of his remaining; ſince we find him highly praiſed by both Virgil and Horace. He was a writer of tragedies; and Quintilian thinks he may be compared with any of the ancients. In a word, Mæcenas's houſe was a place of refuge and welcome to all the learned of his time; not only to Virgil, Horace, Propertius, and Varius, but to Fundarius, whom Horace extols as an admirable writer of comedies; to Fuſcus Ariſtius, a noble grammarian, and Horace's intimate friend; to Plotius Tucea, who aſſiſted Varius in correcting the Æneid after the death of Virgil; to Valgius, a poet and very learned man, who, as Pliny tells us, dedicated a book to Auguſtus *De uſu herbarum;* to Aſinius Pollio, an excellent tragic writer; and to ſeveral others, whom it would be tedious to mention. All theſe dedicated their works, or ſome part of them at leaſt, to Mæcenas, and celebrated his praiſes in them over and over: and we may obſerve farther, what Plutarch tells us, that even Auguſtus himſelf inſcribed his Commentaries to him and to Agrippa.

Mæcenas continued in Auguſtus's favour to the end of his life, but not uninterruptedly. Auguſtus had an intrigue with Mæcenas's wife; and, though the miniſter bore this liberty of his maſter's very patiently, yet there was a coldneſs on the part of Auguſtus, which, however, ſoon went off. Mæcenas died in the year 745, but at what age we cannot preciſely determine; though we know he muſt have been old. He muſt have been older than Auguſtus, becauſe he was a kind of tutor to him in his youth: and then find him often called *an old man* by Pædo Albinovanus, a cotemporary poet, whoſe elegy upon his dead patron is ſtill extant. He made Auguſtus his heir; and recommended his friend Horace to him, in thoſe memorable laſt words, “ *Horatii Flacci, ut mei, memor eſto*, &c.” Horace, however, did not probably ſurvive him long, as there is no elegy of his upon Mæcenas extant, nor any account of one having ever been written, which there certainly would have been, had Horace ſurvived him any time. Nay, father Sanadon, the French editor of Horace, will have it, that the poet died before his patron; and that theſe laſt words were found only in Mæcenas's will, which had not been altered.

Mæcenas is ſaid never to have enjoyed a good ſtate of health in any part of his life; and many ſingularities are related of his bodily conſtitution. Thus Pliny tells us, that he was always in a fever; and that, for three years before his death, he had not a moment's ſleep. Though he was certainly an extraordinary man, and poſſeſſed many admirable virtues and qualities, yet it is agreed on all hands, that he was very luxurious and effeminate. “ Mæcenas (ſays Velleius “ Paterculus,) was of the equeſtrian order, but ſprung “ from a moſt illuſtrious origin. He was a man, “ who, when buſineſs required, was able to undergo “ any fatigue and watching; who conſulted properly “ upon all occaſions, and knew as well how to execute what he had conſulted; yet a man, who, in “ ſeaſons of leiſure, was luxurious, ſoft, and effeminate, almoſt beyond a woman. He was no leſs “ dear to Cæſar than Agrippa, but diſtinguiſhed by “ him with fewer honours; for he always continued “ of the equeſtrian rank, in which he was born: not “ that he could not have been advanced upon the leaſt “ intimation, but he never ſolicited it.”

But let moraliſts and politicians determine of Mæcenas as they pleaſe, the men of letters are under high obligations to celebrate his praiſes, and revere his memory: for he countenanced, protected, and ſupported, as far as they wanted his ſupport, all the wits and learned men of his time; and that too, out of a pure and diſintereſted love of letters, when he had no little views of policy to ſerve by their means: whence it is no wonder, that all the protectors and patrons of learning, ever ſince, have uſually been called *Mæcenas's*.

MAELSTROM, a very dangerous whirlpool on the coaſt of Norway, in the 68th degree of latitude, in the province of Nordland, and the diſtrict of Lofoden, and near the iſland of Moſkoe, from whence it alſo takes the name of *Moſkoe-ſtrom*. Its violence and roarings exceed that of a cataract, being heard to a great diſtance, and without any intermiſſion, except a quarter every ſixth hour, that is, at the turn of high and low water, when its impetuoſity ſeems at a ſtand, which ſhort interval is the only time the fiſhermen can venture in: but this motion ſoon returns, and, however calm the ſea may be, gradually increaſes with ſuch a draught and vortex as abſorb whatever comes within their ſphere of action, and keep it under water for ſome hours, when the fragments, ſhivered by the rocks, appear again. This circumſtance, among others, makes ſtrongly againſt Kircher and others, who imagine that there is here an abyſs penetrating the globe, and iſſuing in ſome very remote parts, which Kircher is ſo particular as to aſſign, for he names the gulph of Bothnia. But after the moſt exact reſearches which the circumſtances will admit, this is but a conjecture without foundation; for this and three other vortices among the Ferroe iſlands, but ſmaller, have no other cauſe, than the colliſion of waves riſing and falling, at the flux and reflux, againſt a ridge of rocks and ſhelves, which confine the water ſo that it precipitates itſelf like a cataract; and thus the higher the flood riſes, the deeper muſt the fall be; and the natural reſult of this is a whirlpool or vortex, the prodigious ſuction whereof is ſufficiently known by leſſer experiments. But what has been thus abſorbed, remains no longer at the bottom than the ebb laſts; for the ſuction then ceaſes, and the flood removes all attraction, and permits whatever had been ſunk to make its appearance again. Of the ſituation of this amazing Moſkoeſtrom we have the following account from Mr Jonas Ramus, "The mountain of Helſeggen, in Lofoden, lies a league from the iſland Ver, and betwixt theſe two runs that large and dreadful ſtream called *Moſkoeſtrom*, from the iſland Moſkoe, which is in the middle of it, together with ſeveral circumjacent iſles, as Ambaaren, half a quarter of a league northward, Iſleſen, Hoeholm, Kieldholm, Suarven, and Buckholm. Moſkoe lies about half a quarter of a mile ſouth of the iſland of Ver, and betwixt them theſe ſmall iſlands, Otterholm, Flimen, Sandfleſen, Skarholm. Betwixt Lofoden and Moſkoe, the depth of the water is between 36 and 40 fathoms; but on the other ſide, towards Ver, the depth increaſes ſo as not to afford a convenient paſſage for a veſſel, without the riſk of ſplitting on the rocks, which happens even in the calmeſt weather: when it is flood, the ſtream runs up the country betwixt Lofoden and Moſkoe, with a boiſterous rapidity; but the roar of its impetuous ebb to the ſea, is ſcarce equalled by the loudeſt and moſt dreadful cataracts; the noiſe being heard ſeveral leagues off, and the vortices or pits are of ſuch an extent and depth, that if a ſhip comes within its attraction, it is inevitably abſorbed and carried down to the bottom, and there beat to pieces againſt the rocks; and when the water relaxes, the fragments thereof are thrown up again. But theſe intervals of tranquillity are only at the turn of the ebb and flood, in calm weather; and laſt but a quarter of an hour, its violence gradually returning. When the ſtream is moſt boiſterous, and its fury heightened by a ſtorm, it is dangerous to come within a Norway mile of it; boats, ſhips, and yachts having been carried away, by not guarding againſt it before they were within its reach. It likewiſe happens frequently, that whales come too near the ſtream, and are overpowered by its violence; and then it is impoſſible to deſcribe their howlings and bellowings in their fruitleſs ſtruggles to diſengage themſelves. A bear once attempting to ſwim from Lofoden to Moſkoe, with a deſign of preying upon the ſheep at paſture in the iſland, afforded the like ſpectacle to the people; the ſtream caught him, and bore him down, whilſt he roared terribly, ſo as to be heard on ſhore. Large ſtocks of firs and pine-trees, after being abſorbed by the current, riſe again, broken and torn to ſuch a degree, as if briſtles grew on them. This plainly ſhows the bottom to conſiſt of craggy rocks, among which they are whirled to and fro. This ſtream is regulated by the flux and reflux of the ſea; it being conſtantly high and low water every ſix hours. In the year 1645, early in the morning of Sexageſima Sunday, it raged with ſuch noiſe and impetuoſity, that on the iſland of Moſkoe, the very ſtones of the houſes fell to the ground."

MÆMACTERION, the fourth month of the Athenian year, conſiſting of only 29 days, and anſwering to the latter part of September and the beginning of October.

MÆNA, in ichthyology. See Sparus.

MÆONIA, (anc. geog.), a town of Lydia, ſituate at the foot of mount Tmolus. *Mæonii*, the people. *Mæonis*, (Homer, Ovid), the feminine gentilitious name: hence *Mæonides*, the muſes, (Ovid). *Mæonides* denotes alſo Homer, (Ovid).

MÆOTIS palus or lacus, *Mæotica Palus*, or *Mæoticus Lacus*, (anc. geog.), a lake of Sarmatia Europea, extending from the Iſthmus to the mouth of the Tanais to the eaſt, in compaſs 9000 ſtadia, (Strabo). Still called *Palus Mæotis*, reaching from Crim Tartary to the mouth of the Don.

MÆSTLIN (Michael), in Latin *Mæſtlinus*, a celebrated aſtronomer of Germany, was born in the duchy of Wittemberg; but ſpent his youth in Italy, where he made a ſpeech in favour of Copernicus's ſyſtem, which brought Galilæo over from Ariſtotle and Ptolemy, to whom he had been hitherto entirely devoted. He afterwards returned to Germany, and became profeſſor of mathematics at Tubingen; where, among his other ſcholars, he taught the great Kepler, who has praiſed ſeveral of his ingenious inventions, in his *Aſtronomia Optica*. Though Tycho Brahe did not aſſent to Mæſtlin's opinion, yet he allowed him to be an extraordinary perſon deeply ſkilled in the ſcience of aſtronomy. Mæſtlin publiſhed many mathematical and aſtronomical works; and died in 1590.

MÆSTRICHT, an ancient, large, and ſtrong town of the Netherlands, ceded to the Dutch by the treaty of Munſter. The town-houſe and the other public buildings are handſome, and the place is about four miles in circumference, and ſtrongly fortified. It is governed jointly by the Dutch and the biſhop of Liege; however, it has a Dutch garriſon. The inhabitants are noted for making excellent fire-arms, and ſome ſay that in the arſenal there are arms ſufficient for a whole army. Both Papiſts and Proteſtants are allowed the free exerciſe of their religion, and the magiſtrates are compoſed of both. It is ſeated on the river Maeſe, which ſeparates it from Wyck, and with which it communicates by a handſome bridge. Mæſtricht revolted from the Spaniards in 1570, but was reduced in 1579. Lewis XIV. became maſter of it in 1673; but it was reſtored to the ſtates by the treaty of Nimeguen in 1678. E. Long. 5. 50. N. Lat. 51. 5.

MAFFÆUS (Vegio), a Latin poet, born in Lombardy in 1407, was greatly admired in his time. He wrote epigrams, and a humorous ſupplement to Virgil, which he called *The thirteenth book of the Æneid:* this was as humorouſly tranſlated into Engliſh a few years ſince by Mr Ellis. Maffæus wrote alſo ſome proſe-works. He was chancellor of Rome towards the end of the pontificate of Martin V.; and died in 1458.

MAFFEI (Scipio), a celebrated Italian poet, born of an illuſtrious and ancient family at Verona, in 1675. After having finiſhed his ſtudies, he took arms, and diſtinguiſhed himſelf by his valour at the battle of Donawert;

naweit; but he more particularly diſtinguiſhed himſelf by his love of learning, which made him undertake ſeveral voyages into France, England, and Germany. He converſed with the learned in all thoſe countries, and obtained their friendſhip and eſteem. He was a member of the Academy of the Arcadia at Rome, an honorary foreign member of that of Inſcriptions at Paris; and died in 1755. He wrote many works in verſe and proſe, which are eſteemed; the moſt known of which are, 1. The tragedy of Merope, of which there are two French tranſlations in proſe. 2. Ceremony, a comedy. 3. A tranſlation, into Italian verſe, of the firſt book of Homer's Iliad. 4. Many other pieces of poetry, in a collection intitled *Rhyme and Proſe*, quarto. His principal works in proſe, are, 1. *Verona illuſtrata.* 2. *Iſtoria diplomàtica.* 3. *Scienza cavallereſca;* an excellent work, in which he attacks duelling. 4. An edition of *Theatro Italiano.* 5. An edition of Caſſiodorus on the Epiſtles, Acts of the Apoſtles, and Apocalypſe. 6. *Galliæ antiquitates quædam ſelectæ, atque in plures epiſtolas diſtributæ,* and ſeveral other works.

MAGADOXO, the capital town of a kingdom of the ſame name, in Africa, and on the coaſt of Ajan; ſeated near the mouth of a river of the ſame name, defended by a citadel, and has a good harbour. The inhabitants are Mohammedans. E. Long. 45. 15. N. Lat. 3. 0.

MAGAZINE, a place in which ſtores are kept, of arms, ammunition, proviſions, &c. Every fortified town ought to be furniſhed with a large magazine, which ſhould contain ſtores of all kinds, ſufficient to enable the garriſon and inhabitants to hold out a long ſiege; and in which ſmiths, carpenters, wheel-wrights, &c. may be employed in making every thing belonging to the artillery, as carriages, waggons, &c.

Powder-MAGAZINE, is that place where the powder is kept in very large quantities. Authors differ greatly both with regard to the ſituation and conſtruction; but all agree, that they ought to be arched and bomb-proof. In fortifications, they are frequently placed in the rampart; but of late they have been built in different parts of the town. The firſt powder-magazines were made with Gothic arches: but M. Vauban finding them too weak, conſtructed them in a ſemicircular form; whoſe dimenſions are 60 feet long within, 25 broad; the foundations are eight or nine feet thick, and eight feet high from the foundation to the ſpring of the arch; the floor is two feet from the ground, which keeps it from dampneſs.

One of our engineers of great experience ſome time ſince had obſerved, that after the centres of ſemicircular arches are ſtruck, they ſettle at the crown and riſe up at the hances, even with a ſtraight horizontal extrados, and ſtill much more ſo in powder-magazines, whoſe outſide at top is formed like the roof of a houſe, by two inclined planes joining in an angle over the top of the arch, to give a proper deſcent to the rain; which effects are exactly what might be expected agreeable to the true theory of arches. Now, as this ſhrinking of the arches muſt be attended with very ill conſequences, by breaking the texture of the cement after it has been in ſome degree dried, and alſo by opening the joints of the vouſſoirs at one end, ſo a remedy is provided for this inconvenience with regard to bridges, by the *arch of equilibration* in Mr Hutton's book on bridges; but as the ill effect is much greater in powder-magazines, the ſame ingenious gentleman propoſed to find an arch of equilibration for them alſo, and to conſtruct it when the ſpan is 20 feet, the pitch or height 10, (which are the ſame dimenſions as the ſemicircle), the inclined exterior walls at top forming an angle of 113 degrees, and the height of their angular point above the top of the arch equal to ſeven feet. This very curious queſtion was anſwered in 1775, by the reverend Mr Wildbore, to be found in Mr Hutton's *Miſcellanea Mathematica*.

Artillery-MAGAZINE. In a ſiege, the magazine is made about 25 or 30 yards behind the battery, towards the parallels, and at leaſt three feet underground, to hold the powder, loaded ſhells, port fires, &c. Its ſides and roof muſt be well ſecured with boards to prevent the earth from falling in: a door is made to it, and a double trench or paſſage is ſunk from the magazine to the battery, one to go in and the other to come out at, to prevent confuſion. Sometimes traverſes are made in the paſſages to prevent ricochet ſhot from plunging into them.

MAGAZINE, on ſhip-board, a cloſe room or ſtore-houſe, built in the fore or after part of the hold, to contain the gun-powder uſed in battle. This apartment is ſtrongly ſecured againſt fire, and no perſon is allowed to enter it with a lamp or candle: it is therefore lighted, as occaſion requires, by means of the candles or lamps in the *light-room* contiguous to it.

MAGDALEN, or *Nuns of St* MAGDALEN, an order of religious in the Romiſh church, dedicated to St Mary Magdalen, and ſometimes called *Magdalenettes*. Theſe conſiſt chiefly of courtezans, who, quitting their profeſſion, devote the reſt of their lives to repentance and mortification.

MAGDALENA, one of the Marqueſas iſlands, about five leagues in circuit, and ſuppoſed to be in S. Lat. 10. 25. W. Long. 138. 50. It was only ſeen at nine leagues diſtance by thoſe who diſcovered it.

MAGDALENE's CAVE, a cave of Germany, and in Carinthia, 10 miles eaſt of Gortz. It appears like a chaſm in a rock, and at the entrance torches are lighted to conduct travellers. It is divided into ſeveral apartments, or halls, with a vaſt number of pillars formed by nature, which give it a beautiful appearance, they being as white as ſnow, and almoſt tranſparent. The bottom is of the ſame ſubſtance, inſomuch that a perſon may fancy himſelf to be walking among the ruins of an enchanted caſtle, ſurrounded with magnificent pillars, ſome entire and others broken.

MAGDEBURG, a duchy of Germany, in the circle of Lower Saxony; bounded on the north by the duchy of Mecklenburg, on the ſouth and ſouthweſt by the principality of Anhalt and Halberſtadt, on the eaſt by Upper Saxony with part of Brandenburg, and on the weſt by the duchy of Wolfenbuttle. The Saale circle, and that of Luxkenwalde, are ſeparated from the reſt, and ſurrounded on all ſides by a part of Upper Saxony. This country is, for the moſt part, level; but ſandy, marſhy, or overgrown with woods. There are ſalt ſprings in it ſo rich, that they burg

they are ſufficient to ſupply all Germany with that commodity. The Holz circle is the moſt fruitful part of it. In the Saale circle, where wood is ſcarce, there is pit-coal: and at Rothenburg is a copper-mine worked. The duchy is well watered, for the Elbe paſſes through it; and the Saale, Havel, Aller, Ohre, and Elſter, either riſe in, or waſh ſome part of it in their courſe. The whole duchy, excluſive of that part of the county of Mansfeldt which is connected with it, is ſaid to contain 29 cities, ſix towns, about 430 villages, and 330,000 inhabitants. The ſtates of the country conſiſt of the clergy, the nobility, and deputies of the cities. Before it became ſubject to the electoral houſe of Brandenburg, frequent diets were held in it; but at preſent no diets are held, nor have the ſtates the direction of the finances as formerly. Before the Reformation, it was an archbiſhopric, ſubject in ſpirituals to the Pope alone, and its prelate was primate of all Germany; but embracing the Reformation, it choſe itſelf adminiſtrators, till the treaty of Munſter in 1648, when it was given, together with the biſhopric of Halberſtadt, to the elector of Brandenburg, as an equivalent for the Hither Pomerania, granted by that treaty to the king of Sweden. Lutheraniſm is the predominant religion here; but Calviniſts, Jews, and Roman-catholics are tolerated. Of the laſt there are five convents, who never embraced the Reformation. All the Lutheran pariſhes, amounting to 314, are ſubject to 16 inſpectors, under one general ſuperintendant; only the clergy of the old town of Magdeburg are under the direction of their ſenior. The Jews have a ſynagogue at Halle. The manufactures of the duchy are cloth, ſtuffs, ſtockings, linen, oil-ſkins, leather, and parchment; of which, and grain of all ſorts, large quantities are exported. The arms of it are, Party per pale, ruby, and pearl. The king of Pruſſia, as duke of Magdeburg, ſits and votes between the elector of Bavaria, as duke of Bavaria, and the elector palatine, as palſgrave of Lautern. Of the ſtates of the circle of Lower Saxony he is the firſt. His matricular aſſeſſment for the duchy is 43 horſe and 196 foot, or 1300 florins monthly; and to the chamber of Witzlar 343 florins and 40 kruitzers. For the civil government of the duchy there is a council of regency, with a war and demeſne chamber; and for the eccleſiaſtical, a conſiſtory, and general ſuperintendant. The revenues of the duchy, ariſing from the ſalt-works, demeſnes, and taxes, ſome of which are very heavy and oppreſſive, are ſaid to amount to 800,000 rixdollars annually. With reſpect to ſalt, every houſe-keeper in the Pruſſian dominions is obliged to buy a certain quantity for himſelf and wife; and alſo for every child and ſervant, horſe, cow, calf, and ſheep, that he poſſeſſes. The principal places are Magdeburg, Halle, and Glauche.

Magdeburg

Magdeburg, a city of Germany, in a duchy of the ſame name, of which it is not only the capital, but that of all Lower Saxony, and formerly even of all Germany. It ſtands on the Elbe, in E. Long. 12. 9. N. Lat. 52. 16. It is a city of great trade, ſtrongly fortified, and very ancient. Its name ſignifies *the maiden city;* which, ſome imagine, took its riſe from the temple of Venus, which is ſaid to have ſtood here anciently, and to have been deſtroyed by Charlemagne. The founder of the city is ſuppoſed to have been Otho I. or his empreſs Editha, daughter to Edmund the Saxon king of England. The ſame emperor founded a Benedictine convent here, which he afterwards converted into an archbiſhopric, of which the archbiſhop was a count-palatine, and had very great privileges, particularly that of wearing the archiepiſcopal pallium, and having the croſs borne before him, beſides many others. The firſt tournament in Germany is ſaid to have been appointed near this city, by the emperor Henry the Fowler; but theſe paſtimes were afterwards aboliſhed, becauſe they occaſioned ſuch envy and animoſity among the nobility, that ſeveral of them killed one another upon the ſpot. The ſituation of the city is very convenient and pleaſant, upon the banks of the Elbe, amidſt ſpacious fruitful plains, and on the road betwixt High and Low Germany. It has been a great ſufferer by fires and ſieges; but by none ſo much as that in 1631, when the emperor's general, count Tilly, took it by ſtorm, plundered and ſet it on fire, by which it was entirely reduced to aſhes, except the cathedral, the convent of our Lady, and a few cottages belonging to fiſhermen; of 40,000 burghers not above 400 eſcaping. The ſoldiers ſpared neither age nor ſex; but ripped up women with child, murdered ſucking infants in ſight of their parents, and raviſhed young women in the ſtreets; to prevent which violation, many of them flung themſelves into the Elbe, and others into the fire. The city is now populous, large, and well built, particularly the broad ſtreet and cathedral-ſquare. The principal buildings are the king's palace, the governor's houſe, the armoury, guild-hall, and cathedral. The laſt is a ſuperb ſtructure in the antique taſte, dedicated to St Maurice, which has a fine organ, the maſter-pipe of which is ſo big, that a man can ſcarce claſp it with both arms; it alſo contains the tombs of the emperor Otho, and the empreſs Editha; a fine marble ſtatue of St Maurice, a porphyry font, an altar in the choir of one ſtone of divers colours, curiouſly wrought, and many other curioſities. They ſhew here a bedſtead and table which belonged to Martin Luther, when he was an Auguſtine friar in a cloiſter of this city before the Reformation. Among the reliques, they pretend to have the baſon in which Pilate waſhed his hands after his condemnation of our Saviour; the lantern which Judas made uſe of when he apprehended him; and the ladder on which the cock crowed after St Peter denied him. The chapter conſiſts of a provoſt, 16 major, and ſeven minor canons; beſides which, there are four other Lutheran collegiate foundations, and a Lutheran convent dedicated to our Lady, in which is a ſchool or ſeminary. Here is alſo a gymnaſium, with an academy, in which young gentlemen are inſtructed in the art of war. The canons of the chapter, which, except the change of religion, is upon the ſame footing as before the Reformation, muſt make proof of their nobility. The prebends and dignities are all in the gift of the elector; and the revenue of the provoſt is computed at 12,000 crowns a-year. Here is a great trade, and a variety of manufactures. The chief are thoſe of woollen cloths and ſtuffs, ſilks, cottons, linen, ſtockings, hats, gloves, tobacco and ſnuff. The city was formerly one of the Hanſe and

Magellan.

imperial towns. Editha, conſort to Otho I. on whom it was conferred as a dowry, among many other privileges and advantages, procured it the grant of a yearly fair. The bargravate of this city was anciently an office of great power; having the civil and criminal juriſdiction, the office of hereditary cup-bearer being annexed to it; and was long held as a fief of the archbiſhopric, but afterwards became an imperial fief, which was again conferred on the archbiſhopric by the elector of Saxony, upon certain conditions.

MAGELLAN (Ferdinand), a celebrated Portugueſe mariner in the 16th century. He being diſſatiſfied with the king of Portugal, went into the ſervice of the emperor Charles V. and ſailed from Seville with five veſſels in 1519, when he diſcovered and paſſed the ſtrait to which he gave his own name, and ſailed through the South Sea to the Ladrone Iſlands, when, according to ſome authors, he was poiſoned in 1520; though others ſay that he was killed in a mutiny of his people, in the iſland of Mutan, on account of his ſeverity. His voyage round the world was written by one on board, and has been frequently printed in Engliſh. His ſuddenly converting to the Chriſtian religion people whoſe language was unknown to him, as his was to them, is an abſurdity that diſcredits this work.

Straits of MAGELLAN, a narrow paſſage between the iſland of Terra del Fuego, and the ſouthern extremity of the continent of America. This paſſage was firſt diſcovered by Ferdinand Magellan, who ſailed through it into the South Sea, and from thence to the Eaſt-Indies. Other navigators have paſſed the ſame way; but as theſe ſtraits are exceedingly difficult, and ſubject to ſtorms, it has been common to ſail by Cape Horn, rather than through the Straits of Magellan. See *Straits Le* MAIRE, and TERRA *del Fuego*.

MAGGI (Jerome), in Latin *Magius*, one of the moſt learned men of the 16th century, was born at Anghiari in Tuſcany. He applied himſelf to all the ſciences, and even to the art of war; and diſtinguiſhed himſelf ſo much in this laſt ſtudy, that the Venetians ſent him into the iſland of Cyprus in quality of judge of the admiralty. When the Turks beſieged Famaguſta, he performed all the ſervices that could be expected from the moſt excellent engineer: he invented mines and machines for throwing fire, by means of which he deſtroyed all the works of the beſiegers, and in an inſtant overthrew what had coſt the Turks infinite labour. But they had their revenge; for, taking the city in 1571, they plundered his library, carried him loaded with chains to Conſtantinople, and treated him in the moſt inhuman and barbarous manner. He nevertheleſs comforted himſelf from the example of Æſop, Menippus, Epictetus, and other learned men; and, after paſſing the whole day in the meaneſt drudgery, he ſpent the night in writing. He compoſed, by the help of his memory alone, treatiſes filled with quotations, which he dedicated to the Imperial and French ambaſſadors. Theſe miniſters, moved by compaſſion for this learned man, reſolved to purchaſe him: but while they were treating for his ranſom, Maggi found means to make his eſcape, and to get to the Imperial ambaſſador's houſe; when the Grand Vizir being enraged at his flight, and remembering the great miſchief he had done the Turks during the ſiege of Famaguſta, ſent to have him ſeized, and cauſed him to be ſtrangled in priſon in 1572. His principal works are, 1. A treatiſe on the bells of the ancients. 2. On the deſtruction of the world by fire. 3. Commentaries on Æmilius Probus's lives of illuſtrious men. 4. Commentaries on the inſtitutes. Theſe works are written in elegant Latin. He alſo wrote a treatiſe on fortification in Italian; and a book on the ſituation of ancient Tuſcany.

He ought not to be confounded with his brother *Bartholomew Maggi*, a phyſician at Bologna, who wrote a treatiſe of gun-ſhot wounds; nor with *Vincent Maggi*, a native of Breſſe, and a celebrated profeſſor of humanity at Ferrara in Padua, who was the author of ſeveral works.

MAGGOT, the common name of the fly-worm bred in fleſh, from the egg of the great blue fleſh-fly. Notwithſtanding the diſtaſte for this animal, its figure and ſtructure of parts are greatly worth attending to; and may ſerve as a general hiſtory of the claſs of worms produced from the eggs of flies.

This animal is white and fleſhy: its body is compoſed of a number of rings, like the bodies of caterpillars and other ſimilar inſects; and is capable, at the pleaſure of the animal, of aſſuming different figures; being at times more or leſs extended in length, and conſequently more or leſs thick.

Notwithſtanding that this animal has no legs, it is able to move itſelf very ſwiftly; and in its firſt attempt to move its body, is extended to its greateſt length, and aſſumes ſomething of the figure of a pointed cone. The pointed part of this cone is the head of the animal, and is not ſeparated from the next ring by any deeper furrow than the reſt of the rings are from one another. In ſome ſtates of the animal, one may ſee two ſhort horns thruſt out from the head; but more generally two ſcaly hooks are obſervable: theſe are, however, ſometimes hid, and have each of them a caſe or ſheath, into which the animal can retract them at pleaſure. Theſe hooks are bent into an arch, the concavity of which is towards the plane on which the creature is placed; and they are the thickeſt at their inſertion in the head, and thence diminiſh gradually, till they terminate in a fine ſharp point.

Theſe two hooks are placed in a parallel direction, and can never come together, and therefore cannot ſerve in the place of teeth for grinding the food; but merely to pull and ſever it in pieces, that it may be of a proper ſize for the mouth of the creature. Beſides theſe hooks the maggot has a kind of dart, which is about a third part of their length, and is placed at an equal diſtance between them. This alſo is brown and ſcaly like them; it is quite ſtraight, and terminates in a fine point. The hooks have as it were two ſcaly thorns at their points; and this dart ſeems intended, by reiterated ſtrokes, to divide and break the pieces of fleſh theſe have ſeparated from the reſt into ſmaller parts. Immediately below the apertures for the egreſs of the hooks, is placed the mouth of the animal; the creature does not ſhew this little opening unleſs preſſed: but if the preſſure is properly managed, it will ſufficiently open it, and there may be diſcovered within it a ſmall protuberance, which may very naturally be ſuppoſed either the tongue or the ſucker of the animal.

mal. The hooks in theſe creatures not only ſupply the place of teeth, but alſo of legs; ſince it is by faſtening theſe hooks into the ſubſtance it is placed on, and then drawing up its body to it, that it pulls itſelf along.

The back of this creature lowers itſelf by degrees as it approaches the extremity of the belly; and near the place where the back begins to lower itſelf, are placed the creature's two principal organs of reſpiration. One may perceive there two ſmall roundiſh brown ſpots: they are very eaſily diſtinguiſhable by the naked eye, becauſe the reſt of the body of the creature is white; but if we take in the aſſiſtance of glaſſes, each of theſe ſpots appears to be a brown circular eminence raiſed a little above the reſt of the body. On each of theſe ſpots one may alſo diſcover three oblong oval cavities, ſomething of the ſhape of button-holes; theſe are ſituated in a parallel direction to one another, and their length nearly in a perpendicular direction to that of the body of the animal. Theſe apertures are ſo many ſtigmata or air-holes; openings deſtined to admit the air neceſſary to the life of the animal. It has ſix of theſe ſtigmata, three in each ſide of its body.

The great tranſparency of the body of this animal gives us an opportunity alſo to diſtinguiſh that it has on each ſide a large white veſſel running the whole length of the body. It is eaſy to follow the courſe of theſe veſſels through their whole length, but they are moſt diſtinct of all towards its hinder part; and they are always ſeen to terminate each in the brown ſpot abovementioned: this leaves us no room to doubt that they are the two principal tracheæ.

The ramifications of the two great tracheæ are very beautifully ſeen in this creature; eſpecially on its belly: and it is remarkable, that no veſſel analogous to the great artery in the caterpillar claſs can be diſcovered in theſe; though, if there were any ſuch, their great tranſparence muſt needs make them very eaſily diſtinguiſhable; nor could its dilatations and contractions, if ſo conſiderable as in that claſs of animals, be leſs ſo. See ERUCA.

Malpighi imagined that this artery in the caterpillar claſs was a ſeries of hearts; in its place, however, there may be ſeen in theſe animals a true heart. It is eaſy to obſerve in theſe creatures, about the fourth ring of their body, a ſmall fleſhy part, which has alternate contractions and dilatations; and is not only diſcoverable in the body by means of its tranſparence, but on making a proper ſection of them in the ſecond, third, and fourth, will be thrown out of the body of the creature, and continue its beats for ſome time afterwards.

MAGI, or **MAGIANS**, an ancient religious ſect in Perſia, and other Eaſtern countries, who maintained that there were two principles, one the cauſe of all good, the other the cauſe of all evil: and, abominating the adoration of images, they worſhipped God only by fire; which they looked upon as the brighteſt and moſt glorious ſymbol of Oromaſdes, or the good God; as darkneſs is the trueſt ſymbol of Arimanius, or the evil god. This religion was reformed by Zoroaſter, who maintained that there was one ſupreme independent Being; and under him two principles or angels, one the angel of goodneſs and light, and the other of evil and darkneſs: that there is a perpetual ſtruggle between them, which ſhall laſt to the end of the world; that then the angel of darkneſs and his diſciples ſhall go into a world of their own, where they ſhall be puniſhed in everlaſting darkneſs; and the angel of light and his diſciples ſhall alſo go into a world of their own, where they ſhall be rewarded in everlaſting light.

The prieſts of the magi were the moſt ſkilful mathematicians and philoſophers of the ages in which they lived, inſomuch that a learned man and a magian became equivalent terms. The vulgar looked on their knowledge as ſupernatural; and hence thoſe who practiſed wicked and miſchievous arts, taking upon themſelves the name of *magians*, drew on it that ill ſignification which the word magician now bears among us.

This ſect ſtill ſubſiſts in Perſia under the denomination of *gaurs*, where they watch the ſacred fire with the greateſt care, and never ſuffer it to be extinguiſhed.

MAGIC, **MAGIA**, ΜΑΓΕΙΑ, in its ancient ſenſe, the ſcience, or diſcipline and doctrine of the magi, or wiſemen of Perſia. See MAGI.

The origin of magic and the magi is aſcribed to Zoroaſter: Salmaſius derives the very name from Zoroaſter, who, he ſays, was ſurnamed *Mog*, whence Magus. Others, inſtead of making him the author of the Perſian philoſophy, make him only the reſtorer and improver thereof; alleging, that many of the Perſian rites in uſe among the magi, were borrowed from the Zabii among the Chaldeans, who agreed in many things with the magi of the Perſians; whence ſome make the name *magus* common both to the Chaldeans and Perſians. Thus Plutarch mentions, that Zoroaſter inſtituted magi among the Chaldeans, in imitation whereof the Perſians had theirs too.

MAGIC, in a more modern ſenſe, is a ſcience which teaches to perform wonderful and ſurpriſing effects.

The word *magic* originally carried with it a very innocent, nay laudable, meaning; being uſed purely to ſignify the ſtudy of wiſdom, and the more ſublime parts of knowledge: but in regard the ancient magi engaged themſelves in aſtrology, divination, ſorcery, &c. the term *magic* in time became odious, and was only uſed to ſignify an unlawful and diabolical kind of ſcience, depending on the aſſiſtance of the devil and departed ſouls.

If any wonder how ſo vain and deceitful a ſcience ſhould gain ſo much credit and authority over mens minds, Pliny gives the reaſon of it. It is, ſays he, becauſe it has poſſeſſed itſelf of three ſciences of the moſt eſteem among men; taking from each, all that is great and marvellous in it. Nobody doubts but it had its firſt origin in medicine; and that it inſinuated itſelf into the minds of the people, under pretence of affording extraordinary remedies. To theſe fine promiſes it added every thing in religion that is pompous and ſplendid, and that appears calculated to blind and captivate mankind. Laſtly, it mingled judiciary aſtrology with the reſt; perſuading people, curious of futurity, that it ſaw every thing to come in the heavens. Agrippa divides magic into three kinds; natural, celeſtial, and ceremonial or ſuperſtitious.

Natural **MAGIC** is no more than the application of natural active cauſes to paſſive ſubjects; by means whereof many ſurpriſing, but yet natural, effects are produced.

Baptiſta Porta has a treatiſe of natural magic, or of ſecrets for performing very extraordinary things by natural cauſes. The natural magic of the Chaldeans was nothing but the knowledge of the powers of ſimples and minerals. The magic which they called *theurgia*, conſiſted wholly in the knowledge of the ceremonies to be obſerved in the worſhip of gods, in order to be acceptable. By virtue of theſe ceremonies they believed they could converſe with ſpiritual beings, and cure diſeaſes.

Celeſtial MAGIC, borders nearly on judiciary aſtrology: it attributes to ſpirits a kind of rule or dominion over the planets, and to planets a dominion over men; and on thoſe principles builds a ridiculous kind of ſyſtem. See ASTROLOGY.

Superſtitious or *Goetic* MAGIC, conſiſts in the invocation of devils. Its effects are uſually evil and wicked, though very ſtrange and ſeemingly ſurpaſſing the powers of nature; ſuppoſed to be produced by virtue of ſome compact, either tacit or expreſs, with evil ſpirits: but the truth is, theſe have not all the power that is uſually imagined, nor do they produce thoſe effects ordinarily aſcribed to them.

Naude has publiſhed an apology for all the great men ſuſpected of magic.—Agrippa ſays, that the words uſed by thoſe in compact with the devil, to invoke him, and to ſucceed in what they undertake, are *Dies*, *mies*, *jeſquet*, *benedoefet*, *douvima*, *enitemaus*. There are an hundred other ſuperſtitious formulas of words compoſed at pleaſure, or gathered from ſeveral different languages, or patched from the Hebrew, or formed in imitation of it.

The moſt ignorant and barbarous people have been moſt generally ſuſpected of magic. Among ourſelves, the moſt miſerably ignorant perſons have been accuſed of it. Among foreigners, the Laplanders and Icelanders have been ſuppoſed moſt converſant of all others in it. Theſe people themſelves place an abſolute confidence in the effects of certain idle words and actions; and the reſt of the world is deceived in the ſame manner. The famous *magical drum* of the Laplanders is ſtill in conſtant uſe in that nation; and Scheffer, in his hiſtory of Lapland, has given an account of its ſtructure.

This inſtrument is made of beech, pine, or fir, ſplit in the middle, and hallowed on the flat ſide where the drum is to be made. The hollow is of an oval figure; and is covered with a ſkin clean dreſſed, and painted with figures of various kinds, ſuch as ſtars, ſuns and moons, animals and plants, and even countries, lakes and rivers; and of latter days, ſince the preaching of Chriſtianity among them, the acts and ſufferings of our Saviour and his apoſtles are often added among the reſt. All theſe figures are ſeparated by lines into three regions or cluſters.

There is, beſides theſe parts of the drum, an index and a hammer. The index is a bundle of braſs or iron rings, the biggeſt of which has a hole in its middle, and the ſmaller ones are hung to it. The hammer or drumſtick is made of the horn of a rein-deer; and with this they beat the drum ſo as to make theſe rings move, they being laid on the top for that purpoſe. In the motion of theſe rings about the pictures figured on the drum, they fancy to themſelves ſome prediction in regard to the things they inquire about.

What they principally inquire into by this inſtrument, are three things. 1. What ſacrifices will prove moſt acceptable to their gods. 2. What ſucceſs they ſhall have in their ſeveral occupations, as hunting, fiſhing, curing of diſeaſes, and the like; and, 3. What is doing in places remote from them. On theſe ſeveral occaſions they uſe ſeveral peculiar ceremonies, and place themſelves in various odd poſtures as they beat the drum; which influences the rings to the one or the other ſide, and to come nearer to the one or the other ſet of figures. And when they have done this, they have a method of calculating a diſcovery, which they keep as a great ſecret, but which ſeems merely the buſineſs of the imagination in the diviner or magician.

MAGIC-*Square*, a ſquare figure formed of a ſeries of numbers in arithmetical proportion, ſo diſpoſed in parallel and equal ranks, as that the ſums of each row, taken either perpendicularly, horizontally, or diagonally, are equal.

The ſeveral numbers which compoſe any ſquare number, (for inſtance, 1, 2, 3, 4, 5, &c. to 25 incluſive, which compoſe the ſquare number 25), being diſpoſed after each other in a ſquare figure of 25 cells, each in its cell: if then you change the order of theſe numbers, and diſpoſe them in the cells, in ſuch manner, as that the five numbers which fill an horizontal rank of cells, being added together, ſhall make the ſame ſum with the five numbers in any other rank of cells, whether horizontal or vertical; and even the ſame number with the five in each of the two diagonal ranks; this diſpoſition of numbers is called a *magic-ſquare*, in oppoſition to the former diſpoſition, which is called a *natural ſquare*.

Natural Square.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Magic-Square.

16	14	8	2	25
3	22	20	11	9
15	6	4	33	17
24	18	12	10	1
7	5	21	19	13

One would imagine that magic ſquares had that name given them in regard this property of all their ranks, which, taken any way, make always the ſame ſum, appeared extremely ſurpriſing, eſpecially in certain ignorant ages, when mathematics paſſed for magic. But there is a great deal of reaſon to ſuſpect, that theſe ſquares merited their name ſtill further by the ſuperſtitious operations they were employed in, as the conſtruction of taliſmans, &c. For according to the childiſh philoſophy of thoſe days, which attributed virtues to numbers, what virtues might not be expected from numbers ſo wonderful?

However, what was at firſt the vain practice of makers of taliſmans and conjurors, has ſince become the ſubject of a ſerious reſearch among mathematicians: not that they imagine it will lead them to any thing of ſolid uſe or advantage; magic ſquares favour too much of their original, to be of much uſe: but only as it is a kind of play, where the difficulty makes the merit; and as it may chance to produce ſome new views of numbers which mathematicians will not loſe the occaſion of.

Magic *Lantern*. See Dioptrics, art. ix. p. 2478.

MAGICIAN, one who practiſes magic, or hath the power of doing wonderful feats by the agency of ſpirits.

Among the Eaſtern nations it ſeems to have been formerly common for the princes to have magicians about their court to confer with upon extraordinary occaſions. And concerning theſe there hath been much diſputation: ſome ſuppoſing that their power was only feigned, and that they were no other than impoſtors who impoſed on the credulity of their ſovereigns; while others have thought that they really had ſome unknown connection or correſpondence with evil ſpirits, and could by their means accompliſh what otherwiſe would have been impoſſible for men. The greateſt difficulty is with regard to the magicians of Egypt, by St Paul called *Jannes* and *Jambres*, who oppoſed Moſes and Aaron. From the account given of them in Scripture, it would ſeem that they had the art either of performing or counterfeiting certain miraculous actions, while others, ſeemingly as eaſy, they could neither perform nor counterfeit.

A very learned author tells us, that the original of theſe magicians ſeems to have been this, That as God admitted the holy patriarchs to a familiar intercourſe with him, ſo the devil kept men in obedience to him by pretending to diſcover ſecret things to them: and when God was pleaſed to work miracles to confirm the truth, the devil directed the latter how to invoke him for the performance of ſtrange things, which confirmed them in their error.

With regard to the enchantments which they are ſaid to make uſe of, if the Hebrew word came from *lahat*, a "flame," (Gen. iii. 24.), it ſhews that they dazzled mens eyes, and impoſed upon them by falſe appearances. But it may be derived from *laat*, "hidden, or ſecret;" and ſo intimate to us, that they uſed ſecret whiſpers or murmurs, as enchanters did who were familiar with demons; and thus it is explained in Gemara ſanhedrim.

A late learned and ingenious writer has obliged the public with ſeveral very curious remarks upon this ſubject, of the Egyptian magicians ſucceeding in ſeveral of their attempts to work miracles. He is not of the opinion that theſe wonders could poſſibly be done by any or all the powers of nature; nor does he agree with ſome authors, who imagine there was not any real tranſmutation, but that they played their parts as jugglers, pretending to do what they did not, or that ſome demons aſſiſted them to deceive the ſight of the beholders. For with regard to their impoſing upon Pharaoh by artifice and pretence, this muſt inevitably have given Moſes and Aaron an opportunity of detecting their impoſture. And as to their being able to exhibit the appearances of ſerpents, frogs, and blood, when no ſuch things were really in being, either by themſelves or by the aſſiſtance of demons; this ſuppoſes them to have performed wonders, of which we can give as little account as of a miracle. But the queſtion will recur, If they had no myſtical arts to perform theſe things, how came they to ſucceed in the attempts which they made in oppoſition to Moſes? To this our author replies, 1. That we have no reaſon to think that the king knew that the works which he employed them to perform were within the reach of their art; but rather, on the contrary, he ordered them to try to perform them, that he might know whether art could effect them or not, or whether they were true miracles. 2. That it does not appear from the magicians here trying the experiments, and ſucceeding in them, that they thought at firſt their arts would be effectual: but, they would try all experiments in order to judge further of the matter; and, upon their attempting, God was pleaſed in ſome caſes to give an unexpected ſucceſs to their endeavours, in order to ſerve his purpoſes by it. For, 3. Their ſucceſs was certainly unexpected, as evidently appears by their not being able to follow Moſes in all his miracles. When they attempted to produce the lice, they could not do it. It is here evident the magicians did not know the extent of their powers, if they can be conceived to have had any: for they attempted to equal Moſes in all his performances; but upon trial they found they could do ſome, whereas in others, though not a whit more difficult, they could not obtain any ſucceſs at all. Had they had any effectual rules of art or ſcience to work by, they would at firſt, without trial, have known what to attempt, and what not; but, in truth, they had no arts to perform any thing of this ſort. In ſome inſtances, God was pleaſed to give a ſucceſs, which they little expected, to their endeavours, and which they were ſo far from reſting ſatisfied with, that they took the firſt opportunity which was given them, when their attempts failed, to acknowledge that Moſes was certainly aſſiſted by the divine power.

MAGISTERY, in chemiſtry, a name given to almoſt all precipitates. Thus, *magiſtery* and *precipitate* are ſynonimous; but lately, chemiſts have uſed chiefly the term *precipitate*, and applied that of *magiſtery* to ſome particular precipitates only, which are uſed in medicine and in the arts. Such are, the magiſteries of biſmuth, coal, crabs-eyes, ſulphur, &c.

Magistery *of Biſmuth*. See Chemistry, n° 209.

MAGISTRATE, any public officer, to whom the executive power of the law is committed either wholly or in part.

MAGLIABECHI (Antony), a perſon of great learning, and remarkable for an amazing memory, was born at Florence in 1633. His father died when he was only ſeven years old. His mother had him taught grammar and drawing, and then put him apprentice to one of the beſt goldſmiths in Florence. When he was about 16 years old, his paſſion for learning began to ſhew itſelf; and he laid out all his money in buying books. Becoming acquainted with Michael Ermini, librarian to the cardinal de Medicis, he ſoon perfected himſelf by his aſſiſtance in the Latin tongue, and in a little time became maſter of the Hebrew. His name ſoon became famous among the learned. A prodigious memory was his diſtinguiſhing talent; and he retained not only the ſenſe of what he had read, but frequently all the words, and the very manner of ſpelling. It is ſaid that a gentleman, to make trial of the force of his memory, lent him a manuſcript he was going to print. Some time after it was returned, the gentleman, coming to him with a melancholy countenance, pretended it was loſt, and requeſted Magliabechi to recollect what he remembered of it; upon which he wrote the whole, without miſſing a word. He generally ſhut himſelf up the whole day, and opened his doors in the evening to the men of letters who came to converſe with him. His attention was ſo abſorbed by his ſtudies, that he often forgot the moſt urgent wants of nature. Coſmo III. grand duke of Florence, made him his librarian; but he ſtill continued negligent in his dreſs, and ſimple in his manners. An old cloak ſerved him for a morning-gown in the day, and for bed-clothes at night. The duke, however, provided for him a commodious apartment in his palace, which he was with difficulty perſuaded to take poſſeſſion of; but which he quitted four months after, and returned to his houſe. He was remarkable for his extraordinary modeſty, his ſincerity, and his beneficence, which his friends often experienced in their wants. He was a patron of men of learning; and had the higheſt pleaſure in aſſiſting them with his advice and information, and in furniſhing them with books and manuſcripts. He had the utmoſt averſion at any thing that looked like conſtraint; and therefore the grand duke always diſpenſed with his perſonal attendance, and ſent him his orders in writing. Though he lived a moſt ſedentary life, he reached the 81ſt year of his age; and died in the midſt of the public applauſe, after enjoying, during the latter part of his life, ſuch affluence as few have ever procured by their learning. By his will, he left a very fine library to the public, with a fund for its ſupport.

MAGNA ASSISA ELIGENDA, is a writ anciently directed to the ſheriff for ſummoning four lawful knights before the juſtices of aſſize, in order to chooſe 12 knights of the neighbourhood, &c. to paſs upon the great aſſize between ſuch a perſon plaintiff and ſuch a one defendant.

MAGNA *Charta*, the great charter of the liberties of Britain, and the baſis of our laws and privileges.

This charter may be ſaid to derive its origin from king Edward the Confeſſor, who granted ſeveral privileges to the church and ſtate by charter: theſe liberties and privileges were alſo granted and confirmed by king Henry I. by a celebrated great charter now loſt; but which was confirmed or re-enacted by king Henry II. and king John. Henry III. the ſucceſſor of this laſt prince, after having cauſed 12 men make inquiry into the liberties of England in the reign of Henry I. granted a new charter; which was the ſame as the preſent magna charta. This he ſeveral times confirmed, and as often broke; till, in the 37th year of his reign, he went to Weſtminſter-hall, and there, in preſence of the nobility and biſhops, who held lighted candles in their hands, magna charta was read, the king all the time holding his hand to his breaſt, and at laſt ſolemnly ſwearing faithfully and inviolably to obſerve all the things therein contained, &c. Then the biſhops extinguiſhing the candles, and throwing them on the ground, they all cried out, "Thus let him be extinguiſhed, and ſtink in hell, who violates this charter." It is obſerved, that, notwithſtanding the ſolemnity of this confirmation, king Henry, the very next year, again invaded the rights of his people, till the barons entered into a war againſt him; when, after various ſucceſs, he confirmed this charter, and the charter of the foreſt, in the 52d year of his reign.

This charter confirmed many liberties of the church, and redreſſed many grievances incident to feodal tenures, of no ſmall moment at the time; tho' now, unleſs conſidered attentively and with this retroſpect, they ſeem but of trifling concern. But, beſides theſe feodal proviſions, care was alſo taken therein to protect the ſubject againſt other oppreſſions, then frequently ariſing from unreaſonable amercements, from illegal diſtreſſes or other proceſs for debts or ſervices due to the crown, and from the tyrannical abuſe of the prerogative of purveyance and pre-emption. It fixed the forfeiture of lands for felony in the ſame manner as it ſtill remains; prohibited for the future the grants of excluſive fiſheries; and the erection of new bridges ſo as to oppreſs the neighbourhood. With reſpect to private rights, it eſtabliſhed the teſtamentary power of the ſubject over part of his perſonal eſtate, the reſt being diſtributed among his wife and children; it laid down the law of dower, as it hath continued ever ſince; and prohibited the appeals of women, unleſs for the death of their huſbands. In matters of public police and national concern, it enjoined an uniformity of weights and meaſures; gave new encouragements to commerce, by the protection of merchant-ſtrangers; and forbad the alienation of lands in mortmain. With regard to the adminiſtration of juſtice: beſides prohibiting all denials or delays of it, it fixed the court of common-pleas at Weſtminſter, that the ſuitors might no longer be harraſſed with following the king's perſon in all his progreſſes; and at the ſame time brought the trial of iſſues home to the very doors of the freeholders, by directing aſſiſes to be taken in the proper counties, and eſtabliſhing annual circuits: it alſo corrected ſome abuſes then incident to the trials by wager of law and of battle; directed the regular awarding of inqueſts for life or member; prohibited the king's inferior miniſters from holding pleas of the crown, or trying any criminal charge, whereby many forfeitures might otherwiſe have unjuſtly accrued to the exchequer; and regulated the time and place of holding the inferior tribunals of juſtice, the county-court, ſheriff's torn, and court-leet. It confirmed and eſtabliſhed the liberties of the city of London, and all other cities, boroughs, towns, and ports of the kingdom. And laſtly, (which alone would have merited the title that it bears, of the *great charter)* it protected every individual of the nation in the free enjoyment of his life, his liberty, and his property, unleſs declared to be forfeited by the judgment of his peers or the law of the land.

This excellent charter, ſo equitable, and beneficial to the ſubject, is the moſt ancient written law in the kingdom. By the 25th Edward I. it is ordained, that it ſhall be taken as the common law; and by the 43d Edward III. all ſtatutes made againſt it are declared to be void.

MAGNESA, or **MAGNESIA**, (anc. geog.) a town or a diſtrict of Theſſaly, at the foot of mount Pelius, called by Philip, the ſon of Demetrius, one of the three keys of Greece, (Pauſanias).

MAGNESIA ALBA, a white earth procured from the mother-liquors of nitre, or ſea-ſalt, by precipitation with a fixed alkali, and afterwards waſhing of the ſalt with water. See CHEMISTRY, n° 37.

Magneſia alba is a good abſorbent; and undoubtedly ly to be preferred to crab's-eyes, on account of its purgative quality when united with an acid, which the other has not. It has been eſteemed hurtful in bilious habits where there is a diſpoſition in the ſtomach contrary to acidity. This, however, according to Mr Henry, is doubtful: and where putrid bile is to be corrected, he thinks good purpoſes may be anſwered by taking magneſia with an acid in a ſtate of efferveſcence; as the fixed air, thus extricated, will correct the putridity of the contents of the inteſtines, while they are at the ſame time evacuated downwards. He is alſo of opinion, that in cutaneous diſeaſes it may enter the circulation in form of a neutral ſalt, and, by acting as a diaphoretic and diuretic, prove an excellent alterative.

For ſome medical purpoſes, magneſia is uſed in a calcined ſtate; in which caſe it is deprived of its fixed air, and then it proves nearly as aperient as a double quantity of magneſia in its uncalcined ſtate. Mr Henry is of opinion, that it may be uſeful in diſtenſions of the bowels ariſing from flatus; that it may be ſucceſsfully employed as a cathartic with patients labouring under the ſtone, who are uſing the lixivium ſaponaceum; and that, joined with warm aromatics, it may be of ſervice in correcting the great flatulency which ſo much afflicts people of a gouty diſpoſition. From ſeveral experiments made by the ſame author, it alſo appears that magneſia has a conſiderable antiſeptic power. The like virtue he aſcribes to all kinds of teſtaceous powders: from whence he concludes, that medicines of this kind are by no means improper in fevers of a putreſcent type; that where bile is ſuſpected to be the cauſe of any putrid diſeaſe, thoſe antiſeptics ſhould be preſcribed which particularly impede its corruption; that, as calcined magneſia is a more powerful antiſeptic than moſt other abſorbents, it merits a preference to theſe; and that where an acid cacochymy prevails, magneſia or other abſorbents, taken immediately before or after meal-time, may, by increaſing the putrefactive fermentation of animal-food, be of very great ſervice. He hath alſo found, that magneſia hath a power of promoting the ſolution of reſinous gums in water; and thus we have an elegant and eaſy method of preparing aqueous tinctures from theſe ſubſtances. Such tinctures, however, are calculated only for extemporaneous preſcription, as moſt of them depoſit a ſediment when they have been kept a week or two.

Magnesia, (anc. geog.), a maritime diſtrict of Theſſaly, lying between the ſouth part of the Sinus Thermaicus and the Pagaſæus to the ſouth, and to the eaſt of the Pelaſgiotis. *Magnetes*, the people. *Magneſius* and *Magneſſus*, the epithet, (Horace).

Magnesia *ad Mæandrum*, (anc. geog.), a town of Ionia, on the Meander, to diſtinguiſh it from another Magneſia at the foot of mount Sipylus. The former was one of the three towns given to Themiſtocles by Artaxerxes, with theſe wofds, *to furniſh his table with bread.* A colony from the Magneſia of Theſſaly, (Pliny); from Delphi, (Athenæus); from Lacedæmon, (Velleius); diſtant 15 miles from Epheſus to the eaſt, (Pliny). It did not ſtand immediately on the Meander, being nearer the river Lethæus, which runs into the Meander, (Strabo). It is ſometimes mentioned without its diſtinguiſhing ſurname, as being more conſiderable than the other Magneſia, which is ſcarce ever without its ſurname *ad Sipylum. Magnetes*, the people.

Magnesia *ad Sipylum*, (anc. geog.), anciently *Tantalis*, the reſidence of Tantalus, and capital of Mæonia, where now ſtands the lake Sale. A town of Lydia, at the foot of mount Sipylus, to the eaſt of the Hermus; adjudged free under the Romans; deſtroyed by earthquakes. (Strabo).

Magnet.

MAGNET, Magnes, the *Loadſtone;* a ſort of ferruginous ſtone, in weight and colour reſembling iron ore, though ſomewhat harder and more heavy; endued with divers extraordinary properties, attractive, directive, inclinatory, &c. See Magnetism.

The magnet is alſo called *Lapis Heraclæus*, from Heraclea, a city of Magneſia, a port of the ancient Lydia, where it is ſaid to have been firſt found, and from which it is uſually ſuppoſed to have taken its name. Though others derive the word from a ſhepherd named *Magnes*, who firſt diſcovered it with the iron of his crook on mount Ida. It is alſo called *lapis nauticus*, by reaſon of its uſe in navigation; and *ſiderites*, from its attracting iron, which the Greeks call σιδηρος.

The magnet is uſually found in iron mines, and ſometimes in very large pieces, half magnet, half iron. Its colour is different, according to the different countries it is brought from. Norman obſerves, that the beſt are thoſe brought from China and Bengal, which are of an irony or ſanguine colour; thoſe of Arabia are reddiſh; thoſe of Macedonia blackiſh; and thoſe of Hungary, Germany, England, &c. the colour of unwrought iron. Neither its figure nor bulk are determined, but it is found of all forms and ſizes.

The ancients reckoned five kinds of magnets different in colour and virtue: the Ethiopic, Magneſian, Bœotic, Alexandrian, and Natolian. They alſo took it to be male and female: but the chief uſe they made of it was in medicine; eſpecially for the cure of burns, and defluxions on the eyes.—The moderns, more happy, take it to conduct them in their voyages. See Navigation.

The moſt diſtinguiſhing properties of the magnet are, That it attracts iron, and that it points to the poles of the world; and in other circumſtances alſo dips or inclines to a point beneath the horizon, directly under the pole; and that it communicates theſe properties, by touch, to iron. On which foundation are built the mariner's needles, both horizontal, and inclinatory or dipping needles.

Attractive Power of the Magnet was known to the ancients, and is mentioned even by Plato and Euripides, who call it the *Herculean ſtone*, becauſe it commands iron, which ſubdues every thing elſe: but the knowledge of its directive power, whereby it diſpoſes its poles along the meridian of every place, and occaſions needles, pieces of iron, &c. touched with it, to point nearly north and ſouth, is of a much later date; though the exact time of its diſcovery, and the diſcoverer himſelf, are yet in the dark. The firſt tidings we hear of it is in 1260, when Marco Polo the Venetian is ſaid by ſome to have introduced the mariners compaſs; tho' not as an invention of his own, but as derived from the Chineſe, who are ſaid to have had the uſe of it long before; tho' ſome imagine that the Chineſe rather borrowed it from the Europeans.

Flavio de Gioa, a Neapolitan, who lived in the 13th century, is the perſon uſually ſuppoſed to have the beſt title to the diſcovery: and yet Sir G. Wheeler mentions, that he had ſeen a book of aſtronomy much older, which ſuppoſed the uſe of the needle; though not as applied to the uſes of navigation, but of aſtronomy. And in Guyot de Provins, an old French poet, who wrote about the year 1180, there is an expreſs mention made of the loadſtone and the compaſs; and their uſe in navigation obliquely hinted at.

The Variation of the Magnet, or its declination from the pole, was firſt diſcovered by Seb. Cabot, a Venetian, in 1500; and the variation of that variation, by Mr Gellibrand, an Engliſhman, about the year 1625. See Variation.

Laſtly, the dip or inclination of the needle, when at liberty to play vertically, to a point beneath the horizon, was firſt diſcovered by another of our countrymen, Mr R. Norman, about the year 1576. See the article *Dipping*-Needle.

Phænomena of the Magnet. 1°. In every magnet there are two poles, one whereof points northwards, the other ſouthwards; and if the magnet be divided into ever ſo many pieces, the two poles will be found in each piece. The poles of a magnet are found by holding a very fine ſhort needle over it; for where the poles are, the needle will ſtand upright, but nowhere elſe. 2°. Theſe poles in different parts of the globe, are differently inclined towards a point under the horizon. 3°. Theſe poles, though contrary to one another, do help mutually towards the magnet's attraction and ſuſpenſion of iron. 4°. If two magnets be ſpherical, one will turn or conform itſelf to the other, ſo as either of them would do to the earth; and after they have ſo conformed or turned themſelves, they endeavour to approach or join each other; but if placed in a contrary poſition, they avoid each other. 5°. If a magnet be cut through the axis, the parts or ſegments of the ſtone, which before were joined, will now avoid and fly each other. 6°. If the magnet be cut by a ſection perpendicular to its axis, the two points, which before were conjoined, will become contrary poles; one in one, the other in the other ſegment. 7°. Iron receives virtue from the magnet by application to it, or barely from an approach near it, though it do not touch it; and the iron receives this virtue variouſly, according to the parts of the ſtone it is made to touch, or even approach to. 8°. If an oblong piece of iron be any how applied to the ſtone, it receives virtue from it only as to its length. 9°. The magnet loſes none of its own virtue by communicating any to the iron; and this virtue it can communicate to the iron very ſpeedily: though the longer the iron touches or joins the ſtone, the longer will its communicated virtue hold; and a better magnet will communicate more of it, and ſooner, than one not ſo good. 10°. Steel receives virtue from the magnet better than iron. 11°. A needle touched by a magnet will turn its ends the ſame way towards the poles of the world, as the magnet itſelf does. 12°. Neither loadſtone nor needles touched by it do conform their poles exactly to thoſe of the world, but have uſually ſome variation from them: and this variation is different in divers places, and at divers times in the ſame place. 13°. A loadſtone will take up much more iron when armed or capped than it can alone. And though an iron ring or key be ſuſpended by the loadſtone, yet the magnetical particles do not hinder that ring or key from turning round any way, either to the right or left. A loadſtone is ſaid to be armed, when its poles are ſurrounded with plates of ſteel. To determine the quality of ſteel to be applied, try the magnet with ſeveral ſteel bars; and the greateſt weight it takes up, with a bar on, is to be the weight of its armour. 14°. The force of a loadſtone may be variouſly increaſed or leſſened by the various application of iron, or another loadſtone, to it. 15°. A ſtrong magnet at the leaſt diſtance from a leſſer or a weaker, cannot draw to it a piece of iron adhering actually to ſuch leſſer or weaker ſtone; but if it come to touch it, it can draw it from the other: but a weaker magnet, or even a little piece of iron, can draw away or ſeparate a piece of iron contiguous to a greater or ſtronger loadſtone. 16°. In theſe northern parts of the world, the ſouth pole of a loadſtone will raiſe up more iron than the north pole. 17°. A plate of iron only, but no other body interpoſed, can impede the operation of the loadſtone, either as to its attractive or directive quality. Mr Boyle found it true in glaſſes ſealed hermetically; and glaſs is a body as impervious as moſt are to any effluvia. 18°. The power or virtue of a loadſtone may be impaired by lying long in a wrong poſition, as alſo by ruſt, wet, &c. and may be quite deſtroyed by fire. 19°. A piece of iron-wire well touched, will, upon being bent round in a ring, or coiled round on a ſtick, &c. generally, quite loſe its directive virtue, but always have it much diminiſhed: and yet if the whole length of the wire were not entirely bent, ſo that the ends of it, though but for the length of one tenth of an inch, were left ſtrait, the virtue will not be deſtroyed in thoſe parts; though it will in all the reſt. This was firſt obſerved by Grimaldi and de la Hire; and is confirmed by the experiments of Mr Derham; who adds further, that though coiling or bending the wire as above, would always deſtroy its virtue by day, yet it would not do it in the evening. 20°. This ſphere of the activity of magnets is greater and leſs at different times: in particular, that reſerved in the repoſitory of the royal ſociety will keep a key or other body ſuſpended to another, ſometimes, at the height of eight or ten feet; and at others, not above four feet. To which we may add, that the variation of the magnetical needle from the meridian, varies at various times of the day; as appears from ſome experiments of Mr Graham, and likewiſe from obſervations made during one of Capt Cook's voyages. See Variation. 21°. By twiſting a piece of wire touched with a magnet, its virtue is exceedingly diminiſhed; and ſometimes ſo diſordered and confuſed, that in ſome parts it will attract, and in others repel; and even, in ſome places, one ſide of the wire ſeems to be attracted, and the other ſide repelled, by one and the ſame pole of the ſtone. 22°. A piece of wire that has been touched, being ſplit, or cleft in two, the poles are ſometimes changed, as in a cleft magnet; the north becoming the ſouth, and the ſouth the north: and yet ſome-

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Fig. 4.

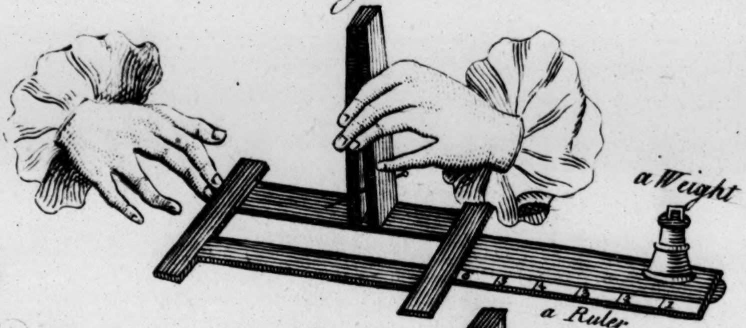

a Weight
a Ruler

Fig. 1.

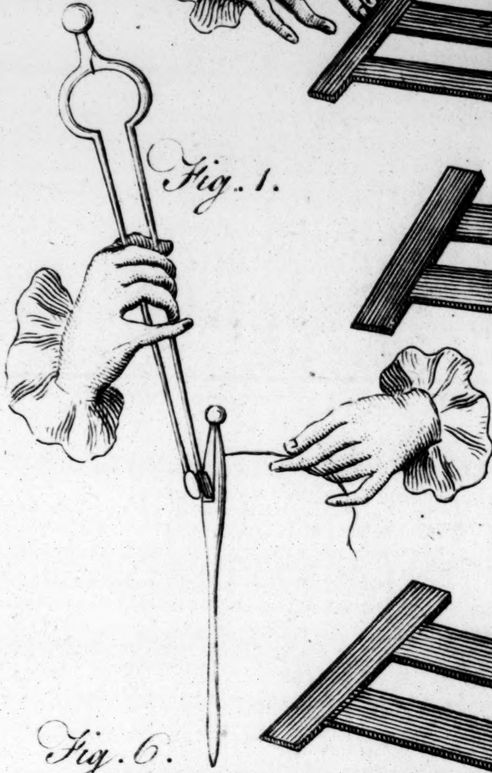


Fig. 2.

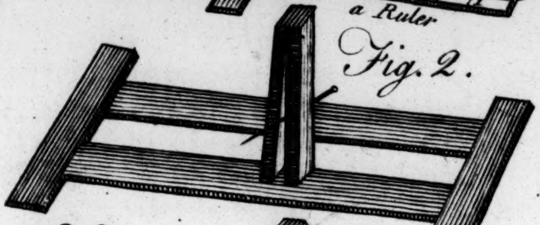


Fig. 3.

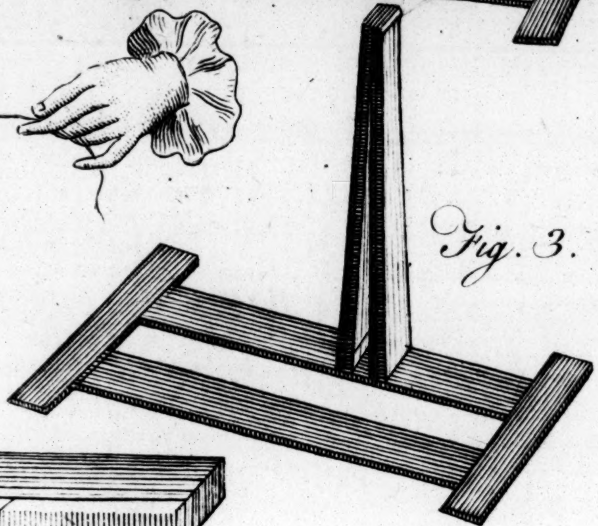


Fig. 6.

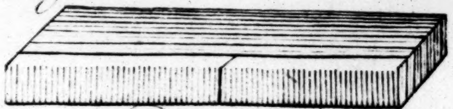


Fig. 5.

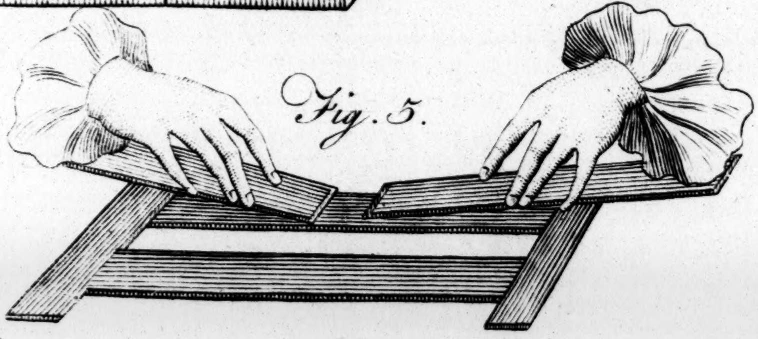
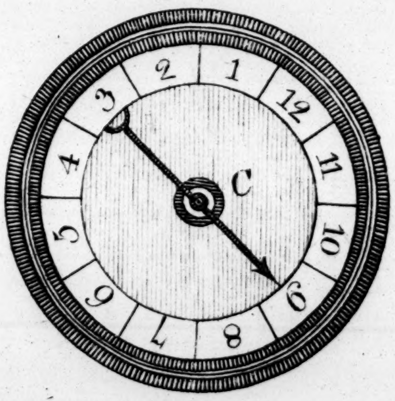


Fig. 9.


2
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12
11
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Fig. 10.

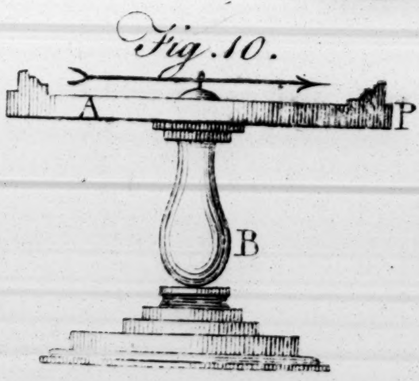


Fig. 11.

North
E
South

Fig. 7.

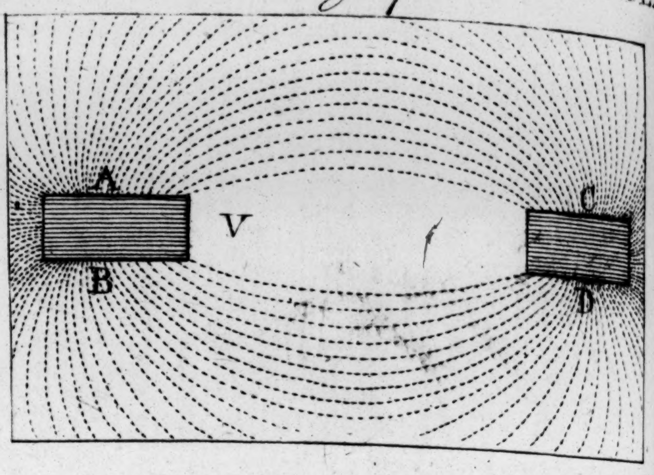


Fig. 8.

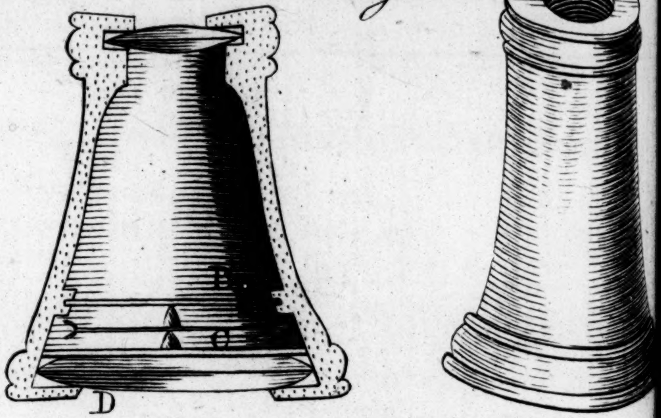


Fig. 12.

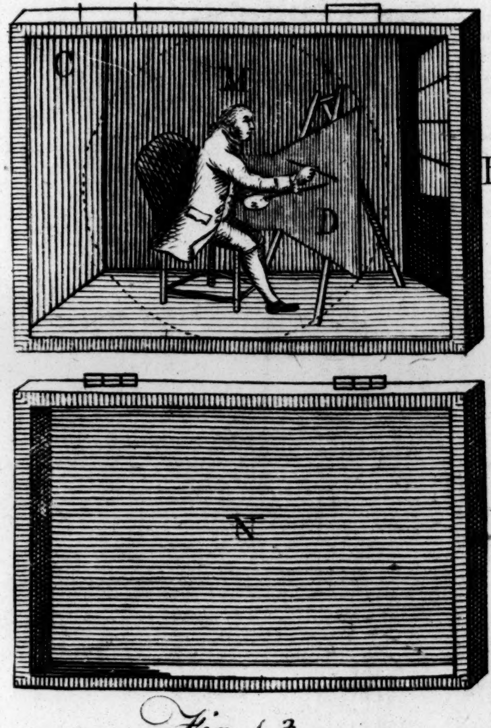


Fig. 19.

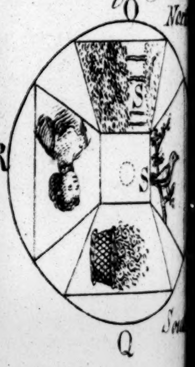


Fig. 18.

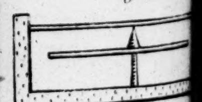


Fig. 17.

Fig. 13.

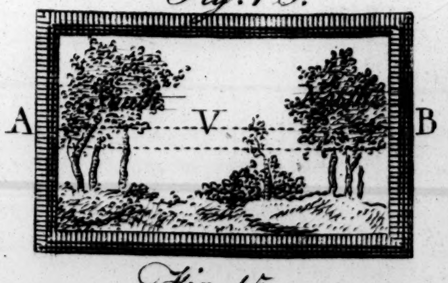


Fig. 14.

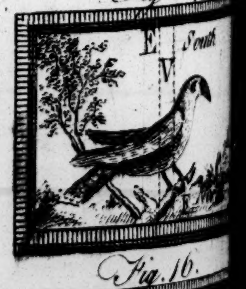


Fig. 15.

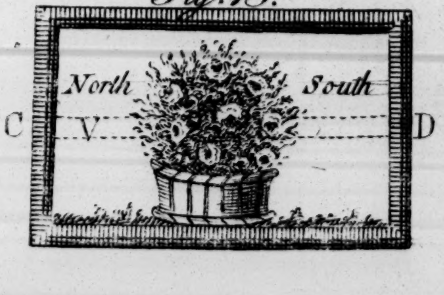
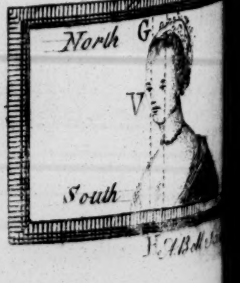

North
South
C
V
D

Fig. 16.


North
G
V
South

ſometimes one half of the wire will retain its former poles, and the other half will have them changed. To which it may be added, that laying one or other ſide of the half uppermoſt, cauſes a great alteration in its tendency or averſion to the poles of the magnet. 23°. A wire being touched from end to end with the ſame pole of the magnet, the end whereat you begin will always turn contrary to the pole which touched it: if it be again touched the ſame way with the other pole of the magnet, it will then be turned the contrary way. 24°. If a piece of wire be touched in the middle with only one pole of the magnet, without moving it backwards or forwards; in that place will be the pole of the wire, and the two ends will be the other pole. 25°. If a magnet be heated red hot, and again cooled either with its ſouth pole towards the north in a horizontal poſition, or with its ſouth pole downwards in a perpendicular poſition, its poles will be changed. 26°. Mr Boyle (to whom we are indebted for the following magnetical phenomena) found he could preſently change the poles of a ſmall fragment of a loadſtone, by applying them to the oppoſite vigorous ones of a large magnet. 27°. Hard iron-tools well tempered, when heated by a briſk attrition, as filing, turning, &c. will attract thin filings or chips of iron, ſteel, &c. and hence we obſerve files, punches, augres, &c. to have a ſmall degree of magnetic virtue. 28°. The iron-bars of windows, &c. which have a long time ſtood in an erect poſition, grow permanently magnetical; the lower ends of ſuch bars being the north-pole, and the upper the ſouthern. 29°. A bar of iron that has not ſtood long in an erect poſture, if it be only held perpendicularly, will become magnetical, and its lower end the north pole, as appears from its attracting the ſouth pole of a needle: but then this virtue is tranſient, and by inverting the bar the poles will ſhift their places. In order therefore to render the quality permanent in an iron bar, it muſt continue a long time in a proper poſition. But the fire will produce the effect in a ſhort time: for as it will immediately deprive a loadſtone of its attractive virtue; ſo it ſoon gives a verticity to a bar of iron, if, being heated red hot, it be cooled in an erect poſture, or directly north and ſouth. Nay, tongs and fire-forks, by being often heated and ſet to cool again in a poſture nearly erect, have gained this magnetical property. Sometimes iron bars, by long ſtanding in a perpendicular poſition, have acquired the magnetic virtue in a ſurpriſing degree. A bar about 10 feet long, and three inches thick, ſupporting the ſummer-beam of a room, was able to turn the needle at eight or ten feet diſtance, and exceeded a loadſtone of three and an half pounds weight. From the middle point upwards it was a north pole, and downwards a ſouth pole; and Mr Martin mentions a bar, which had been the beam of a large ſteel-yard, that had ſeveral poles in it. 30°. Mr Boyle found, that by heating a piece of Engliſh oker red-hot, and placing it to cool in a proper poſture, it manifeſtly acquired a magnetic virtue. And an excellent magnet of the ſame ingenious gentleman's having lain near a year in an inconvenient poſture, had its virtue ſurpriſingly impaired, as if it had been by fire. 31°. A needle well touched, it is known, will point north and ſouth: if it have one contrary touch of the ſame ſtone, it will be deprived of its faculty; and by another ſuch touch will have its poles quite changed. 32°. If a bar of iron have gained a verticity by being heated red-hot and cooled again, north and ſouth, and then hammered at the two ends; its virtue will be deſtroyed by two or three ſmart blows on the middle. 33°. By drawing the back of a knife, or long piece of ſteel-wire, &c. leiſurely over the pole of a loadſtone; carrying the motion from the middle of the ſtone to the pole, the knife or wire will accordingly attract one end of a needle; but if the knife or wire be paſſed from the ſaid pole to the middle of the ſtone, it will repel that end of the needle which in the other caſe it attracts. 34°. Either a magnet or a piece of iron being laid on a piece of cork, ſo as to ſwim freely in water; it will be found, that, whichſoever of the two is held in the hand, the other will be drawn to it: ſo that iron attracts the magnet as much as it is attracted by it; action and re-action being always equal. In this experiment, if the magnet be ſet afloat, it will direct its two poles to the poles of the world. 35°. A knife, &c. touched with a magnet, acquires a greater or leſs degree of virtue, according to the part it is touched on. It receives the ſtrongeſt touch, when it is drawn leiſurely from the handle towards the point over one of the poles: And if the ſame knife thus touched, and thus in poſſeſſion of a ſtrong attractive power, be retouched in a contrary direction, viz. by drawing it from the point towards the handle over the ſame pole, it immediately loſes all its virtue. 36°. A magnet acts with equal force *in vacuo* and in the open air. 37°. The ſmalleſt magnets have generally the greateſt power in proportion to their bulk. A large magnet will ſeldom take up above three or four times its own weight, whereas a ſmall one will frequently take up more than ten times its weight. A magnet worn by Sir Iſaac Newton in a ring, and which weighed only three grains, would take up 746 grains, or almoſt 250 times its own weight. A magnetic bar made by Mr Canton, according to the method deſcribed in the next article, and which weighed 10 ounces 12 penny-weights, took up ſomething more than 79 ounces; and a flat ſemicircular ſteel magnet that weighed an ounce and 13 penny-weights took up an iron wedge of 90 ounces.

Artificial MAGNET, is a term uſually applied to ſteel bars impregnated with the virtues of the natural magnet or loadſtone; and are much more common, as well as more convenient for uſe, than the others.

The late Dr Godwin Knight poſſeſſed a ſurpriſing ſkill in magnetiſm, being able to communicate an extraordinary degree of attractive or repulſive virtue, and to alter or reverſe the poles at pleaſure; but as he refuſed to diſcover his methods upon any terms whatever, (even, as he ſaid, though he ſhould receive in return as many guineas as he could carry) theſe curious and valuable ſecrets have died with him. In the 69th volume of the Philoſophical Tranſactions, however, Mr Benjamin Wilſon hath given a proceſs which at leaſt diſcovers one of the leading principles of Dr Knight's art, and may perhaps be a means of diſcovering the whole to thoſe who ſhall be leſs reſerved. The doctor's proceſs, according to Mr Wilſon, was as follows. Having provided himſelf with a great quantity of clean iron-filings, he put them into a large tub that was more than one third filled with clean

Magnet.

clean water; he then, with great labour, worked the tub to and fro for many hours together, that the friction between the grains of iron by this treatment might break off ſuch ſmaller parts as would remain ſuſpended in the water for a time. The obtaining of theſe very ſmall particles in ſufficient quantity ſeemed to him to be one of the principal deſiderata in the experiment. The water being by this treatment rendered very muddy, he poured the ſame into a clean iron veſſel, leaving the filings behind; and when the water had ſtood long enough to become clear, he poured it out carefully, without diſturbing ſuch of the ſediment as ſtill remained, which now appeared reduced almoſt to impalpable powder. This powder was afterwards removed into another veſſel in order to dry it; but as he had not obtained a proper quantity thereof by this one ſtep, he was obliged to repeat the proceſs many times. Having at laſt procured enough of this very fine powder, the next thing was to make a paſte of it, and that with ſome vehicle which would contain a conſiderable quantity of the phlogiſtic principle: for this purpoſe, he had recourſe to linſeed oil in preference to all other fluids. With theſe two ingredients only he made a ſtiff paſte, and took particular care to knead it well before he moulded it into convenient ſhapes. Sometimes, while the paſte continued in its ſoft ſtate, he would put the impreſſion of a ſeal upon the ſeveral pieces; one of which is in the Britiſh muſæum. This paſte was then put upon wood, and ſometimes on tiles, in order to bake or dry it before a moderate fire, at about the diſtance of a foot or thereabouts. He found that a moderate fire was moſt proper, becauſe a greater degree of heat made the compoſition frequently crack in many places. The time required for the baking or drying of this paſte was generally about five or ſix hours before it attained a ſufficient degree of hardneſs. When that was done, and the ſeveral baked pieces were become cold, he gave them their magnetic virtue in any direction he pleaſed, by placing them between the extreme ends of his large magazine of artificial magnets for a few ſeconds or more, as he ſaw occaſion. By this method the virtue they acquired was ſuch, that, when any of thoſe pieces were held between two of his beſt ten-guinea bars, with its poles purpoſely inverted, it immediately of itſelf turned about to recover its natural direction, which the force of thoſe very powerful bars was not ſufficient to counteract.

As to the method of making artificial magnets of ſteel, none hath ſucceeded in it better than Mr Canton, whoſe proceſs is as follows.

Procure a dozen of bars; ſix of ſoft ſteel, each three inches long, one quarter of an inch broad, and one twentieth of an inch thick; with two pieces of iron, each half the length of one of the bars, but of the ſame breadth and thickneſs: alſo ſix pieces of hard ſteel, each five inches and a half long, half an inch broad, and three-twentieths of an inch thick; with two pieces of iron of half the length, but the whole breadth and thickneſs of one of the hard bars; and let all the bars be marked with a line quite round them at one end. Then take an iron poker and tongs, (fig 1.) or two bars of iron, the larger they are and the longer they have been uſed, the better; and fixing the poker upright between the knees, hold to it, near the top, one of the ſoft bars, having its marked end downwards, by a piece of ſewing ſilk, which muſt be pulled tight by the left hand, that the bar may not ſlide: then graſping the tongs with the right hand, a little below the middle, and holding them nearly in a vertical poſition, let the bar be ſtroked by the lower end from the bottom to the top, about ten times on each ſide, which will give it a magnetic power ſufficient to lift a ſmall key at the marked end: which end, if the bar was ſuſpended on a point, would turn towards the north, and is therefore called the *north pole;* and the unmarked end is, for the ſame reaſon, called the *ſouth pole.* Four of the ſoft bars being impregnated after this manner, lay the two (fig. 2.) parallel to each other, at the diſtance of one fourth of an inch, between the two pieces of iron belonging to them, a north and a ſouth pole againſt each piece of iron: then take two of the four bars already made magnetical, and place them together ſo as to make a double bar in thickneſs, the north pole of one even with the ſouth pole of the other; and the remaining two being put to theſe, one on each ſide, ſo as to have two north and two ſouth poles together; ſeparate the north from the ſouth poles at one end by a large pin, and place them perpendicularly with that end downward on the middle of one of the parallel bars, the two north poles towards its ſouth, and the two ſouth poles towards it north end: ſlide them backward and forward three or four times the whole length of the bar, and removing them from the middle of this, place them on the middle of the other bar as before directed, and go over that in the ſame manner; then turn both the bars the other ſide upwards, and repeat the former operation: this being done, take the two from between the pieces of iron; and, placing the two outermoſt of the touching bars in their room, let the other two be the outermoſt of the four to touch theſe with; and this proceſs being repeated till each pair of bars have been touched three or four times over, which will give them a conſiderable magnetic power, put the half-dozen together after the manner of the four, (fig. 3.) and touch them with two pair of the hard bars placed between their irons, at the diſtance of about half an inch from each other; then lay the ſoft bars aſide, and with the four hard ones let the other two be impregnated (fig. 4.), holding the touching bars apart at the lower end near two tenths of an inch; to which diſtance let them be ſeparated after they are ſet on the parallel bar, and brought together again before they are taken off: this being obſerved, proceed according to the method deſcribed above, till each pair have been touched two or three times over. But as this vertical way of touching a bar will not give it quite ſo much of the magnetic virtue as it will receive, let each pair be now touched once or twice over in their parallel poſition between the irons (fig. 5.), with two of the bars held horizontally, or nearly ſo, by drawing at the ſame time the north of one from the middle over the ſouth end, and the ſouth of the other from the middle over the north end of a parallel bar; then bringing them to the middle again, without touching the parallel bar, give three or four of theſe horizontal ſtrokes to each ſide. The horizontal touch, after the vertical, will make the bars as ſtrong as they poſſibly can be made, as appears by their not receiving any additional ſtrength, when the vertical touch is given by a great number of bars, and the

Plate CLXIII.

the horizontal by thoſe of a ſuperior magnetic power. This whole proceſs may be gone through in about half an hour; and each of the large bars, if well hardened, may be made to lift 28 Troy ounces, and ſometimes more. And when theſe bars are thus impregnated, they will give to an hard bar of the ſame ſize its full virtue in leſs than two minutes; and therefore will anſwer all the purpoſes of magnetiſm in navigation and experimental philoſophy much better than the loadſtone, which is known not to have a ſufficient power to impregnate hard bars. The half dozen being put into a caſe (fig. 6.), in ſuch a manner as that two poles of the ſame denomination may not be together, and their irons with them as one bar, they will retain the virtues they have received; but if their power ſhould, by making experiments, be ever ſo far impaired, it may be reſtored without any foreign aſſiſtance in a few minutes. And if, out of curioſity, a much larger ſet of bars ſhould be required, theſe will communicate to them a ſufficient power to proceed with; and they may, in a ſhort time, by the ſame method, be brought to their full ſtrength.

MAGNETISM,

THE quality or conſtitution of a body, and its pores, whereby it is rendered magnetical, or a magnet. See MAGNET.

Magnetiſm is found to be a tranſient power, capable of being produced and deſtroyed again.

SECT. I. *The Laws of Magnetiſm.*

THE laws of magnetiſm are laid down by Mr Whiſton in the following propoſitions.—1°. The loadſtone has both an attractive and a directive power united together, whereby iron touched by it has only the former; i. e. the magnet not only attracts needles or filings of ſteel, but directs them to certain different angles with reſpect to its own ſurface and axis: whereas iron touched with it, does little or nothing more than attract them; ſtill ſuffering them to lie along or ſtand perpendicular to its ſurface and edges in all places, without any ſuch ſpecial direction.

2°. Neither the ſtrongeſt nor the large magnets give a better directive touch to needles than thoſe of a leſs ſize or virtue: to which it may be added, that whereas there are are two qualities in all magnets, an attractive and a directive one; neither of them depend on, or are any argument of, the ſtrength of the other.

3°. The attractive power of magnets, and of iron, will greatly increaſe or diminiſh the weight of needles on the balance; nay, will overcome that weight, and ſuſtain other additional weights too: while the directive power has much ſmaller effect. Gaſſendus indeed, as well as Merſennus and Dr Gilbert, maintain it has none at all: but miſtakenly; for Mr Whiſton found, from repeated trials on large needles, that after the touch they weighed leſs than before. One of $4584\frac{1}{8}$ grains loſt $2\frac{5}{8}$ grains by the touch; and another of 65726 grains weight, no leſs than 14 grains.

4°. It is probable that iron conſiſts almoſt wholly of the attractive particles; and the magnet, of the attractive and directive together: mixed, probably, together with other heterogeneous matter; as having never been purged by the fire, which iron has: and hence may ariſe the reaſon why iron, after it has been touched, will lift up much greater weights than the loadſtone that touched it.

5°. The quantity and direction of magnetic powers, communicated to needles, is not properly, after ſuch communication, owing to the magnet which gave the touch; but to the goodneſs of the ſteel which receives it, and to the ſtrength and poſition of the terreſtrial loadſtone, whoſe influence alone thoſe needles are afterwards ſubject to, and directed by: ſo that all ſuch needles, if good, move with the ſame ſtrength and point to the ſame angle; what loadſtone ſoever (provided it be good) they were excited by. Nor does the touch ſeem to do much more in magnetical, than attrition in electrical caſes; i. e. it ſerves to rub off ſome obſtructing particles, that adhere to the ſurface of the ſteel, and open the pores of the bodies touched, and ſo make way for the entrance and exit of ſuch effluvia as occaſion or aſſiſt the powers we are ſpeaking of. Hence Mr Whiſton takes occaſion to obſerve, that the directive power of the loadſtone ſeems to be mechanical; and to be derived from magnetic effluvia, circulating continually round it.

6°. The abſolute attractive power of different armed loadſtones, is, *cæteris paribus*, according to the quantity, not of their diameters or ſolidities, but of the ſurfaces of the loadſtones, or in a duplicate proportion of their diameters.

7°. The power of good magnets unarmed, not ſenſibly different in ſtrength, ſimilar in figure and poſition, but unequal in magnitude, is ſometimes a little greater, ſometimes a little leſs, than in the proportion of their ſimilar diameters.

8°. The loadſtone attracts needles that have been touched, and others that have not been touched, with equal force, at diſtances unequal, viz. where the diſtances are to one another as 5 to 2.

9°. Both poles of a loadſtone equally attract needles, till they be thoroughly touched: then it is, and then only, that one pole begins to attract one end, and repel the other; though the repelling pole will ſtill attract upon contact, nay at very ſmall diſtances, notwithſtanding.

10°. The attractive power of loadſtones, in their ſimilar poſition to, but different diſtances from magnetic needles, is in the ſeſquiduplicate proportion of the diſtances of their ſurfaces from their needles reciprocally, or as the mean proportionals between the ſquares and the cubes of thoſe diſtances reciprocally, or as the ſquare roots of the fifth powers of thoſe diſtances reciprocally. Thus the magnetic power of attraction, at twice the diſtance from the ſurface of the loadſtone, is between a fifth and ſixth part of that power at the firſt diſtance. At thrice the diſtance, the power is between the 15th and 16th part; at four times the diſtance, the power 32 times as ſmall; and at ſix times the diſtance, 88 times as ſmall. Where it is to be noted, that the diſtances are not taken, as in the law of gravity, from the centre, but from the ſurface; all experience aſſuring us, that

Laws of Magnetiſm.

the magnetic power reſides chiefly, if not wholly, in the ſurface of the loadſtones and iron, without any particular relation to centre at all. The proportion here laid down was determined by Mr Whiſton, from a great number of experiments of Mr Haukſbee, Dr Brook Taylor, and himſelf; meaſuring the force by the chords of thoſe arcs by which the magnet at ſeveral diſtances draws the needle out of its natural direction, to which chords (as he has demonſtrated) it is ever proportional. The numbers in ſome of their moſt accurate trials he gives us in the following table, ſetting down half the chords, or the ſines of half thoſe arches of declination, as the true meaſures of the power of magnetiſm.

Diſtances in inches.		*Degrees of inclination.*		*Sines of* $\frac{1}{2}$ *arcs.*		*Rat. ſeſquidupl.*
20	—	2	—	175	—	466
$14\frac{8}{9}$	—	4	—	349	—	216
$13\frac{5}{8}$	—	6	—	523	—	170
$12\frac{3}{8}$	—	8	—	697	—	138
$11\frac{1}{8}$	—	10	—	871	—	105
$10\frac{1}{4}$	—	12	—	1045	—	87
$9\frac{1}{4}$	—	14	—	1219	—	70

11°. An inclinatory, or dipping-needle, of ſix inches radius, and of a priſmatic or cylindric figure, when it oſcillates along the magnetic meridian, performs here every mean vibration in about $6''$ or $360'''$; and every ſmall oſcillation in about $5''\frac{1}{2}$, or $330'''$; and the ſame kind of needle, four feet long, makes every mean oſcillation in about $24''$, and every ſmall one in about $22''$.

12°. The entire power of magnetiſm in this country, as it affects needles a foot long, is to that of gravity nearly as 1 to 300; and as it affects needles four feet long, as 1 to 600.

13°. The quantity of magnetic power accelerating the ſame dipping-needle, as it oſcillates in different vertical planes, is ever as the coſines of the angles made by thoſe planes, and the magnetic meridian, taken on the horizon.

Thus if we would eſtimate the quantity of forces in the horizontal and vertical ſituations of needles at London; we ſhall find that the latter, in needles a foot long, is to the entire force along the magnetic meridian as 96 to 100; and in needles four feet long, as 9667 to 10,000: whereas, in the former, the entire force in needles a foot long, is as 28 to 100; and in thoſe four feet long, as 2560 to 10,000. Whence it follows, that the power by which horizontal needles are governed in theſe parts of the world is but one quarter of the power by which the dipping-needle is moved.

Hence alſo, ſince the horizontal needle is moved only by a part of the power which moves the dipping-needle; and that it only points to a certain place in the horizon, becauſe that place is the neareſt its original tendency of any its ſituation will allow it to tend to: whenever the dipping-needle ſtands exactly perpendicular to the horizon, the horizontal needle will not reſpect one point of the compaſs more than another, but will wheel about every way uncertainly.

14°. The time of oſcillation and vibration, both in dipping and horizontal needles equally good, is as their length directly; and the actual velocity of their points along their arcs always equal. Hence magnetical needles are, *cæteris paribus*, ſtill better the longer they are; and that in the ſame proportion with their lengths.

The law of magnetic attraction is not yet aſcertained. Sir Iſaac Newton ſuppoſes it to decreaſe nearly in the triplicate ratio of the diſtance: but Dr Helſham, trying the experiment by his loadſtone, found it to be as the ſquares of the diſtances inverſely; and Mr Martin aſſures us, that the power of his loadſtone decreaſes in a different manner from either, it being in the ſeſquiplicate ratio of the diſtances inverſely. For exactneſs, he made a ſquare bar of iron juſt a quarter of an inch thick, and then provided three pieces of wood of the ſame form and thickneſs exactly; then poiſing the loadſtone very nicely at the end of a balance, which would turn with leſs than a grain, he placed under it the iron with firſt one piece of wood, then two pieces, and laſtly all three pieces upon it: by which means the ſteel points of the pole were kept at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, of an inch from the iron; and in thoſe diſtances the weights put into the oppoſite ſcale, to raiſe the loadſtone from the wood, which is touched while the beam was horizontal, were as follows:

		Grains.		*Rat. of ſq.*		*Rat. of cub.*		*S. rat.*
Diſtances.	$\frac{1}{4}$—	156	—	156	—	56	—	156
	$\frac{1}{2}$—	50	—	39	—	19	—	56
	$\frac{3}{4}$—	28	—	17	—	6	—	30

Whence it appears, that the number of grains to counteract the power of the loadſtone in theſe diſtances, approach very near, and are almoſt the ſame with thoſe which are in the ſeſquiplicate ratio, but are widely different from thoſe which are in the duplicate ratio; and this experiment Mr Martin tried ſeveral times for each diſtance, with ſcarce any variation in the ſucceſs.

The ingenious Muſchenbroek has, with indefatigable pains and application, made experiments of the attractions and repulſions of loadſtones in reſpect to iron and to each other; but could never find any regular proportion in the increaſe of attraction in their approach to, or decreaſe of attraction in their receſs from, one another: only that the force of the magnetic virtue did increaſe in the approach to, and diminiſh in the receſs from the ſtone, but not exactly as the diſtance, nor as the ſquare or cube of the diſtance, nor as the ſquare or cube of the diſtance reciprocally, nor in any proportion reducible to numbers; and therefore he conjectures, that the repulſions and attractions diſturb one another, ſo as to confound the proportion.

Cauſes of Magnetiſm.

SECT. II. *Of the Cauſes of Magnetiſm.*

WITH reſpect to the cauſes of magnetiſm, nothing hath hitherto appeared that can be called a ſatisfactory ſolution of its phænomena. It is certain indeed, that both natural and artificial electricity will give polarity to needles, and even reverſe their poles; but though from this it may appear probable that the electric fluid is alſo the cauſe of magnetiſm, yet in what manner the fluid acts while producing the magnetical phænomena ſeems to be totally unknown. All that hath been diſcovered with regard to this matter is, that a ſhock from a jar moderately charged, ſent from end to end through a fine needle, will give it a polarity. If the needle is reverſed, and a ſimilar ſhock ſent through it the contrary way, the polarity will be deſtroyed; a third ſhock will reverſe the poles; and the ſame thing is done by a ſecond ſhock, if much ſtronger than the firſt. If the ſhock is ſent through the ſides of the needle, its ends will point eaſt and weſt; the reaſon of which is, that one ſide of it is become a north, and the other a ſouth pole. Moſt authors agree, that the end at which the electric blaſt enters becomes the north-pole; but, from ſome experiments, this ſeems very doubtful. The degree of magnetic virtue which electricity can communicate, is very far from being aſcertained.

The direction of the magnetic effluvia is thought to be ſhown by the following experiment. Let AB, CD, (fig. 7.) be the poles of a magnet. Round every ſide lightly ſtrew ſteel filings, on a ſheet of white paper; the particles of the filings will be ſo affected by the effluvia the ſtone, as to ſhow the courſe they take every way. In the middle of each pole, between A B and C D, they appear to proceed in lines nearly ſtraight; towards the ends, they are more and more curved; till at laſt the lines from both ſides, coinciding with each other, form numberleſs curves round the ſtone, which are nearly of a circular figure, as in the plate. Hence it is inferred that the magnetic effluvia, iſſuing from one pole, circulates to the other.

Sect. III. *Entertaining Experiments.*

Conſtruction of the **Magnetic Perspective-glass.**] Provide an ivory tube, about two inches and a half long, and of the form expreſſed in fig. 8. The ſides of this tube muſt be thin enough to admit a conſiderable quantity of light. It is to open at one end with a ſcrew: at that end there muſt be placed an eye-glaſs A of about two inches focus, and at the other end any glaſs you pleaſe. Have a ſmall magnetic needle, like that placed on a compaſs. It muſt be ſtrongly touched, and ſo placed at the bottom of the tube that it may turn freely round. It is to be fixed on the centre of a ſmall ivory circle C, of the thickneſs of a counter, which is placed on the object-glaſs D, and painted black on the ſide next it. This circle muſt be kept faſt by a circular rim of paſteboard, that the needle may not riſe off its pivot, after the ſame manner as in the compaſs. This tube will thus become a compaſs, ſufficiently tranſparent to ſhow the motions of the needle. The eye-glaſs ſerves more clearly to diſtinguiſh the direction of the needle; and the glaſs at the other end, merely to give the tube the appearance of a common perſpective. It will appear from the laws of magnetiſm already laid down, that the needle in this tube, when placed over, and at a ſmall diſtance from, a magnet, or any machine in which it is contained, will neceſſarily place itſelf in a poſition directed by that magnet, and conſequently ſhow where the north and ſouth pole of it is placed; the north end of the needle conſtantly pointing to the ſouth end of the magnet. This effect will take place, though the magnet be incloſed in a caſe of wood, or even metal, as the magnetic effluvia penetrates all bodies. You muſt obſerve, however, that the attracting magnet muſt not be very far diſtant from the needle, eſpecially if it be ſmall, as in that caſe its influence extends but to a ſhort diſtance. This tube may be differently conſtructed, by placing the needle in a perpendicular direction, on a ſmall axis of iron, on which it muſt turn quite freely, between two ſmall plates of braſs placed on each ſide the tube: the two ends of the needle ſhould be in exact equilibrium. The north and ſouth ends of this needle will, in like manner, be attracted by the ſouth and north ends of the magnetic bar. The former conſtruction, however, appears preferable, as it is more eaſily excited, and the ſituation of the needle much more eaſily diſtinguiſhed.

Exper. 1. *The communicative crown.*

Take a crown-piece, and bore a hole in the ſide of it; in which place a piece of wire, or a large needle, well poliſhed, and ſtrongly touched with a magnet. Then cloſe the hole with a ſmall piece of pewter, that it may not be perceived. Now the needle in the magnetic perſpective before deſcribed, when it is brought near to this piece of money, will fix itſelf in a direction correſpondent to the wire or needle in that piece. Deſire any perſon to lend you a crown-piece, which you dextrouſly change for one that you have prepared as above. Then give the latter piece to another perſon, and leave him at liberty either to put it privately in a ſnuff-box, or not; he is then to place the box on a table, and you are to tell him, by means of your glaſs, if the crown is or is not in the box. Then bringing your perſpective cloſe to the box, you will know, by the motion of the needle, whether it be there or not; for as the needle in the perſpective will always keep to the north of itſelf, if you do not perceive it has any motion, you conclude the crown is not in the box. It may happen, however, that the wire in the crown may be placed to the north, in which caſe you will be deceived. Therefore, to be ſure of ſucceſs, when you find the needle in the perſpective remain ſtationary, you may make ſome pretence to deſire the perſon to move the box into another poſition, by which you will certainly know if the crown-piece be there nor not.—You muſt remember, that the needle in the perſpective muſt here be very ſenſible, as the wire in the crown cannot poſſibly have any great attractive force.

2. *The magnetic table.*

Under the top of a common table place a magnet that turns on a pivot; and fix a board under it, that nothing may appear. There may alſo be a drawer under the table, which you pull out to ſhow that there is nothing concealed. At one end of the table there muſt be a pin that communicates with the magnet, and by which it may be placed in different poſitions: this pin muſt be ſo placed as not to be viſible to the ſpectators. Strew ſome ſteel-filings or very ſmall nails over that part of the table where the magnet is. Then aſk any one to lend you a knife, or a key, which will then attract part of the nails or filings. Then placing your hand in a careleſs manner on the pin at the end of the table, you alter the poſition of the magnet; and giving the key to any perſon, you deſire him to make the experiment, which he will then not be able to perform. You then give the key to another perſon; at the ſame time placing the magnet, by means of the pin, in the firſt poſition, when that perſon will immediately perform the experiment.

3. *The myſterious watch.*

You deſire any perſon to lend you his watch, and aſk him if he thinks it will or will not go when it is laid on the table. If he ſay it will, you place it over the end of the magnet, and it will preſently ſtop (A). You then mark with chalk, or a pencil, the preciſe point where you placed the watch; and moving the poſition of the magnet, as in the laſt experiment, you give the watch to another perſon, and deſire him to make the experiment; in which he not ſucceeding, you give it to a third perſon, at the ſame time replacing the magnet, and he will immediately perform the experiment.

4. *The magnetic dial.*

Plate CLXIII.

Provide a circle of wood or ivory, of about five or ſix inches diameter, as fig. 9. which muſt turn quite free on the ſtand B (fig. 10.) in the circular border A: on the circle muſt be placed the dial of paſteboard C (fig. 9.), whoſe circumference is to be divided into 12 equal parts, in which muſt be inſcribed the numbers from 1 to 12, as on a common dial. There muſt be a ſmall groove in the circular frame D, to receive the paſteboard circle: and obſerve, that the dial muſt be made to turn ſo free, that it may go round without moving the circular border in which it is placed. Between the paſteboard circle and the bottom of the frame, place a ſmall artificial magnet E, (fig. 11.) that has a hole in its middle, or a ſmall protuberance. On the outſide of the frame place a ſmall pin P, which ſerves to ſhow where the magnetic needle I, that is placed on a pivot at the centre of the dial, is to ſtop. This needle muſt turn quite free on its pivot, and its two ſides ſhould be in exact equilibrium. Then provide a ſmall bag, that has five or ſix diviſions, like a lady's work-bag, but ſmaller. In one of theſe diviſions put ſmall ſquare pieces of paſteboard, on which are wrote the numbers from 1 to 12, and if you pleaſe you may put ſeveral of each number. In each of the other diviſions you muſt put 12 or more like pieces; obſerving, that all the pieces in each diviſion muſt be marked with the ſame number. Now the needle being placed upon its pivot, and turned quickly about, it will neceſſarily ſtop at that point were the north end of the magnetic bar is placed, and which you previouſly know by the ſituation of the ſmall pin in the circular border. You therefore preſent to any perſon that diviſion of the bag which contains the ſeveral pieces on which is wrote the number oppoſite to the north end of the bar, and tell him to draw any one of them he pleaſes. Then placing the needle on the pivot, you turn it quickly about, and it will neceſſarily ſtop, as we have already ſaid, at that particular number.

Another experiment may be made with the ſame dial, by deſiring two perſons to draw each of them one number out of two different diviſions of the bag; and if their numbers, when added together, exceed 12, the needle or index will ſtop at the number they exceed it; but if they do not amount to 12, the index will ſtop at the ſum of thoſe two numbers. In order to perform this experiment, you muſt place the pin againſt the number 5, if the two numbers to be drawn from the bag be 10 and 7; or againſt 9, if they be 7 and 2.—If this experiment be made immediately after the former, as it eaſily may, by dexterouſly moving the pin, it will appear the more extraordinary.

5. *The dexterous painter.*

Provide two ſmall boxes, as M and N (fig. 12.), four inches wide, and four inches and a half long. Let the box M be half an inch deep, and N two-thirds of an inch. They muſt both open with hinges, and ſhut with a claſp. Have four ſmall pieces of light wood, (fig. 13, 14, 15, 16.) of the ſame ſize with the inſide of the box M (fig. 12.), and about one third of an inch thick. In each of theſe let there be a groove, as AB, EF, CD, GH: theſe grooves muſt be in the middle, and parallel to two of the ſides. In each of theſe grooves place a ſtrong artificial magnet, as fig. 17. The poles of theſe magnets muſt be properly diſpoſed with regard to the figures that are to be painted on the boards; as is expreſſed in the plate. Cover the bars with paper, to prevent their being ſeen; but take care, in paſting it on, not to wet the bars, as they will thereby ruſt, which will conſiderably impair their virtue. When you have painted ſuch ſubjects as you chooſe, you may cover them with a very thin clear glaſs. At the centre of the box N, place a pivot (fig. 18.), on which a ſmall circle of paſteboard OPQR (fig. 19.) is to turn quite free; under which is to be a touched needle S. Divide this circle into four parts, which are to be diſpoſed with regard to the poles of the needle, as is expreſſed in the figure. In theſe four diviſions you are to paint the like ſubjects as are on the four boards, but reduced to a ſmaller compaſs. Cover the inſide of the top of this box with a paper M, (ſee fig. 12.), in which muſt be an opening D, at about half an inch from the centre of the box, that you may perceive, ſucceſſively, the four ſmall pictures on the paſteboard circle juſt mentioned. This opening is to ſerve as the cloth on which the little painter is ſuppoſed to draw one of the pictures. You may cover the top of the box, if you pleaſe, with a thin glaſs. Then give the firſt box to any perſon, and tell him to place any one of the four pictures in it privately, and, when he has cloſed it, to give it you. You then place the other box over it; when the moveable circle, with the needle, will turn till it comes in the ſame poſition with the bar in the firſt box. It will then appear that the little dexterous painter has already copied the picture that is incloſed in the firſt box.

6. *The cylindric oracle.*

Plate CLXIV. fig. 1.

Provide a hollow cylinder of about ſix inches high and three wide, as AB. Its cover CD muſt be made to fix on any way. On one ſide of this box or cylinder let there be a groove, nearly of the ſame length with that ſide; in which place a ſmall ſteel bar (fig. 2.) that is ſtrongly impregnated, with the north pole next the bottom of the cylinder. On the upper ſide of the cover deſcribe a circle; and divide it into ten equal parts, in which are to be wrote the numbers from 1 to 10, as is expreſſed in fig. 3. Place a pivot at the

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(A) To perform this experiment, you muſt uſe a ſtrong magnetic bar; and the balance of the watch muſt not be of braſs, but ſteel.

MAGNETISM. Plate CLXIV.

Fig. 1.

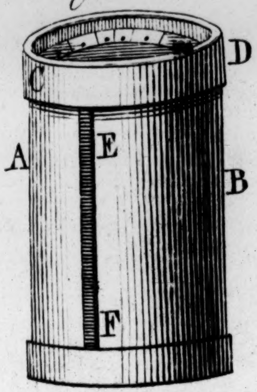


Fig. 2.

Fig. 3.

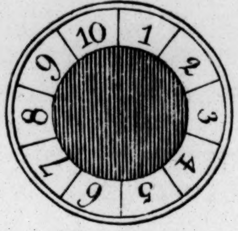
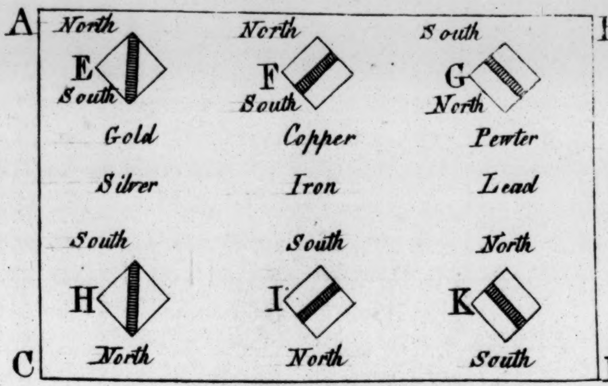

10
1
2
3
4
5
6
7
8
9

Fig. 7.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North
South
B
E
F
G
South
South
North
Gold
Copper
Pewter
Silver
Iron
Lead
South
South
North
H
I
K
C
North
North
South
D

Fig. 8.

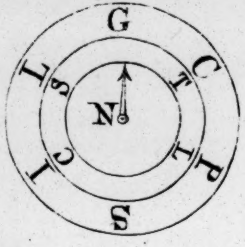


Fig. 4.

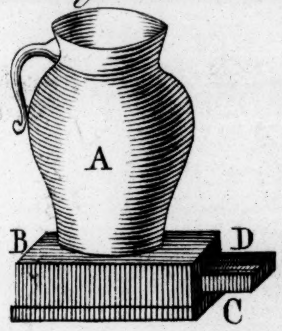


Fig. 5.

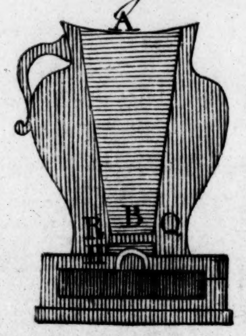
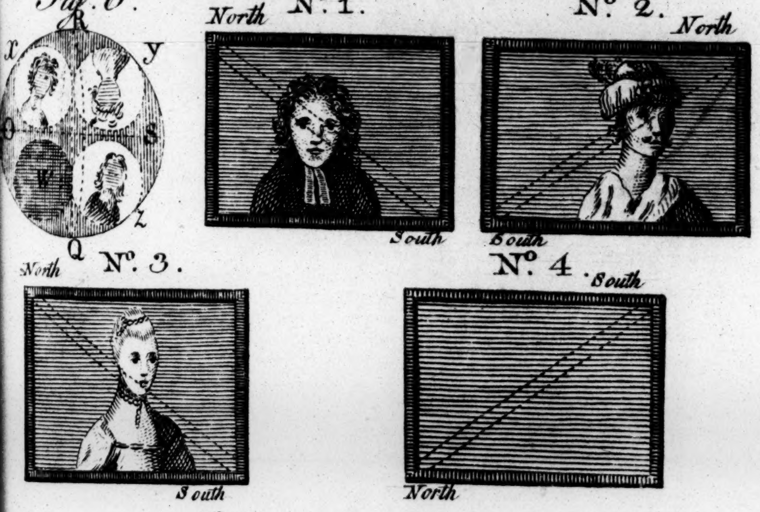


Fig. 6.


R
X
Y
O
S
V
Z
Q
No. 1.
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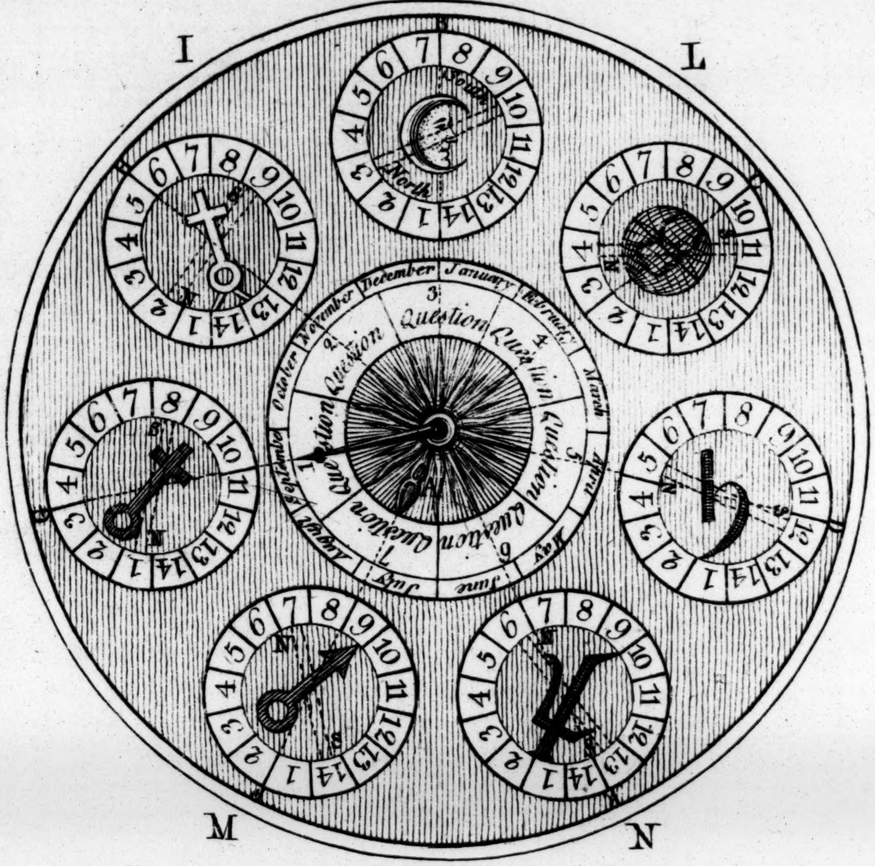
No. 2.
North
South
No. 3.
North
South
No. 4.
South
North

Fig. 9.


I
L
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December
January
February
March
April
May
June
July
August
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A
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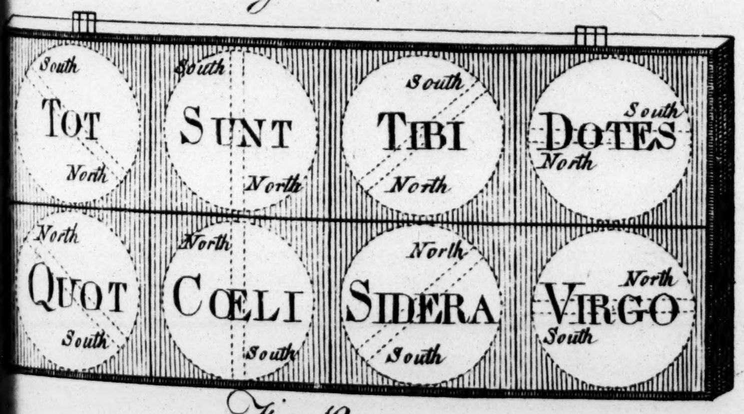
S

Fig. 11.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TOT
North
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SUNT
North
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TIBI
North
South
DOTES
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QUOT
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CŒLI
South
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SIDERA
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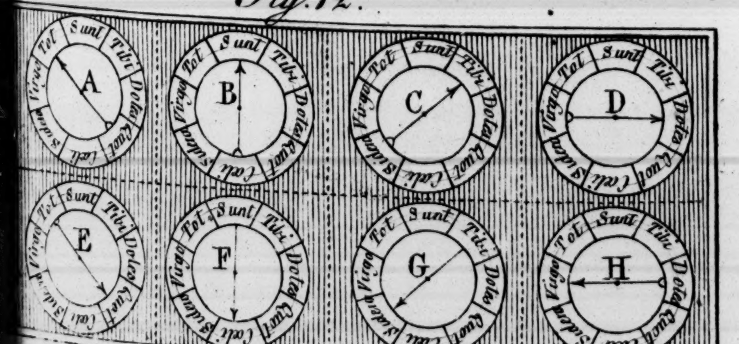
North
VIRGO
South

Fig. 12.


A
B
C
D
E
F
G
H
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Sunt
Tibi
Dotes
Quot
Cœli
Sidera
Virgo

Fig. 10.

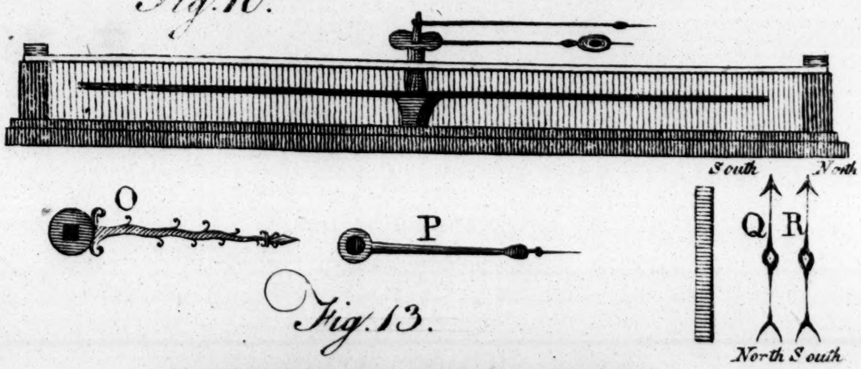
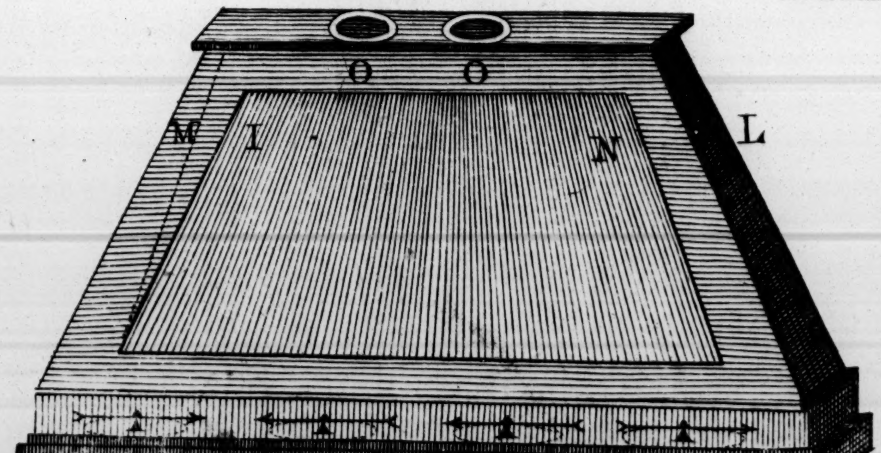

O
P
South
North
Q
R
North
South

Fig. 13.



A Bell Sculpt

3 MA 53

the centre of this circle, and have ready a magnetic needle. You are then to provide a bag, in which there are ſeveral diviſions, like that deſcribed in exper. 4. In each of theſe diviſions put a number of papers, on which the ſame or ſimilar queſtions are wrote. In the cylinder put ſeveral different anſwers to each queſtion, and ſeal them up in the manner of ſmall letters. On each of theſe letters or anſwers is to be wrote one of the numbers of the dial or circle at the top of the box. You are ſuppoſed to know the number of the anſwers to each queſtion. You then offer one of the diviſions of the bag, obſerving which diviſion it is, to any perſon, and deſire him to draw one of the papers. Next put the top on the cylinder, with that number which is wrote on the anſwer directly over the bar. Then placing the needle on the pivot, you turn it briſkly about, and it will naturally ſtop at the number over the bar. You then deſire the perſon who drew the queſtion to obſerve the number at which the needle ſtands, and to ſearch in the box for a paper with the ſame number, which he will find to contain the anſwer.—You may repeat the experiment by offering another diviſion of the bag to the ſame or another perſon; and placing the number that correſponds to the anſwer over the magnetic bar, proceed as before.

It is eaſy to conceive of ſeveral anſwers to the ſame queſtion. For example, ſuppoſe the queſtion to be, Is it proper to marry?

Anſwer 1. While you are young not yet, when you are old not at all.

2. Marry in haſte, and repent at leiſure.

3. Yes, if you can get a good fortune; for ſomething has ſome ſavour, but nothing has no flavour.

4. No, if you are apt to be out of humour with yourſelf; for then you will have two perſons to quarrel with.

5. Yes, if you are ſure to get a good huſband (wife); for that is the greateſt bleſſing of life. But take care you are ſure.

6. No, if the perſon you would marry is an angel; unleſs you will be content to live with a devil.

7. *The enchanted ewer.*

Fix a common ewer, as A, (fig. 4.) of about 12 inches high, upon a ſquare ſtand BC; in one ſide of which there muſt be a drawer D, of about four inches ſquare and half an inch deep. In the ewer place a hollow tin cone, inverted, as AB, fig. 5. of about four inches and a half diameter at top, and two inches at bottom; and at the bottom of the ewer there muſt likewiſe be a hole of two inches diameter.

Upon the ſtand, at about an inch diſtance from the bottom of the ewer, and directly under the hole, place a ſmall convex mirror H, of ſuch convexity that a perſon's viſage, when viewed in it, at about 15 inches diſtance, may not appear above two inches and a half long.

Upon the ſtand likewiſe, at the point I, fig. 2. place a pivot of half an inch high, on which muſt be fixed a touched needle RQ, incloſed in a circle of very thin paſteboard OS, fig. 6. of five inches diameter. Divide this paſteboard into four parts, in each of which draw a ſmall circle: and in three of theſe circles paint a head as x, y, z, the dreſs of each of which is to be different, one, for example, having a turban, another a hat, and the other a woman's cap. Let that part which contains the face in each picture be cut out, and let the fourth circle be entirely cut out; as it is expreſſed in the figure. You muſt obſerve, that the poles of the needle are to be diſpoſed in the ſame manner as in the plate.

You are next to provide four ſmall frames of wood or paſteboard, nº 1. 2. 3. 4. each of the ſame ſize with the inſide of the drawer. On theſe frames muſt be painted the ſame figures as on the circular paſteboard; with this difference, that there muſt be no part of them cut out. Behind each of theſe pictures place a magnetic bar, in the ſame direction as is expreſſed in the plate; and cover them over with paper, that they may not be viſible. Matters being thus prepared, you firſt place in the drawer the frame nº 4. on which there is nothing painted. You then pour a ſmall quantity of water into the ewer, and deſire the company to look into it, aſking them if they ſee their own figures as they are. Then you take out the frame nº 4. and give the three others to any one, deſiring him to chooſe in which of thoſe dreſſes he would appear. Then put the frame with the dreſs he has choſe in the drawer; and a moment after, the perſon looking into the ewer will ſee his own face ſurrounded with the dreſs of that picture. For, the paſteboard circle (divided, as above deſcribed, into four parts, in three of which are painted the ſame figures as on three of the boards, and the fourth left blank) containing a magnetic needle, and the four boards having each a concealed magnet; therefore, when one of them is put in the drawer under the ewer, the circle will correſpond to the poſition of that magnet, and conſequently the perſon looking into the top of the ewer will ſee his own face ſurrounded with the head-dreſs of the figure in the drawer.—This experiment, well performed, is highly agreeable. As the paſteboard circle can contain only three heads, you may have ſeveral ſuch circles, but you muſt then have ſeveral other frames: and the ewer muſt be made to take off from the ſtand.

8. *The box of metals.*

PROVIDE a wooden box, about thirteen inches long and ſeven wide, as ABCD (fig. 7.). The cover of this box ſhould be as thin as poſſible. Have ſix ſmall boxes or tablets, about an inch deep, all of the ſame ſize and form, as EFGHIK, that they may indiſcriminately go into ſimilar holes made in the bottom of the large box. In each of theſe tablets is to be placed a ſmall magnetic ball, and their poles are to be diſpoſed as expreſſed in the figure. Cover each of theſe tablets with a thin plate of one of the ſix following metals, viz. gold, ſilver, copper, iron, pewter, and lead. You muſt alſo have a magnetic perſpective, at the end of which is to be two circles, one divided into ſix equal parts, and the other into four, as in fig. 8. from the centre of which there muſt be drawn an index N, whoſe point is to be placed to the north. Therefore, when you are on the ſide CD of the box, and hold your perſpective over any one of the tablets that are placed on the holes E, F, G, ſo that the index drawn on the circle is perpendicular to the ſide AB, the needle in the perſpective will have its ſouth pole directed to the letter that denotes the metal contained in

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the centre of this circle, and have ready a magnetic needle. You are then to provide a bag, in which there are ſeveral diviſions, like that deſcribed in exper. 4. In each of theſe diviſions put a number of papers, on which the ſame or ſimilar queſtions are wrote. In the cylinder put ſeveral different anſwers to each queſtion, and ſeal them up in the manner of ſmall letters. On each of theſe letters or anſwers is to be wrote one of the numbers of the dial or circle at the top of the box. You are ſuppoſed to know the number of the anſwers to each queſtion. You then offer one of the diviſions of the bag, obſerving which diviſion it is, to any perſon, and deſire him to draw one of the papers. Next put the top on the cylinder, with that number which is wrote on the anſwer directly over the bar. Then placing the needle on the pivot, you turn it briſkly about, and it will naturally ſtop at the number over the bar. You then deſire the perſon who drew the queſtion to obſerve the number at which the needle ſtands, and to ſearch in the box for a paper with the ſame number, which he will find to contain the anſwer.—You may repeat the experiment by offering another diviſion of the bag to the ſame or another perſon; and placing the number that correſponds to the anſwer over the magnetic bar, proceed as before.

It is eaſy to conceive of ſeveral anſwers to the ſame queſtion. For example, ſuppoſe the queſtion to be, Is it proper to marry?

Anſwer 1. While you are young not yet, when you are old not at all.

2. Marry in haſte, and repent at leiſure.

3. Yes, if you can get a good fortune; for ſomething has ſome favour, but nothing has no flavour.

4. No, if you are apt to be out of humour with yourſelf; for then you will have two perſons to quarrel with.

5. Yes, if you are ſure to get a good huſband (wife); for that is the greateſt bleſſing of life. But take care you are ſure.

6. No, if the perſon you would marry is an angel; unleſs you will be content to live with a devil.

7. *The enchanted ewer.*

Fix a common ewer, as A, (fig. 4.) of about 12 inches high, upon a ſquare ſtand BC; in one ſide of which there muſt be a drawer D, of about four inches ſquare and half an inch deep. In the ewer place a hollow tin cone, inverted, as AB, fig. 5. of about four inches and a half diameter at top, and two inches at bottom; and at the bottom of the ewer there muſt likewiſe be a hole of two inches diameter.

Upon the ſtand, at about an inch diſtance from the bottom of the ewer, and directly under the hole, place a ſmall convex mirror H, of ſuch convexity that a perſon's viſage, when viewed in it, at about 15 inches diſtance, may not appear above two inches and a half long.

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You are next to provide four ſmall frames of wood or paſteboard, nº 1. 2. 3. 4. each of the ſame ſize with the inſide of the drawer. On theſe frames muſt be painted the ſame figures as on the circular paſteboard; with this difference, that there muſt be no part of them cut out. Behind each of theſe pictures place a magnetic bar, in the ſame direction as is expreſſed in the plate; and cover them over with paper, that they may not be viſible. Matters being thus prepared, you firſt place in the drawer the frame nº 4. on which there is nothing painted. You then pour a ſmall quantity of water into the ewer, and deſire the company to look into it, aſking them if they ſee their own figures as they are. Then you take out the frame nº 4. and give the three others to any one, deſiring him to chooſe in which of thoſe dreſſes he would appear. Then put the frame with the dreſs he has choſe in the drawer; and a moment after, the perſon looking into the ewer will ſee his own face ſurrounded with the dreſs of that picture. For, the paſteboard circle (divided, as above deſcribed, into four parts, in three of which are painted the ſame figures as on three of the boards, and the fourth left blank) containing a magnetic needle, and the four boards having each a concealed magnet; therefore, when one of them is put in the drawer under the ewer, the circle will correſpond to the poſition of that magnet, and conſequently the perſon looking into the top of the ewer will ſee his own face ſurrounded with the head-dreſs of the figure in the drawer.—This experiment, well performed, is highly agreeable. As the paſteboard circle can contain only three heads, you may have ſeveral ſuch circles, but you muſt then have ſeveral other frames: and the ewer muſt be made to take off from the ſtand.

8. *The box of metals.*

Provide a wooden box, about thirteen inches long and ſeven wide, as ABCD (fig. 7.). The cover of this box ſhould be as thin as poſſible. Have ſix ſmall boxes or tablets, about an inch deep, all of the ſame ſize and form, as EFGHIK, that they may indiſcriminately go into ſimilar holes made in the bottom of the large box. In each of theſe tablets is to be placed a ſmall magnetic ball, and their poles are to be diſpoſed as expreſſed in the figure. Cover each of theſe tablets with a thin plate of one of the ſix following metals, viz. gold, ſilver, copper, iron, pewter, and lead. You muſt alſo have a magnetic perſpective, at the end of which is to be two circles, one divided into ſix equal parts, and the other into four, as in fig. 8. from the centre of which there muſt be drawn an index N, whoſe point is to be placed to the north. Therefore, when you are on the ſide CD of the box, and hold your perſpective over any one of the tablets that are placed on the holes E, F, G, ſo that the index drawn on the circle is perpendicular to the ſide AB, the needle in the perſpective will have its ſouth pole directed to the letter that denotes the metal contained in that

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that tablet. When you hold the perſpective over one of the boxes placed in the holes H, I, K, ſo that the index drawn on the circle is perpendicular to the ſide CD, the ſouth pole of the needle will in like manner expreſs the name of the metal incloſed. If the under-ſide of any one of the tablets be turned upward, the needle will be ſlower in its motion, on account of the greater diſtance of the bar. The gold and ſilver will ſtill have the ſame direction; but the four other metals will be expreſſed by the letters on the interior circle. If any one of the metals be taken away, the needle will not then take any of the above directions, but naturally point to the north; and its motion will be much ſlower. You therefore give the box to any one, and leave him at liberty to diſpoſe all the tablets in what manner and with what ſide upward he pleaſe, and even to take any one of them away. Then, by the aid of your perſpective, you tell him immediately the name of the metal on each tablet, and of that he has taken away.

This box of metals will, on compariſon, be found far to exceed that which has been publicly exhibited: for that, being compoſed of ſix tablets, of which two only differ in form, admits but of ſix different diſpoſitions, whereas in this the tablets may be placed 720 different ways. In the other, you muſt alſo know the particular ſide of the box, which in this is not at all neceſſary. Nay, you may here diſtinguiſh each metal, though the box be completely covered with paper; for the effect of the needle will be always the ſame. The experiments with this box are therefore much more extaordinary, and its conſtruction at the ſame time more ſimple.

9. *The magnetic planetarium.*

CONSTRUCT a round box, ILMN, (fig. 9.), of eight or nine inches diameter, and half an inch deep. On its bottom fix a circle of paſteboard, on which draw the central circle A, and the ſeven circumjacent circles B, C, D, E, F, G, H. Divide the central circle into ſeven equal parts by the lines AB, AC, AD, AE, AF, AG, and AH, which muſt paſs through the centres of the other circles, and divide each of them into two equal parts. Then divide the circumference of each of thoſe circles into 14 equal parts, as in the figure. You are likewiſe to have another paſteboard of the ſame figure, and divided in the ſame manner, which muſt turn freely in the box, by means of an axis placed on a pivot; one end of which is to be fixed in the centre of the circle A. See fig. 10. On each of the ſeven ſmaller circles at the bottom of the box, place a magnetic bar, two inches long, in the ſame direction with the diameters of thoſe circles, and their poles in the ſituations expreſſed in the figure. There muſt be an index O, like that of the hour-hand of a dial, which is to be fixed on the axis of the central circle, and by which the paſteboard circle in the box may be turned about. There muſt be alſo a needle P, which muſt turn freely on the axis, without moving the circular paſteboard.—In each of the ſeven diviſions of the central circle write a different queſtion; and in another circle, divided into 12 parts, you may write the names of the 12 months. In each of the ſeven circles write two anſwers to each queſtion, obſerving that there muſt be but ſeven words in each anſwer; in the following manner. In the firſt diviſion of the circle G, which is oppoſite to the firſt queſtion, write the firſt word of the firſt anſwer. In the ſecond diviſion of the next circle, write the ſecond word; and ſo on to the laſt word, which will be in the ſeventh diviſion of the ſeventh circle. In the eighth diviſion of the firſt circle, write the firſt word of the ſecond anſwer; in the ninth diviſion of the ſecond circle, write the ſecond word of the ſame anſwer; and ſo on to the 14th diviſion of the ſeventh circle, which muſt contain the laſt word of that anſwer. The ſame muſt be done for all the ſeven queſtions; and to each of them muſt be aſſigned two anſwers, the words of which are to be diſperſed through the ſeven circles. At the center of each of theſe circles place a pivot; and have two magnetic needles, the pointed end of one of which muſt be north, and the other ſouth, (QR). Now, the index of the central circle being directed to any one of the queſtions, if you place one of the two magnetic needles on each of the ſeven leſſer circles, they will fix themſelves according to the direction of the bars on the correſpondent circles at the bottom of the box, and conſequently point to the ſeven words that compoſe the anſwer. If you place one of the other needles on each circle, it will point to the words that are diametrically oppoſite to thoſe of the firſt anſwer, the north pole being in the place of the ſouth pole of the other.—You therefore preſent this planetarium to any perſon, and deſire him to chooſe one of the queſtions there wrote; and you then ſet the index of the central circle to that queſtion, and putting one of the needles on each of the ſeven circles, you turn it about; and when they all ſettle, they will point to the ſeven words that compoſe the anſwer. The two anſwers may be one favourable and the other unfavourable; and the different needles will ſerve to diverſify the anſwers when you repeat the experiment.

There may be alſo a moveable needle to place againſt the names of the months; and when the party has fixed upon a queſtion, you place that needle againſt the month in which he was born, which will give the buſineſs an air of more myſtery. On the centre of the large circle may be the figure of the ſun; and on each of the ſeven ſmaller circles one of the characters of the five planets, together with the earth and moon. This experiment, well executed, is one of the moſt entertaining that magnetiſm has produced.

10. *The ſagacious ſwan.*

PROVIDE a box XY, 18 inches long, nine wide, and two deep, the top of which is to ſlide on and off at the end Y. Toward the end X, deſcribe a circle of ſix inches diameter, round which are to be fixed ſix ſmall vaſes of wood or ivory, of one inch and a half high; and to each of them there muſt be a cover. At the end Y place an egg B, of ivory or other matter, of about three inches and a half high, with a cover that ſhuts by a hinge, and faſtens with a ſpring. It muſt be fixed on the ſtand C; through which, as well as the bottom of the egg, and the part of the box directly underneath, there muſt paſs a hole of one-third of an inch in diameter. In this cavity place an ivory cylinder F, that can move freely, and riſes or falls by means of the ſpring R. You muſt have a thin copper baſon A, of ſix inches diameter, which is to be placed on the centre of the circle at X, and conſequently in the middle of the ſix vaſes. Let a proper workman conſtruct the movement expreſſed by fig. 2. which is compoſed of a quadrant G, that has 16 teeth, and is moveable about an axis in the ſtand H, that has an elbow, by which it is ſcrewed to the bottom of the box at L. To the quadrant there muſt be joined the ſtraight piece K. The horizontal wheel M has 24 teeth; and is ſupported by the piece S, which is ſcrewed to the end of the box next Y. On the axis of this wheel place a braſs rod O P, five inches long; and at the part O place a large bar or horſe-ſhoe, of a ſemicircular form, and about two inches and a half diameter, ſtrongly impregnated. The ſteel rod V, takes at one end the teeth of the quadrant G, by the pinion F, and at the other end the wheel M, by the perpendicular wheel N, of 30 teeth; the two ends of this rod are ſupported by the two ſtands that hold the other pieces. Under the piece K, that joins to the quadrant, muſt be placed the ſpring R, by which it is raiſed, and puſhes up the cylinder that goes thro' the ſtand C into the egg. You muſt alſo have ſix ſmall etwees or caſes, as Y, fig. 3. They muſt be of the ſame circumference with the cylinder in the ſtand, and round at their extremities: their length muſt be different, that, when they are placed in the egg, and the lower end enters the hole in which is the cylinder, they may thruſt it down more or leſs, when the top of the egg, againſt which they preſs, is faſtened down; and thereby lower the bar that is fixed to the end of the quadrant, and conſequently, by means of the pinion (fig. 4.) and wheels N M (fig. 2.), turn the horſe-ſhoe that is placed upon the axis of the laſt wheel. The exact length of theſe etwees can be determined by trials only; which trials, however, may be made with round pieces of wood. In each of theſe etwees place a different queſtion, wrote on a ſlip of paper and rolled up, and in each of the vaſes put the anſwer to one of the queſtions; as you will know, by trials, where the magnetic bar or horſe-ſhoe will ſtop. Laſtly, provide a ſmall figure of a ſwan, or what other you pleaſe, made of cork or enamel, in which you muſt fix a touched needle, of the largeſt ſize of thoſe commonly uſed in ſewing.

Being thus prepared, you offer a perſon the ſix etwees, and deſire him to chooſe any one of them himſelf, and conceal the others, or give them to different perſons. He is then to open his etwee, read the queſtion it contains to himſelf, and return the etwee to you, after replacing the queſtion. You then put the etwee in the egg, and, placing the ſwan upon the water in the baſon, you tell the company ſhe will preſently diſcover in which of the vaſes the anſwer is contained. The ſame experiment may be repeated with all the etwees.

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11. *The multifarious verſe.*

THE eight words that compoſe this Latin verſe,

Tot ſunt tibi dotes, quot cœli ſidera, virgo (A),

being privately placed in any one of the different combinations of which they are ſuſceptible, and which are 40320 in number, to tell the order in which they are placed.

Plate CLXV. fig. 11.

Provide a box that ſhuts with hinges, and is eight inches long, three wide, and half an inch deep. Have eight pieces of wood about one-third of an inch thick, two inches long, and one and a half wide, which will therefore, when placed cloſe together, exactly fill the box. In each of theſe pieces or tablets place a magnetic bar, with their poles as is expreſſed in the figure. The bars being covered over, write on each of the tablets, in the order they then ſtand, one of the words of the foregoing Latin verſe. On a very thin board of the ſame dimenſions with the box, draw the eight circles, A, B, C, D, E, F, G, H, (fig. 12.) whoſe centres ſhould be exactly over thoſe of the eight tablets in the box when the board is placed upon it. Divide each of thoſe circles into eight parts, as in the figure; and in each of thoſe diviſions write one of the words of the Latin verſe, and in the preciſe order expreſſed in the plate; ſo that, when the board is placed over the box, the eight touched needles placed at the centre of the circles may be regulated by the poles of the bars in the box, and conſequently the word that the needle points to in the circle be the ſame with that inſcribed on the tablet. Cover the board with a glaſs, to prevent the needles from riſing off their pivots, as is done in the ſea-compaſs. Over the board place four plates of glaſs, I, L, M, N, fig. 13. which will give the machine the figure of a truncated pyramid, of eight inches high. Cover it with a glaſs, or rather a board in which are placed two lenſes, O O, of eight inches focus, and diſtant from each other about half an inch. Line the four plates of glaſs that compoſe the ſides with very thin paper, that will admit the light, and at the ſame time prevent the company from ſeeing the circles on the board.

Theſe preparations being made, you give the box to any one; and tell him to place the tablets on which the words are wrote, privately, in what poſition he thinks proper, then to cloſe the box, and, if he pleaſe, to wrap it up in paper, ſeal it, and give it you. Then placing the board with the pyramid upon it, you immediately tell him the order in which the tablets are placed, by reading the words to which the needles on the circles point.

MAGNITUDE, whatever is made up of parts locally extended, or that hath ſeveral dimenſions; as a line, ſurface, ſolid, &c.

MAGNIFYING, the making of objects appear larger than they would otherwiſe do; whence convex lenſes, which have the power of doing this, are called *magnifying glaſſes*. See OPTICS.

MAGNOLIA, the LAUREL-LEAVED TULIP-TREE; a genus of the polygynia order, belonging to the polyandria claſs of plants.

Species. 1. The glauca or ſmall magnolia is a native of Virginia, Carolina, and other parts of North America. In moiſt places it riſes from ſeven or eight to 15 or 16 feet high, with a ſlender ſtem. The wood is white and ſpongy, the bark ſmooth and of a greeniſh white colour; the branches garniſhed with thick ſmooth leaves, like thoſe of the bay; but of an oval ſhape, ſmooth on their edges, and white underneath.

(A) i. e. Thy virtues, virgin, are as numerous as the ſtars of heaven.

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that tablet. When you hold the perſpective over one of the boxes placed in the holes H, I, K, ſo that the index drawn on the circle is perpendicular to the ſide CD, the ſouth pole of the needle will in like manner expreſs the name of the metal incloſed. If the under-ſide of any one of the tablets be turned upward, the needle will be ſlower in its motion, on account of the greater diſtance of the bar. The gold and ſilver will ſtill have the ſame direction; but the four other metals will be expreſſed by the letters on the interior circle. If any one of the metals be taken away, the needle will not then take any of the above directions, but naturally point to the north; and its motion will be much ſlower. You therefore give the box to any one, and leave him at liberty to diſpoſe all the tablets in what manner and with what ſide upward he pleaſe, and even to take any one of them away. Then, by the aid of your perſpective, you tell him immediately the name of the metal on each tablet, and of that he has taken away.

This box of metals will, on compariſon, be found far to exceed that which has been publicly exhibited: for that, being compoſed of ſix tablets, of which two only differ in form, admits but of ſix different diſpoſitions, whereas in this the tablets may be placed 720 different ways. In the other, you muſt alſo know the particular ſide of the box, which in this is not at all neceſſary. Nay, you may here diſtinguiſh each metal, though the box be completely covered with paper; for the effect of the needle will be always the ſame. The experiments with this box are therefore much more extarordinary, and its conſtruction at the ſame time more ſimple.

9. *The magnetic planetarium.*

CONSTRUCT a round box, ILMN, (fig. 9.), of eight or nine inches diameter, and half an inch deep. On its bottom fix a circle of paſteboard, on which draw the central circle A, and the ſeven circumjacent circles B, C, D, E, F, G, H. Divide the central circle into ſeven equal parts by the lines AB, AC, AD, AE, AF, AG, and AH, which muſt paſs through the centres of the other circles, and divide each of them into two equal parts. Then divide the circumference of each of thoſe circles into 14 equal parts, as in the figure. You are likewiſe to have another paſteboard of the ſame figure, and divided in the ſame manner, which muſt turn freely in the box, by means of an axis placed on a pivot; one end of which is to be fixed in the centre of the circle A. See fig. 10. On each of the ſeven ſmaller circles at the bottom of the box, place a magnetic bar, two inches long, in the ſame direction with the diameters of thoſe circles, and their poles in the ſituations expreſſed in the figure. There muſt be an index O, like that of the hour-hand of a dial, which is to be fixed on the axis of the central circle, and by which the paſteboard circle in the box may be turned about. There muſt be alſo a needle P, which muſt turn freely on the axis, without moving the circular paſteboard.—In each of the ſeven diviſions of the central circle write a different queſtion; and in another circle, divided into 12 parts, you may write the names of the 12 months. In each of the ſeven circles write two anſwers to each queſtion, obſerving that there muſt be but ſeven words in each anſwer; in the following manner. In the firſt diviſion of the circle G, which is oppoſite to the firſt queſtion, write the firſt word of the firſt anſwer. In the ſecond diviſion of the next circle, write the ſecond word; and ſo on to the laſt word, which will be in the ſeventh diviſion of the ſeventh circle. In the eighth diviſion of the firſt circle, write the firſt word of the ſecond anſwer; in the ninth diviſion of the ſecond circle, write the ſecond word of the ſame anſwer; and ſo on to the 14th diviſion of the ſeventh circle, which muſt contain the laſt word of that anſwer. The ſame muſt be done for all the ſeven queſtions; and to each of them muſt be aſſigned two anſwers, the words of which are to be diſperſed through the ſeven circles. At the center of each of theſe circles place a pivot; and have two magnetic needles, the pointed end of one of which muſt be north, and the other ſouth, (QR). Now, the index of the central circle being directed to any one of the queſtions, if you place one of the two magnetic needles on each of the ſeven leſſer circles, they will fix themſelves according to the direction of the bars on the correſpondent circles at the bottom of the box, and conſequently point to the ſeven words that compoſe the anſwer. If you place one of the other needles on each circle, it will point to the words that are diametrically oppoſite to thoſe of the firſt anſwer, the north pole being in the place of the ſouth pole of the other.—You therefore preſent this planetarium to any perſon, and deſire him to chooſe one of the queſtions there wrote; and you then ſet the index of the central circle to that queſtion, and putting one of the needles on each of the ſeven circles, you turn it about; and when they all ſettle, they will point to the ſeven words that compoſe the anſwer. The two anſwers may be one favourable and the other unfavourable; and the different needles will ſerve to diverſify the anſwers when you repeat the experiment.

There may be alſo a moveable needle to place againſt the names of the months; and when the party has fixed upon a queſtion, you place that needle againſt the month in which he was born, which will give the buſineſs an air of more myſtery. On the centre of the large circle may be the figure of the ſun; and on each of the ſeven ſmaller circles one of the characters of the five planets, together with the earth and moon. This experiment, well executed, is one of the moſt entertaining that magnetiſm has produced.

10. *The ſagacious ſwan.*

Plate CLX fig.

PROVIDE a box XY, 18 inches long, nine wide, and two deep, the top of which is to ſlide on and off at the end Y. Toward the end X, deſcribe a circle of ſix inches diameter, round which are to be fixed ſix ſmall vaſes of wood or ivory, of one inch and a half high; and to each of them there muſt be a cover. At the end Y place an egg B, of ivory or other matter, of about three inches and a half high, with a cover that ſhuts by a hinge, and faſtens with a ſpring. It muſt be fixed on the ſtand C; through which, as well as the bottom of the egg, and the part of the box directly underneath, there muſt paſs a hole of one-third of an inch in diameter. In this cavity place an ivory cylinder F, that can move freely, and riſes or falls by means of the ſpring R. You muſt have a thin copper baſon A, of ſix inches diameter, which is to be placed on

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ents.

on the centre of the circle at X, and conſequently in the middle of the ſix vaſes. Let a proper workman conſtruct the movement expreſſed by fig. 2. which is compoſed of a quadrant G, that has 16 teeth, and is moveable about an axis in the ſtand H, that has an elbow, by which it is ſcrewed to the bottom of the box at L. To the quadrant there muſt be joined the ſtraight piece K. The horizontal wheel M has 24 teeth; and is ſupported by the piece S, which is ſcrewed to the end of the box next Y. On the axis of this wheel place a braſs rod O P, five inches long; and at the part O place a large bar or horſe-ſhoe, of a ſemicircular form, and about two inches and a half diameter, ſtrongly impregnated. The ſteel rod V, takes at one end the teeth of the quadrant G, by the pinion F, and at the other end the wheel M, by the perpendicular wheel N, of 30 teeth; the two ends of this rod are ſupported by the two ſtands that hold the other pieces. Under the piece K, that joins to the quadrant, muſt be placed the ſpring R, by which it is raiſed, and puſhes up the cylinder that goes thro' the ſtand C into the egg. You muſt alſo have ſix ſmall etwees or caſes, as Y, fig. 3. They muſt be of the ſame circumference with the cylinder in the ſtand, and round at their extremities; their length muſt be different, that, when they are placed in the egg, and the lower end enters the hole in which is the cylinder, they may thruſt it down more or leſs, when the top of the egg, againſt which they preſs, is faſtened down; and thereby lower the bar that is fixed to the end of the quadrant, and conſequently, by means of the pinion (fig. 4.) and wheels N M (fig. 2.), turn the horſe-ſhoe that is placed upon the axis of the laſt wheel. The exact length of theſe etwees can be determined by trials only; which trials, however, may be made with round pieces of wood. In each of theſe etwees place a different queſtion, wrote on a ſlip of paper and rolled up, and in each of the vaſes put the anſwer to one of the queſtions; as you will know, by trials, where the magnetic bar or horſe-ſhoe will ſtop. Laſtly, provide a ſmall figure of a ſwan, or what other you pleaſe, made of cork or enamel, in which you muſt fix a touched needle, of the largeſt ſize of thoſe commonly uſed in ſewing.

Being thus prepared, you offer a perſon the ſix etwees, and deſire him to chooſe any one of them himſelf, and conceal the others, or give them to different perſons. He is then to open his etwee, read the queſtion it contains to himſelf, and return the etwee to you, after replacing the queſtion. You then put the etwee in the egg, and, placing the ſwan upon the water in the baſon, you tell the company ſhe will preſently diſcover in which of the vaſes the anſwer is contained. The ſame experiment may be repeated with all the etwees.

Entertaining Experiments.

11. *The multifarious verſe.*

THE eight words that compoſe this Latin verſe,

Tot ſunt tibi dotes, quot cœli ſidera, virgo (A),

being privately placed in any one of the different combinations of which they are ſuſceptible, and which are 40320 in number, to tell the order in which they are placed.

Plate CLXV. fig. 11.

Provide a box that ſhuts with hinges, and is eight inches long, three wide, and half an inch deep. Have eight pieces of wood about one-third of an inch thick, two inches long, and one and a half wide, which will therefore, when placed cloſe together, exactly fill the box. In each of theſe pieces or tablets place a magnetic bar, with their poles as is expreſſed in the figure. The bars being covered over, write on each of the tablets, in the order they then ſtand, one of the words of the foregoing Latin verſe. On a very thin board of the ſame dimenſions with the box, draw the eight circles, A, B, C, D, E, F, G, H, (fig. 12.) whoſe centres ſhould be exactly over thoſe of the eight tablets in the box when the board is placed upon it. Divide each of thoſe circles into eight parts, as in the figure; and in each of thoſe diviſions write one of the words of the Latin verſe, and in the preciſe order expreſſed in the plate; ſo that, when the board is placed over the box, the eight touched needles placed at the centre of the circles may be regulated by the poles of the bars in the box, and conſequently the word that the needle points to in the circle be the ſame with that inſcribed on the tablet. Cover the board with a glaſs, to prevent the needles from riſing off their pivots, as is done in the ſea-compaſs. Over the board place four plates of glaſs, I, L, M, N, fig. 13. which will give the machine the figure of a truncated pyramid, of eight inches high. Cover it with a glaſs, or rather a board in which are placed two lenſes, O O, of eight inches focus, and diſtant from each other about half an inch. Line the four plates of glaſs that compoſe the ſides with very thin paper, that will admit the light, and at the ſame time prevent the company from ſeeing the circles on the board.

Theſe preparations being made, you give the box to any one; and tell him to place the tablets on which the words are wrote, privately, in what poſition he thinks proper, then to cloſe the box, and, if he pleaſe, to wrap it up in paper, ſeal it, and give it you. Then placing the board with the pyramid upon it, you immediately tell him the order in which the tablets are placed, by reading the words to which the needles on the circles point.

MAGNITUDE, whatever is made up of parts locally extended, or that hath ſeveral dimenſions; as a line, ſurface, ſolid, &c.

MAGNIFYING, the making of objects appear larger than they would otherwiſe do; whence convex lenſes, which have the power of doing this, are called *magnifying glaſſes*. See OPTICS.

MAGNOLIA, the LAUREL-LEAVED TULIP-TREE; a genus of the polygynia order, belonging to the polyandria claſs of plants.

Species. 1. The glauca or ſmall magnolia is a native of Virginia, Carolina, and other parts of North America. In moiſt places it riſes from ſeven or eight to 15 or 16 feet high, with a ſlender ſtem. The wood is white and ſpongy, the bark ſmooth and of a greeniſh white colour; the branches garniſhed with thick ſmooth leaves, like thoſe of the bay; but of an oval ſhape, ſmooth on their edges, and white underneath.

(A) i. e. Thy virtues, virgin, are as numerous as the ſtars of heaven.

Magnolia ‖ Mahogany.

neath. The flowers are produced at the extremities of the branches; are white, compoſed of ſix concave petals, and have an agreeable ſcent. After the flowers are paſt, the fruit increaſes in ſize till it becomes as large as a walnut with its cover; but of a conical ſhape, having many cells round the outſide, in each of which is a flat ſeed about the ſize of a ſmall kidney-bean. When ripe, the fruit is of a brown colour, the ſeeds are diſcharged from their cells, and hang by a ſlender thread. 2. The grandiflora, or great magnolia, is a native of Florida and South Carolina. It riſes to the height of 80 feet or more, with a ſtraight trunk upwards of two feet diameter, having a regular head. The leaves reſemble thoſe of the laurel, but are larger, and continue green throughout the year. The flowers are produced at the ends of the branches, and are of a purpliſh white colour. 3. The tripetala, or umbrella-tree, is a native of Carolina. It riſes, with a ſlender trunk to the height of 16 or 20 feet; the wood is ſoft and ſpongy; the leaves remarkably large, and produced in horizontal circles, ſomewhat reſembling an umbrella, from whence the inhabitants of thoſe countries have given it this name. The flowers are compoſed of ten or eleven white petals, that hang down without any order. The leaves drop off at the beginning of winter. 4. The acuminata, with oval, ſpear-ſhaped, pointed leaves, is a native of the inland parts of North America. The leaves are near eight inches long, and five broad; ending in a point. The flowers come out early in the ſpring, and are compoſed of 12 white petals; the wood is of a fine grain, and an orange colour.

Culture. All theſe ſpecies are propagated by ſeeds, which muſt be procured from the places where they grow naturally. They ſhould be put up in ſand, and ſent over as ſoon as poſſible; for if they are kept long out of the ground, they rarely grow.

MAGNUS (John), archbiſhop of Upſal, was born at Lincopping in 1488. Being made apoſtolical nuncio, he uſed his utmoſt endeavours to prevent Guſtavus Vaſa from becoming king of Sweden, and the introduction of Lutheraniſm into his dominions; and ſpared no means to attain theſe ends. He died at Rome in 1545. He wrote a hiſtory of Sweden, and a hiſtory of the archbiſhops and biſhops of Upſal. He was ſucceeded by his brother OLAUS *Magnus*.

MAGNUS CAMPUS, (anc. geog.), a tract lying towards Scythopolis, or Bethſan in Galilee, beyond which it extends into Samaria; Joſephus placing the common boundary between theſe two diſtricts, in the Campus Magnus. Called alſo *Eſdrelon*, (Judith); 30 miles long, and 18 broad; having Samaria with mount Ephraim to the ſouth, the lake Geneſareth to the eaſt, mount Carmel to the weſt, and Lebanon to the north.

MAGNUS *Portus*, (anc. geog.), a port of the Belgæ, in Britain, on the Channel. Now thought to be Portſmouth, in Hampſhire, (Camden).—Another *Portus Magnus* of Bætica in Spain, (Ptolemy); a port to the eaſt of Abdera.

MAGO, the name of ſeveral Carthaginian generals See CARTHAGE.

MAGPY, in ornithology. See CORVUS.

MAHIE. See BREAD-*Tree*.

MAHO. See HIBISCUS.

MAHOGANY. See CEDRUS.

Mahom

MAHOMET, or MOHAMMED, ſtyled the *Impoſtor*, was born in the reign of Anuſhirwan the Juſt, emperor of Perſia, about the end of the 6th century of the Chriſtian æra. He came into the world under ſome diſadvantages. His father Abd'allah was a younger ſon of Abd'almotalleb; and dying very young, and in his father's lifetime, left his widow and infant-ſon in very mean circumſtances, his whole ſubſtance conſiſting but of five camels and one Ethiopian ſhe-ſlave. Abd'almotaleb was therefore obliged to take care of his grandchild Mahomet; which he not only did during his life, but at his death enjoined his eldeſt ſon Abu Taleb, who was brother to Abd'allah by the ſame mother, to provide for him for the future: which he very affectionately did, and inſtructed him in the buſineſs of a merchant, which he followed; and to that end he took him into Syria when he was but 13. He afterwards recommended him to Khadijah, a noble and rich widow, for her factor; in whoſe ſervice he behaved himſelf ſo well, that by making him her huſband ſhe ſoon raiſed him to an equality with the richeſt in Mecca.

After he began by this advantageous match to live at his eaſe, it was, that he formed the ſcheme of eſtabliſhing a new religion, or, as he expreſſed it, of replanting the only true and ancient one profeſſed by Adam, Noah, Abraham, Moſes, Jeſus, and all the prophets, by deſtroying the groſs idolatry into which the generality of his countrymen had fallen, and weeding out the corruptions and ſuperſtitions which the latter Jews and Chriſtians had, as he thought, introduced into their religion, and reducing it to its original purity, which conſiſted chiefly in the worſhip of one only God.

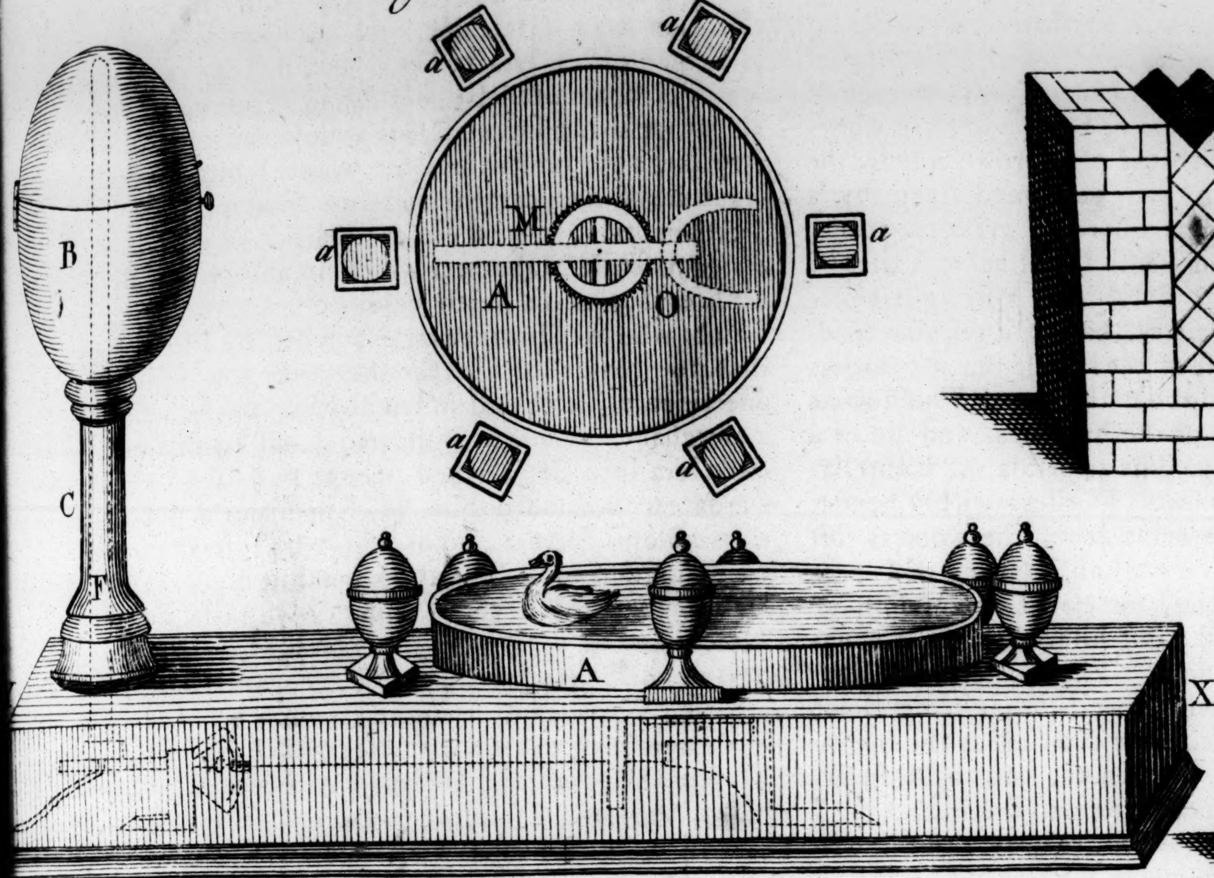
Before he made any attempt abroad, he rightly judged that it was neceſſary for him to begin with the converſion of his own houſehold. Having therefore retired with his family, as he had done ſeveral times before, to a cave in mount Hara, he there opened the ſecret of his miſſion to his wife Khadijah; and acquainted her, that the angel Gabriel had juſt before appeared to him, and told him that he was appointed the apoſtle of God: he alſo repeated to her a paſſage which he pretended had been revealed to him by the miniſtry of the angel, with thoſe other circumſtances of this firſt appearance, which are related by the Mahometan writers. Khadijah received the news with great joy; ſwearing by him in whoſe hands her ſoul was, that ſhe truſted he would be the prophet of his nation; and immediately communicated what ſhe had heard to her couſin Warakah Ebn Nawfal, who, being a Chriſtian, could write in the Hebrew character, and was tolerably well verſed in the ſcriptures; and he as readily came into her opinion, aſſuring her that the ſame angel who had formerly appeared unto Moſes was now ſent to Mahomet. The firſt overture the prophet made was in the month of Ramadan, in the 40th year of his age, which is therefore uſually called the year of his miſſion.

Encouraged by ſo good a beginning, he reſolved to proceed, and try for ſome time what he could do by private perſuaſion, not daring to hazard the whole affair by expoſing it too ſuddenly to the public. He ſoon made proſelytes of thoſe under his own roof, viz. his wife Khadijah, his ſervant Zeid Ebn Haretha (to whom he

MAGNETISM. Plate CLXV.

MASONRY.

Fig. 1.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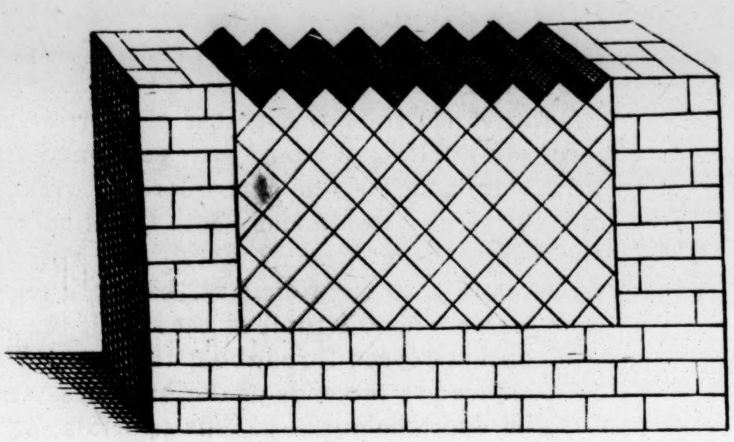

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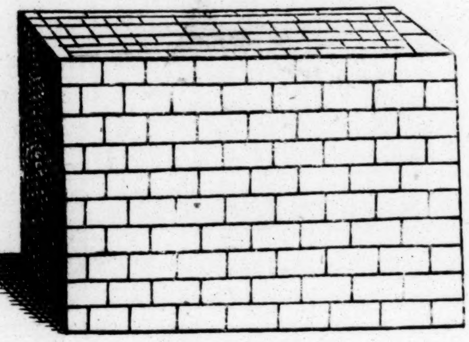
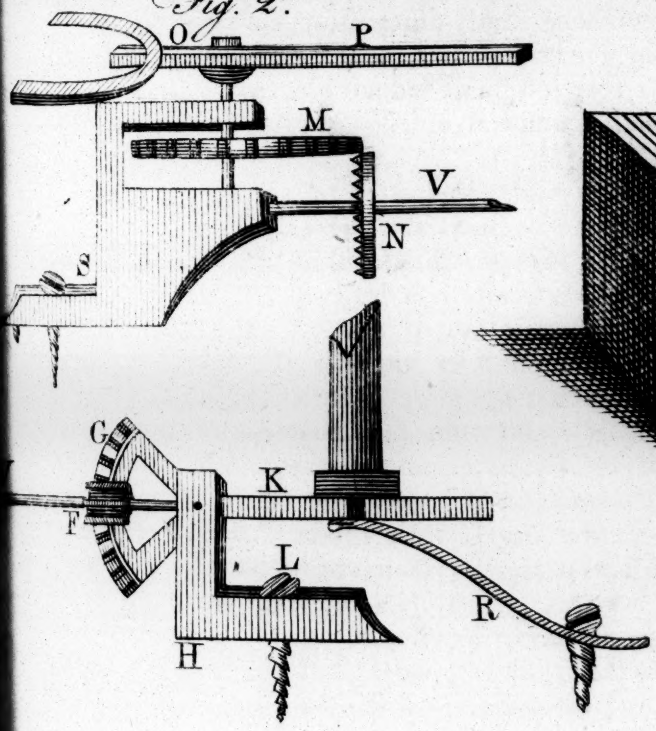


Fig. 2.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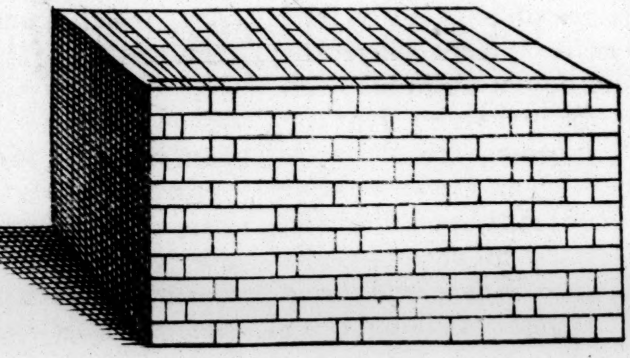

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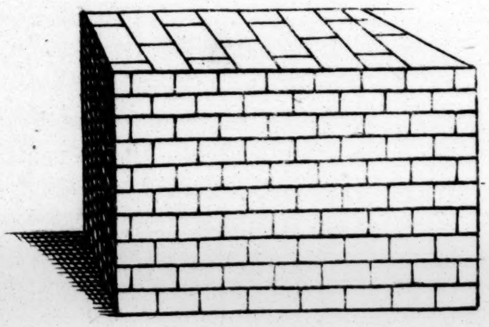

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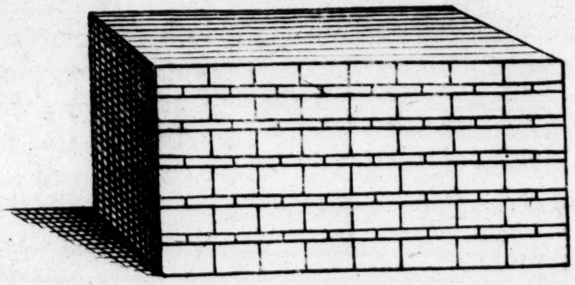

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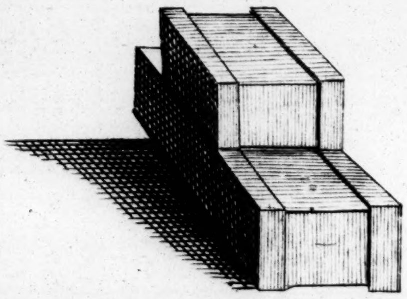

Fig. 3.

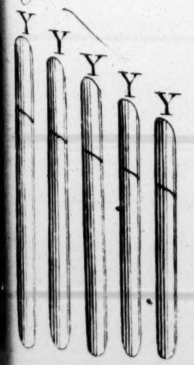

Fig. 4.

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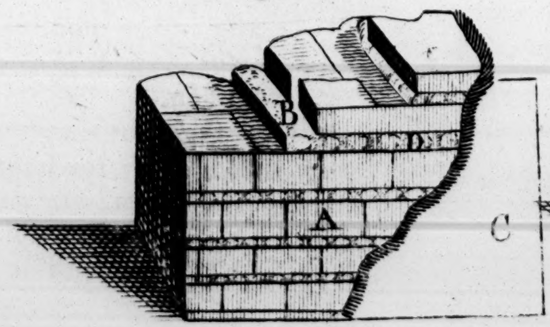

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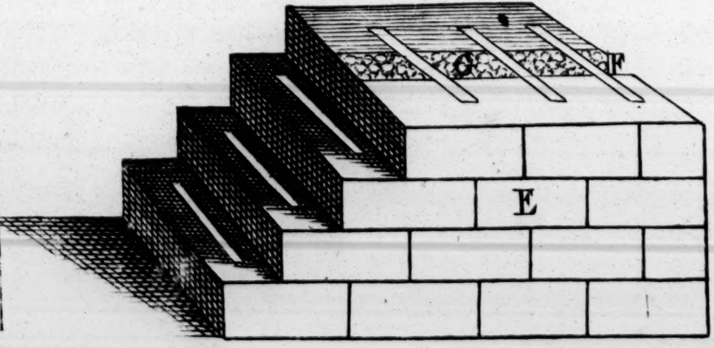

A Bell Sculpt.

3 MA 63

he gave his freedom on that occaſion, (which afterwards became a rule to his followers) and his couſin and pupil Ali, the ſon of Abu Taleb, though then very young: but this laſt, making no account of the other two, uſed to ſtyle himſelf the *firſt of believers.* The next perſon Mahomet applied to was Abd'allah Ebn Abi Kohafa, ſurnamed *Abu Becr*, a man of great authority among the Koreiſh, and one whoſe intereſt he well knew would be of great ſervice to him; as it ſoon appeared: for Abu Becr, being gained over, prevailed alſo on Othman Ebn Affan, Abd'alraham Ebn Awf, Saad Ebn Abi Wakkas, al Zobeir Ebn al Awam, and Telha Ebn Obeid'allah, all principal men of Mecca, to follow his example. Theſe men were the ſix chief companions, who, with a few more, were converted in the ſpace of three years: at the end of which, Mahomet having, as he hoped, a ſufficient intereſt to ſupport him, made his miſſion no longer a ſecret, but gave out that God had commanded him to admoniſh his near relations; and in order to do it with more convenience and proſpect of ſucceſs, he directed Ali to prepare an entertainment, and invite the ſons and deſcendants of Abd'almotaleb, intending then to open his mind to them. This was done, and about 40 of them came; but Abu Laheb, one of his uncles, making the company break up before Mahomet had an opportunity of ſpeaking, obliged him to give them a ſecond invitation the next day; and when they were come, he made them the following ſpeech: "I know no man in all Arabia who can offer his kindred a more excellent thing than I now do you: I offer you happineſs both in this life, and in that which is to come; God Almighty hath commanded me to call you unto him: Who, therefore, among you will be aſſiſtant to me herein, and become my brother and my vicegerent?" All of them heſitating, and declining the matter, Ali at length roſe up, and declared that he would be his aſſiſtant; and vehemently threatened thoſe who ſhould oppoſe him. Mahomet upon this embraced Ali with great demonſtrations of affection, and deſired all who were preſent to hearken to and obey him as his deputy; at which the company broke out into a great laughter, telling Abu Taleb that he muſt now pay obedience to his ſon.

This repulſe, however, was ſo far from diſcouraging Mahomet, that he began to preach in public to the people; who heard him with ſome patience, till he came to upbraid them with the idolatry, obſtinacy, and perverſeneſs, of themſelves and their fathers: which ſo highly provoked them, that they declared themſelves his enemies; and would ſoon have procured his ruin, had he not been protected by Abu Taleb. The chief of the Koreiſh warmly ſolicited this perſon to deſert his nephew, making frequent remonſtrances againſt the innovations he was attempting; which proving ineffectual, they at length threatened him with an open rupture, if he did not prevail on Mahomet to deſiſt. At this Abu Taleb was ſo far moved, that he earneſtly diſſuaded his nephew from purſuing the affair any farther, repreſenting the great danger he and his friends muſt otherwiſe run. But Mahomet was not to be intimidated; telling his uncle plainly, *that if they ſet the ſun againſt him on his right hand, and the moon on his left, he would not leave his enterprize:* and Abu Taleb, ſeeing him ſo firmly reſolved to proceed, uſed no further arguments, but promiſed to ſtand by him againſt all his enemies.

The Koreiſh, finding they could prevail neither by fair words or menaces, tried what they could do by force and ill treatment; uſing Mahomet's followers ſo very injuriouſly, that it was not ſafe for them to continue at Mecca any longer: whereupon Mahomet gave leave to ſuch of them as had not friends to protect them to ſeek for refuge elſewhere. And accordingly, in the fifth year of the prophet's miſſion, 16 of them, four of whom were women, fled into Ethiopia; and among them Othman Ebn Affan and his wife Rakiah, Mahomet's daughter. This was the firſt flight; but afterwards ſeveral others followed them, retiring one after another, to the number of 83 men and 18 women, beſides children. Theſe refugees were kindly received by the Najaſhi, or king of Ethiopia; who refuſed to deliver them up to thoſe whom the Koreiſh ſent to demand them, and, as the Arab writers unanimouſly atteſt, even profeſſed the Mahometan religion.

In the ſixth year of his miſſion, Mahomet had the pleaſure of ſeeing his party ſtrengthened by the converſion of his uncle Hamza, a man of great valour and merit; and of Omar Ebn al Kattab, a perſon highly eſteemed, and once a violent oppoſer of the prophet. As perſecution generally advances rather than obſtructs the ſpreading of a religion, Iſlamiſm made ſo great a progreſs among the Arab tribes, that the Koreiſh, to ſuppreſs it effectually, if poſſible, in the ſeventh year of Mahomet's miſſion, made a ſolemn league or covenant againſt the Haſhemites and the family of Abd'almotaleb, engaging themſelves to contract no marriages with any of them, and to have no communication with them; and, to give it the greater ſanction, reduced it into writing, and laid it up in the Caaba. Upon this the tribe became divided into two factions; and the family of Haſhem all repaired to Abu Taleb, as their head; except only Abd'al Uzza, ſurnamed *Abu Laheb*, who, out of inveterate hatred to his nephew and his doctrine, went over to the oppoſite party, whoſe chief was Abu Soſian Ebn Harb, of the family of Ommeya.

The families continued thus at variance for three years; but, in the tenth year of his miſſion, Mahomet told his uncle Abu Taleb, that God had manifeſtly ſhewed his diſapprobation of the league which the Koreiſh had made againſt them, by ſending a worm to eat out every word of the inſtrument, except the name of *God*. Of this accident Mahomet had probably ſome private notice: for Abu Taleb went immediately to the Koreiſh, and acquainted them with it; offering, if it proved falſe, to deliver his nephew up to them; but, in caſe it were true, he inſiſted that they ought to lay aſide their animoſity, and annul the league they had made againſt the Haſhemites. To this they acquieſced; and, going to inſpect the writing, to their great aſtoniſhment found it to be as Abu Taleb had ſaid; and the league was thereupon declared void.

In the ſame year Abu Taleb died, at the age of above fourſcore; and it is the general opinion that he died an infidel: though others ſay, that when he was at the point of death he embraced Mahometaniſm; and produce ſome paſſages out of his poetical compoſitions to confirm their aſſertion. About a month, or, as ſome write,

write, three days after the death of this great benefactor and patron, Mahomet had the additional mortification to loſe his wife Khadijah, who had ſo generouſly made his fortune. For which reaſon this year is called the *year of mourning*.

On the death of theſe two perſons, the Koreiſh began to be more troubleſome than ever to their prophet, and eſpecially ſome who had formerly been his intimate friends; inſomuch that he found himſelf obliged to ſeek for ſhelter elſewhere, and firſt pitched upon Tayef, about 60 miles eaſt from Mecca, for the place of his retreat. Thither therefore he went, accompanied by his ſervant Zied, and applied himſelf to two of the chief of the tribe of Thakif who were the inhabitants of that place; but they received him very coldly. However, he ſtaid there a month; and ſome of the more conſiderate and better ſort of men treated him with a little reſpect: but the ſlaves and inferior people at length roſe againſt him; and, bringing him to the wall of the city, obliged him to depart and return to Mecca, where he put himſelf under the protection of al Motaam Ebn Adi.

This repulſe greatly diſcouraged his followers. However, Mahomet was not wanting to himſelf; but boldly continued to preach to the public aſſemblies at the pilgrimage, and gained ſeveral proſelytes; and among them ſix of the inhabitants of Yathreb of the Jewiſh tribe of Khazraj, who, on their return home, failed not to ſpeak much in commendation of their new religion, and exhorted their fellow-citizens to embrace the ſame.

In the 12th year of his miſſion it was that Mahomet gave out that he had made his night-journey from Mecca to Jeruſalem, and thence to heaven, ſo much ſpoken of by all that write of him. Dr Prideaux thinks he invented it, either to anſwer the expectations of thoſe who demanded ſome miracle as a proof of his miſſion; or elſe, by pretending to have converſed with God, to eſtabliſh the authority of whatever he ſhould think fit to leave behind by way of oral tradition, and make his ſayings to ſerve the ſame purpoſe as the oral law of the Jews. But it does not appear that Mahomet himſelf ever expected ſo great a regard ſhould be paid to his ſayings, as his followers have ſince done; and ſeeing he all along diſclaimed any power of performing miracles, it ſeems rather to have been a fetch of policy to raiſe his reputation, by pretending to have actually converſed with God in heaven, as Moſes had heretofore done in the mount, and to have received ſeveral inſtitutions immediately from him, whereas before he contented himſelf with perſuading them that he had all by the miniſtry of Gabriel.

However, this ſtory ſeemed ſo abſurd and incredible, that ſeveral of his followers left him upon it; and had probably ruined the whole deſign, had not Abu Becr vouched for his veracity, and declared, that, if Mahomet affirmed it to be true, he verily believed the whole. Which happy incident not only retrieved the prophet's credit, but increaſed it to ſuch a degree, that he was ſecure of being able to make his diſciples ſwallow whatever he pleaſed to impoſe on them for the future. And this fiction, notwithſtanding its extravagance, was one of the moſt artful contrivances Mahomet ever put in practice, and what chiefly contributed to the raiſing of his reputation to that great height to which it afterwards arrived.

In this year, called by the Mahometans the *accepted year*, 12 men of Yathreb or Medina, of whom ten were of the tribe of Khazraj, and the other two of that of Aws, came to Mecca, and took an oath of fidelity to Mahomet at al Akaba, a hill on the north of that city. This oath was called the *womens oath*; not that any women were preſent at this time, but becauſe a man was not thereby obliged to take up arms in defence of Mahomet or his religion; it being the ſame oath that was afterwards exacted of the women, the form of which we have in the Koran, and is to this effect: viz. That they ſhould renounce all idolatry; and they ſhould not ſteal, nor commit fornication, nor kill their children (as the Pagan Arabs uſed to do when they apprehended they ſhould not be able to maintain them,) nor forge calumnies; and that they ſhould obey the prophet in all things that were reaſonable. When they had ſolemnly engaged to all this, Mahomet ſent one of his diſciples, named *Maſab Ebn Omair*, home with them, to inſtruct them more fully in the grounds and ceremonies of his new religion.

Maſab being arrived at Medina, by the aſſiſtance of thoſe who had been formerly converted, gained ſeveral proſelytes, particularly Oſaid Ebn Hodeira, a chief man of the city, and Saad Ebn Moadh, prince of the tribe of Aws; Mahometaniſm ſpreading ſo faſt, that there was ſcarce a houſe wherein there were not ſome who had embraced it.

The next year, being the 13th of Mahomet's miſſion, Maſab returned to Mecca, accompanied by 73 men and two women of Medina who had profeſſed Iſlamiſm, beſides ſome others who were as yet unbelievers. On their arrival, they immediately ſent to Mahomet, and offered him their aſſiſtance, of which he was now in great need; for his adverſaries were by this time grown ſo powerful in Mecca, that he could not ſtay there much longer without imminent danger. Wherefore he accepted their propoſal, and met them one night, by appointment, at al Akaba above-mentioned, attended by his uncle al Abbas; who, though he was not then a believer, wiſhed his nephew well, and made a ſpeech to thoſe of Medina, wherein he told them, that as Mahomet was obliged to quit his native city, and ſeek an aſylum elſewhere, and they had offered him their protection, they would do well not to deceive him; that if they were not firmly reſolved to defend, and not betray him, they had better declare their minds, and let him provide for his ſafety in ſome other manner. Upon their proteſting their ſincerity, Mahomet ſwore to be faithful to them, on condition that they ſhould protect him againſt all inſults, as heartily as they would their own wives and families. They then aſked him what recompence they were to expect if they ſhould happen to be killed in his quarrel; he anſwered, Paradiſe. Whereupon they pledged their faith to him, and ſo returned home; after Mahomet had choſen 12 out of their number, who were to have the ſame authority among them as the 12 apoſtles of Chriſt had among his diſciples.

Hitherto Mahomet had propagated his religion by fair means, ſo that the whole ſucceſs of his enterprize, before his flight to Medina, muſt be attributed to perſuaſion only, and not to compulſion. For before this ſecond oath of fealty or inauguration at al Akaba, he had no permiſſion to uſe any force at all; and in ſeveral places of the Koran, which he pretended were revealed during his ſtay at Mecca, he declares his buſineſs was only to preach and admoniſh; that he had no authority to compel any perſon to embrace his religion; and that, whether people believe or not, was none of his concern, but belonged ſolely unto God. And he was ſo far from allowing his followers to uſe force, that he exhorted them to bear patiently thoſe injuries which were offered them on account of their faith; and, when perſecuted himſelf, choſe rather to quit the place of his birth and retire to Medina, than to make any reſiſtance. But this great paſſiveneſs and moderation ſeem entirely owing to his want of power, and the great ſuperiority of his oppoſers for the firſt 12 years of his miſſion; for no ſooner was he enabled, by the aſſiſtance of thoſe of Medina, to make head againſt his enemies, than he gave out, that God had allowed him and his followers to defend themſelves againſt the infidels; and at length, as his forces increaſed, he pretended to have the divine leave even to attack them; and to deſtroy idolatry, and ſet up the true faith by the ſword; finding, by experience, that his deſigns would otherwiſe proceed very ſlowly, if they were not utterly overthrown; and knowing, on the other hand, that innovators, when they depend ſolely on their own ſtrength, and can compel, ſeldom run any riſque; from whence, ſays Machiavel, it follows, that all the armed prophets have ſucceeded, and the unarmed ones have failed. Moſes, Cyrus, Theſeus, and Romulus, would not have been able to eſtabliſh the obſervance of their inſtitutions for any length of time, had they not been armed. The firſt paſſage of the Koran which gave Mahomet the permiſſion of defending himſelf by arms, is ſaid to have been that in the 22d chapter; after which a great number to the ſame purpoſe were revealed.

That Mahomet had a right to take up arms for his own defence againſt his unjuſt perſecutors, may, perhaps, be allowed; but whether he ought afterwards to have made uſe of that means for the eſtabliſhing of his religion, it is not ſo eaſy to determine. How far the ſecular power may or ought to interpoſe in affairs of this nature, mankind are not agreed. The method of converting by the ſword gives no very favourable idea of the faith which is ſo propagated, and is diſallowed by every body in thoſe of another religion, though the ſame perſons are willing to admit of it for the advancement of their own; ſuppoſing that, though a falſe religion ought not to be eſtabliſhed by authority, yet a true one may; and accordingly force is almoſt as conſtantly employed in theſe caſes by thoſe who have the power in their hands, as it is conſtantly complained of by thoſe who ſuffer the violence. It is certainly one of the moſt convincing proofs that Mahometiſm was no other than a human invention, that it owed its progreſs and eſtabliſhment almoſt entirely to the ſword; and it is one of the ſtrongeſt demonſtrations of the divine original of Chriſtianity, that it prevailed againſt all the force and powers of the world by the mere dint of its own truth, after having ſtood the aſſaults of all manner of perſecutions, as well as other oppoſitions, for 300 years together, and at length made the Roman emperors themſelves ſubmit thereto; after which time, indeed, this proof ſeems to fail, Chriſtianity being then eſtabliſhed, and Paganiſm aboliſhed, by public authority, which has had great influence in the propagation of the one and deſtruction of the other ever ſince. But to return.

Mahomet, having provided for the ſecurity of his companions as well as his own, by the league offenſive and defenſive which he had now concluded with thoſe of Medina, directed them to repair thither, which they accordingly did; but himſelf with Abu Becr and Ali ſtaid behind, having not yet received the divine permiſſion, as he pretended, to leave Mecca. The Koreiſh, fearing the conſequence of this new alliance, began to think it abſolutely neceſſary to prevent Mahomet's eſcape to Medina; and having held a council thereon, after ſeveral milder expedients had been rejected, they came to a reſolution that he ſhould be killed; and agreed that a man ſhould be choſen out of every tribe for the execution of this deſign; and that each man ſhould have a blow at him with his ſword, that the guilt of his blood might fall equally on all the tribes, to whoſe united power the Haſhemites were much inferior, and therefore durſt not attempt to revenge their kinſman's death.

This conſpiracy was ſcarce formed, when, by ſome means or other, it came to Mahomet's knowledge; and he gave out that it was revealed to him by the angel Gabriel, who had now ordered him to retire to Medina. Whereupon, to amuſe his enemies, he directed Ali to lie down in his place, and wrap himſelf up in his green cloak, which he did; and Mahomet eſcaped miraculouſly, as they pretend, to Abu Becr's houſe, unperceived by the conſpirators, who had already aſſembled at the prophet's door. They, in the mean time, looking through the crevice, and ſeeing Ali, whom they took to be Mahomet himſelf, aſleep, continued watching there till morning, when Ali aroſe, and they found themſelves deceived.

From Abu Becr's houſe Mahomet and he went to a cave in mount Thur, to the ſouth-eaſt of Mecca, accompanied only by Amer Ebn Foheirah, Abu Becr's ſervant, and Abd'allah Ebn Oreitah, an idolater whom they had hired for a guide. In this cave they lay hid three days, to avoid the ſearch of their enemies; which they very narrowly eſcaped, and not without the aſſiſtance of more miracles than one: for ſome ſay that the Koreiſh were ſtruck with blidneſs, ſo that they could not find the cave; others, that after Mahomet and his companions were got in, two pigeons laid their eggs at the entrance, and a ſpider covered the mouth of the cave with her web, which made them look no farther. Abu Becr, ſeeing the prophet in ſuch imminent danger, became very ſorrowful; whereupon Mahomet comforted him with theſe words, recorded in the Koran, *Be not grieved, for God is with us*. Their enemies being retired, they left the cave, and ſet out for Medina, by a by-road; and having fortunately, or, as the Mahometans tell us, miraculouſly eſcaped ſome who were ſent to purſue them, arrived ſafely at that city; whither Ali followed them in three days, after he had ſettled ſome affairs at Mecca.

The firſt thing Mahomet did after his arrival at Medina, was to built a temple for his religious worſhip, and a houſe for himſelf, which he did on a parcel of ground which had before ſerved to put camels in, or, as others tell us, for a burying-ground, and belonged to Sahal and Soheil the ſons of Amru, who were orphans. This action Dr Prideaux exclaims againſt, repreſenting it as a flagrant inſtance of injuſtice; for that, ſays he, he violently diſpoſſeſſed theſe poor orphans, the ſons of an inferior artificer (whom the author he quotes calls a *carpenter*), of this ground, and ſo founded the firſt fabric of his worſhip with the like wickedneſs as he did his religion. But, to ſay nothing of the improbability that Mahomet ſhould act in ſo impolitic a manner at his firſt coming, the Mahometan writers ſet this affair in a quite different light: one tells us that he treated with the lads about the price of the ground, but they deſired he would accept it as a preſent: however, as hiſtorians of good credit aſſure us, he actually bought it; and the money was paid by Abu Becr. Beſides, had Mahomet accepted it as a preſent, the orphans were in circumſtances ſufficient to have afforded it: for they were of a very good family, of the tribe of Najjer, one of the moſt illuſtrious among the Arabs; and not the ſons of a carpenter, as Dr Prideaux's author writes, who took the word *Najjer*, which ſignifies a carpenter, for an appellative, whereas it is a proper name.

Mahomet, being ſecurely ſettled at Medina, and able not only to defend himſelf againſt the inſults of his enemies, but to attack them, began to ſend out ſmall parties to make repriſals on the Koreiſh; the firſt party conſiſting of no more than nine men, who intercepted and plundered a caravan belonging to that tribe, and in the action took two priſoners. But what eſtabliſhed his affairs very much, and was the foundation on which he built all his ſucceeding greatneſs, was the gaining of the battle of Bedr, which was fought in the ſecond year of the Hejra, and is ſo famous in the Mahometan hiſtory. Some reckon no leſs than 27 expeditions wherein Mahomet was perſonally preſent, in nine of which he gave battle, beſides ſeveral other expeditions in which he was not preſent. His forces he maintained partly by the contributions of his followers for this purpoſe, which he called by the name of *zacat* or *alms*, and the paying of which he very artfully made one main article of his religion; and partly by ordering a fifth part of the plunder to be brought into the public treaſury for that purpoſe, in which matter he likewiſe pretended to act by the divine direction.

In a few years, by the ſucceſs of his arms (notwithſtanding he ſometimes came off by the worſt) he conſiderably raiſed his credit and power. In the ſixth year of the Hejra he ſet out with 1400 men to viſit the temple of Mecca, not with any intent of committing hoſtilities, but in a peaceable manner. However, when he came to al Hodeibiya, which is ſituate partly within and partly without the ſacred territory, the Koreiſh ſent to let him know that they would not permit him to enter Mecca, unleſs he forced his way; whereupon he called his troops about him, and they all took a ſolemn oath of fealty or homage to him, and he reſolved to attack the city; but thoſe of Mecca ſending Arwa Ebn Maſud, prince of the tribe of Thakif, as their ambaſſador, to deſire peace, a truce was concluded between them for ten years, by which any perſon was allowed to enter into league either with Mahomet, or with the Koreiſh, as he thought fit.

It may not be improper, to ſhow the inconceivable veneration and reſpect the Mahometans by this time had for their prophet, to mention the account which the above-mentioned ambaſſador gave the Koreiſh, at his return, of their behaviour. He ſaid he had been at the courts both of the Roman emperor and of the king of Perſia, and never ſaw any prince ſo highly reſpected by his ſubjects as Mahomet was by his companions: for, whenever he made the ablution, in order to ſay his prayers, they ran and catched the water that he had uſed; and, whenever he ſpit, they immediately licked it up, and gathered up every hair that fell from him with great ſuperſtition.

In the ſeventh year of the Hejra, Mahomet began to think of propagating his religion beyond the bounds of Arabia; and ſent meſſengers to the neighbouring princes, with letters to invite them to Mahometiſm. Nor was this project without ſome ſucceſs. Khoſru Parviz, then king of Perſia, received his letter with great diſdain, and tore it in a paſſion, ſending away the meſſenger very abruptly; which when Mahomet heard, he ſaid *God ſhall tear his kingdom.* And ſoon after a meſſenger came to Mahomet from Badhan king of Yaman, who was a dependent on the Perſians, to acquaint him that he had received orders to ſend him to Khoſru. Mahomet put off his anſwer till the next morning, and then told the meſſenger it had been revealed to him that night that Khoſru was ſlain by his ſon Shiruyeh; adding, that he was well aſſured his new religion and empire ſhould riſe to as great a height as that of Khoſru; and therefore bid him adviſe his maſter to embrace Mahometiſm. The meſſenger being returned, Badhan in a few days received a letter from Shiruyeh, informing him of his father's death, and ordering him to give the prophet no further diſturbance. Whereupon Badhan and the Perſians with him turned Mahometans.

The emperor Heraclius, as the Arabian hiſtorians aſſure us, received Mahomet's letter with great reſpect, laying it on his pillow, and diſmiſſed the bearer honourably. And ſome pretend that he would have profeſſed this new faith, had he not been afraid of loſing his crown.

Mahomet wrote to the ſame effect to the king of Ethiopia, though he had been converted before, according to the Arab writers; and to Mokawkas, governor of Egypt, who gave the meſſenger a very favourable reception, and ſent ſeveral valuable preſents to Mahomer, and among the reſt two girls, one of which, named Mary, became a great favourite with him. He alſo ſent letters of the like purport to ſeveral Arab princes: particularly one to al Hareth Ebn Abi Shamer king of Ghaſſean, who returning for anſwer that he would go to Mahomet himſelf, the prophet ſaid, *May his kingdom periſh:* another to Hawdha Ebn Ali, king of Yamama, who was a Chriſtian, and, having ſome time before profeſſed Iſlamiſm, had lately returned to his former faith; this prince ſent back a very rough anſwer, upon which Mahomet curſing him, he died ſoon after: and a third to al Mondar Ebn Sawa, king of Bahrein, who embraced Mahometiſm, and all the Arabs of that country followed his example.

The eighth year of the Hejra was a very fortunate year to Mahomet. In the beginning of it, Khaled Ebn al Walid and Amru Ebn al As, both excellent ſoldiers, the firſt of whom afterwards conquered Syria and other countries, and the latter Egypt, became proſelytes of Mahometiſm. And ſoon after the prophet ſent 3000 men againſt the Grecian forces, to revenge the death of one of his ambaſſadors, who, being ſent to the governor of Boſra on the ſame errand as thoſe who went to the abovementioned princes, were ſlain by an Arab, of the tribe of Ghaſſan, at Muta, a town in the territory of Balka in Syria, about three days journey eaſtward from Jeruſalem, near which town they encountered. The Grecians being vaſtly ſuperior in number, (for, including the auxiliary Arabs, they had an army of 100,000 men,) the Mahometans were repulſed in the firſt attack, and loſt ſucceſſively three of their generals, viz. Zeid Ebn Haretha Mahomet's freedman, Jaafar the ſon of Abu Taleb, and Abdallah Ebn Rawaha: but Khaled Ebn al Walid ſucceeding to the command, overthrew the Greeks with a great ſlaughter, and brought away abundance of rich ſpoil; on occaſion of which action Mahomet gave him the title of *Seif min ſoyuf Allah*, "one of the ſwords of God."

In this year alſo Mahomet took the city of Mecca, the inhabitants whereof had broken the truce concluded on two years before. For the tribe of Becr, who were confederates with the Koreiſh, attacking thoſe of Khozaah, who were allies of Mahomet, killed ſeveral of them, being ſupported in the action by a party of the Koreiſh themſelves. The conſequence of this violation was ſoon apprehended; and Abu Sofian himſelf made a journey to Medina on purpoſe to heal the breach and renew the truce: but in vain; for Mahomet, glad of this opportunity, refuſed to ſee him: whereupon he applied to Abu Becr and Ali; but they giving him no anſwer, he was obliged to return to Mecca as he came.

Mahomet immediately gave orders for preparations to be made, that he might ſurpriſe the Meccans while they were unprovided to receive him: in a little time he began his march thither; and by that time he came near the city, his forces were encreaſed to 10,000 men. Thoſe of Mecca, being not in a condition to defend themſelves againſt ſo formidable an army, ſurrendered at diſcretion; and Abu Sofian ſaved his life by turning Mahometan. About 28 of the idolaters were killed by a party under the command of Khaled; but this happened contrary to Mahomet's orders, who, when he entered the town, pardoned all the Koreiſh on their ſubmiſſion, except only ſix men and four women, who were more obnoxious than ordinary, (ſome of them having apoſtatiſed), and were ſolemnly proſcribed by the prophet himſelf; but of theſe no more than three men and one woman were put to death, the reſt obtaining pardon on their embracing Mahometiſm, and one of the women making her eſcape.

The remainder of this year Mahomet employed in deſtroying the idols in and round Mecca, ſending ſeveral of his generals on expeditions for that purpoſe, and to invite the Arabs to Iſlamiſm; wherein it is no wonder if they now met with ſucceſs.

The next year, being the ninth of the Hejra, the Mahometans call *the year of embaſſies:* for the Arabs had been hitherto expecting the iſſue of the war between Mahomet and the Koreiſh: but, ſo ſoon as that tribe, the principal of the whole nation, and the genuine deſcendants of Iſhmael, whoſe prerogatives none offered to diſpute, had ſubmitted, they were ſatisfied that it was not in their power to oppoſe Mahomet; and therefore began to come in to him in great numbers, and to ſend embaſſies to make their ſubmiſſions to him, both to Mecca, while he ſtaid there, and alſo to Medina, whither he returned this year. Among the reſt, five kings of the tribe of Hamyar profeſſed Mahometiſm, and ſent ambaſſadors to notify the ſame.

In the 10th year, Ali was ſent into Yaman to propagate the Mahometan faith there; and, as it is ſaid, converted the whole tribe of Hamdan in one day. Their example was quickly followed by all the inhabitants of that province, except only thoſe of Najran, who, being Chriſtians, choſe rather to pay tribute.

Thus was Mahometiſm eſtabliſhed, and idolatry rooted out, even in Mahomet's lifetime (for he died the next year,) throughout all Arabia, except only Yamama, where Moſeilama, who ſet up alſo for a prophet as Mahomet's competitor, had a great party, and was not reduced till the khalifat of Abu Becr: and the Arabs being then united in one faith, and under one prince, found themſelves in a condition of making thoſe conqueſts, which extended the Mahometan faith over ſo great a part of the world.

MAHOMETANISM, or MAHOMETISM, the ſyſtem of religion broached by Mahomet, and ſtill adhered to by his followers. See MAHOMET, and ALCORAN.

Mahometaniſm is profeſſed by the Turks, Perſians, and ſeveral nations among the Africans, and many among the Eaſt-Indians.

The Mahometans divide their religion into two general parts, faith and practice: of which the firſt is divided into ſix diſtinct branches; Belief in God, in his angels, in his ſcriptures, in his prophets, in the reſurrection and final judgment, and in God's abſolute decrees. The points relating to practice are, Prayer, with waſhings, &c. alms, faſting, pilgrimage to Mecca, and circumciſion.

I. Of the Mahometan *Faith*.] 1. That both Mahomet and thoſe among his followers who are reckoned orthodox, had and continue to have juſt and true notions of God and his attributes, appears ſo plain from the Koran itſelf, and all the Mahometan divines, that it would be loſs of time to refute thoſe who ſuppoſe the God of Mahomet to be different from the true God, and only a fictitious deity or idol of his own creation.

2. The exiſtence of angels, and their purity, are abſolutely required to be believed in the Koran; and he is reckoned an infidel who denies there are ſuch beings, or hates any of them, or aſſerts any diſtinction of ſexes among them. They believe them to have pure and ſubtile bodies, created of fire; that they neither eat nor drink, nor propagate their ſpecies; that they have various forms and offices, ſome adoring God in different poſtures, others ſinging praiſes to him, or interceding for mankind. They hold, that ſome of them are employed in writing down the actions

tions of men; others in carrying the throne of God, and other ſervices.

The four angels, whom they look on as more eminently in God's favour, and often mention on account of the offices aſſigned them, are, Gabriel, to whom they give ſeveral titles, particularly thoſe of the *holy ſpirit*, and the *angel of revelations*, ſuppoſing him to be honoured by God with a greater confidence than any other, and to be employed in writing down the divine decrees; Michael, the friend and protector of the Jews; Azrael, the *angel of death*, who ſeparates mens ſouls from their bodies; and Iraſil, whoſe office it will be to ſound the trumpet at the reſurrection. The Mahometans alſo believe, that two guardian angels attend on every man, to obſerve and write down his actions, being changed every day, and therefore called *al Moakkibat*, or "the angels who continually ſucceed one another."

The devil, whom Mahomet names *Eblis*, from his *deſpair*, was once one of thoſe angels who are neareſt to God's preſence, called *Azazil;* and fell, according to the doctrine of the Koran, for refuſing to pay homage to Adam at the command of God.

Beſides angels and devils, the Mahometans are taught by the Koran to believe an intermediate order of creatures, which they call *jin* or *genii*, created alſo of fire, but of a groſſer fabric than angels, ſince they eat and drink, and propagate their ſpecies, and are ſubject to death. Some of theſe are ſuppoſed to be good, and others bad, and capable of future ſalvation or damnation, as men are; whence Mahomet pretended to be ſent for the converſion of genii as well as men.

3. As to the ſcriptures, the Mahometans are taught by the Koran, that God, in divers ages of the world, gave revelations of his will in writing to ſeveral prophets, the whole and every one of which it is abſolutely neceſſary for a good Moſlem to believe. The number of theſe ſacred books were, according to them, 104. Of which 10 were given to Adam, 50 to Seth, 30 to Edris or Enoch, 10 to Abraham; and the other four, being the Pentateuch, the Pſalms, the Goſpel, and the Koran, were ſucceſſively delivered to Moſes, David, Jeſus, and Mahomet; which laſt being the ſeal of the prophets, thoſe revelations are now cloſed, and no more are to be expected. All theſe divine books, except the four laſt, they agree to be now entirely loſt, and their contents unknown; though the Sabians have ſeveral books which they attribute to ſome of the antediluvian prophets. And of thoſe four, the Pentateuch, Pſalms, and Goſpel, they ſay, have undergone ſo many alterations and corruptions, that, though there may poſſibly be ſome part of the true word of God therein, yet no credit is to be given to the preſent copies in the hands of the Jews and Chriſtians. The Mahometans have alſo a goſpel in Arabic, attributed to St Barnabas; wherein the hiſtory of Jeſus Chriſt is related in a manner very different from what we find in the true goſpels, and correſpondent to thoſe traditions which Mahomet has followed in his Koran. Of this goſpel the Moriſcoes in Africa have a tranſlation in Spaniſh; and there is, in the library of prince Eugene of Savoy, a manuſcript of ſome antiquity, containing an Italian tranſlation of the ſame goſpel; made, it is to be ſuppoſed, for the uſe of renegades. This book appears to be no original forgery of the Mahometans; though they have, no doubt, interpolated and altered it ſince, the better to ſerve their purpoſe; and in particular, inſtead of the *Paraclete*, or *Comforter*, they have in this apocryphal goſpel inſerted the word *Periclyte*, that is, the "famous," or "illuſtrious;" by which they pretend their prophet was foretold by name, that being the ſignification of *Mohammed* in Arabic: and this they ſay to juſtify that paſſage of the Koran, where Jeſus Chriſt is formally aſſerted to have foretold his coming, under his other name of *Ahmed*, which is derived from the ſame root as *Mohammed*, and of the ſame import. From theſe, or ſome other forgeries of the ſame ſtamp, it is that the Mahometans quote ſeveral paſſages, of which there are not the leaſt footſteps in the New Teſtament.

4. The number of the prophets, which have been from time to time ſent by God into the world, amounts to no leſs than 224,000, according to one Mahometan tradition; or to 124,000, according to another: among whom 313 were apoſtles, ſent with ſpecial commiſſions to reclaim mankind from infidelity and ſuperſtition; and ſix of them brought new laws or diſpenſations, which ſucceſſively abrogated the preceding: theſe were Adam, Noah, Abraham, Moſes, Jeſus, and Mahomet. All the prophets in general, the Mahometans believe to have been free from great ſins and errors of conſequence, and profeſſors of one and the ſame religion, that is, Iſlam, notwithſtanding the different laws and inſtitutions which they obſerved. They allow of degrees among them, and hold ſome of them to be more excellent and honourable than others. The firſt place they give to the revealers and eſtabliſhers of new diſpenſations, and the next to the apoſtles.

In this great number of prophets, they not only reckon divers patriarchs and perſons named in ſcripture, but not recorded to have been prophets, (wherein the Jewiſh and Chriſtian writers have ſometimes led the way,) as Adam, Seth, Lot, Iſhmael, Nun, Joſhua, &c. and introduce ſome of them under different names, as *Enoch*, *Heber*, and *Jethro*, who are called, in the Koran, *Edris*, *Hud*, and *Shoaib;* but ſeveral others whoſe very names do not appear in ſcripture (though they endeavour to find ſome perſons there to fix them on), as Saleh, Khedr, Dhu'lkefl, &c.

5. The belief of a general reſurrection and a future judgment.

When a corpſe is laid in the grave, they ſay he is received by an angel, who gives him notice of the coming of the two examiners; who are two black livid angels, of a terrible appearance, named *Monker* and *Nakir*. Theſe order the dead perſon to ſit upright; and examine him concerning his faith, as to the unity of God, and the miſſion of Mahomet: if he anſwer rightly, they ſuffer the body to reſt in peace, and it is refreſhed by the air of paradiſe; but, if not, they beat him on the temples with iron maces, till he roars out for anguiſh ſo loud, that he is heard by all from eaſt to weſt, except men and genii. They then preſs the earth on the corpſe, which is gnawed and ſtung till the reſurrection by 99 dragons, with ſeven heads each; or, as others ſay, their ſins will become venomous beaſts, the grievous ones ſtinging like dragons, the ſmaller like ſcorpions, and the other like ſerpents: circumſtances which ſome underſtand in a figurative ſenſe.

As to the ſoul, they hold, that, when it is ſeparated from the body by the angel of death, who performs his office with eaſe and gentleneſs towards the good, and with violence towards the wicked, it enters into that which they call *al berzakh*, or *the interval* between death and the reſurrection. If the departed perſon was a believer, they ſay two angels meet it, who convey it to heaven, that its place there may be aſſigned, according to its merit and degree. For they diſtinguiſh the ſouls of the faithful into three claſſes: the firſt of prophets, whoſe ſouls are admitted into paradiſe immediately; the ſecond of martyrs, whoſe ſpirits, according to a tradition of Mahomet, reſt in the crops of green birds, which eat of the fruits and drink of the rivers of paradiſe; and the third of other believers, concerning the ſtate of whoſe ſouls before the reſurrection there are various opinions.

Though ſome among the Mahometans have thought that the reſurrection will be merely ſpiritual, and no more than the returning of the ſoul to the place whence it firſt came (an opinion defended by Ebn Sina, and called by ſome the *opinion of the philoſophers;*) and others, who allow man to conſiſt of body only, that it will be merely corporeal; the received opinion is, that both body and ſoul will be raiſed: and their doctors argue ſtrenuouſly for the poſſibility of the reſurrection of the body, and diſpute with great ſubtilty concerning the manner of it. But Mahomet has taken care to preſerve one part of the body, whatever becomes of the reſt, to ſerve for a baſis of the future edifice, or rather a leaven for the maſs which is to be joined to it. For he taught, that a man's body was entirely conſumed by the earth, except only the bone called *al ajb*, which we name the *os coccygis*, or rumpbone; and that, as it was the firſt formed in the human body, it will alſo remain uncorrupted till the laſt day, as a ſeed from whence the whole is to be renewed; and this, he ſaid, would be effected by a forty-days rain, which God ſhould ſend, and which would cover the earth to the height of 12 cubits, and cauſe the bodies to ſprout forth like plants. Herein, alſo, is Mahomet beholden to the Jews; who ſay the ſame things of the bone Luz, excepting that what he attributes to a great rain, will be effected, according to them, by a dew, impregnating the duſt of the earth.

The time of the reſurrection the Mahometans allow to be a perfect ſecret to all but God alone; the angel Gabriel himſelf acknowledging his ignorance in this point, when Mahomet aſked him about it. However, they ſay, the approach of that day may be known from certain ſigns which are to precede it. Theſe ſigns they diſtinguiſh into two ſorts, the leſſer, and the greater.

The leſſer ſigns are, 1. The decay of faith among men. 2. The advancing of the meaneſt perſons to eminent dignity. 3. That a maid-ſervant ſhall become the mother of her miſtreſs (or maſter;) by which is meant, either that towards the end of the world men ſhall be much given to ſenſuality, or that the Mahometans ſhall then take many captives. 4. Tumults and ſeditions. 5. A war with the Turks. 6. Great diſtreſs in the world, ſo that a man, when he paſſes by another's grave, ſhall ſay, Would to God I were in his place. 7. That the provinces of Irak and Syria ſhall refuſe to pay their tribute. And, 8. That the buildings of Median ſhall reach to Ahab, or Yahab.

The greater ſigns are, 1. The ſun's riſing in the weſt; which ſome have imagined it originally did. 2. The appearance of the beaſt, which ſhall riſe out of the earth, in the temple of Mecca, or on mount Safa, or in the territory of Tayef, or ſome other place. This beaſt, they ſay, is to be ſixty cubits high; though others, not ſatisfied with ſo ſmall a ſize, will have her reach to the clouds and to heaven, when her head only is out; and that ſhe will appear for three days, but ſhew only a third part of her body. They deſcribe this monſter, as to her form, to be a compound of various ſpecies; having the head of a bull, the eyes of a hog, the ears of an elephant, the horns of a ſtag, the neck of an oſtrich, the breaſt of a lion, the colour of a tiger, the back of a cat, the tail of a ram, the legs of a camel, and the voice of an aſs. Some ſay this beaſt is to appear three times in ſeveral places, and that ſhe will bring with her the rod of Moſes and the ſeal of Solomon; and, being ſo ſwift that none can overtake or eſcape her, will with the firſt ſtrike all the believers on the face, and mark them with the word *mumen*, *i. e.* believer; and with the latter will mark the unbelievers on the face likewiſe, with the word *Caſer*, *i. e.* infidel, that every perſon may be known for what he really is. They add, that the ſame beaſt is to demonſtrate the vanity of all religions except Iſlam, and to ſpeak Arabic. All this ſtuff ſeems to be the reſult of a confuſed indea of the beaſt in the Revelations. 3. War with the Greeks, and the taking Conſtantinople by 70,000 of the poſterity of Iſaac, who ſhall not win that city by force of arms, but the walls ſhall fall down while they cry out, *There is no God but* God, God *is moſt great!* As they are dividing the ſpoil, news will come to them of the appearance of Antichriſt; whereupon they ſhall leave all, and return back. 4. The coming of Antichriſt, whom the Mahometans call *Maſih al Dajjal*, *i. e.* the falſe or lying Chriſt, and ſimply *al Dajjal*. He is to be one-eyed, and marked on the forehead with the letters C. F. R. ſignifying *Caſer*, or infidel. They ſay that the Jews give him the name of Meſſiah Ben David; and pretend he is to come in the laſt days, and to be lord both of land and ſea, and that he will reſtore the kingdom to them. 5. The deſcent of Jeſus on earth. They pretend that he is to deſcend near the white tower to the eaſt of Damaſcus, when the people are returned from the taking of Conſtantinople: that he is to embrace the Mahometan religion, marry a wife, get children, kill Antichriſt; and at length die after 40 years, or, according to others, 24 years continuance on earth. Under him, they ſay, there will be great ſecurity and plenty in the world, all hatred and malice being laid aſide; when lions and camels, bears and ſheep, ſhall live in peace, and a child ſhall play with ſerpents unhurt. 6. War with the Jews; of whom the Mahometans are to make a prodigious ſlaughter, the very trees and ſtones diſcovering ſuch of them as hide themſelves, except only the tree called *gharkad*, which is the tree of the Jews. 7. The eruption of Gog and Magog, or, as they are called in the eaſt, *Yajuj* and

Majuj; of whom many things are related in the Koran and the traditions of Mahomet. Theſe barbarians, they tell us, having paſſed the lake of Tiberias, which the vanguard of their vaſt army will drink dry, will come to Jeruſalm, and there greatly diſtreſs Jeſus and his companions; till, at his requeſt, God will deſtroy them, and fill the earth with their carcaſes, which, after ſome time, God will ſend birds to carry away, at the prayers of Jeſus and his followers. Their bows, arrows, and quivers, the Moſlems will burn for ſeven years together; and at laſt, God will ſend a rain to cleanſe the earth and to make it fertile. 8. A ſmoke, which ſhall fill the whole earth. 9. An eclipſe of the moon. Mahomet is reported to have ſaid, that there would be three eclipſes before the laſt hour; one to be ſeen in the eaſt, another in the weſt, and the third in Arabia. 10. The returning of the Arabs to the worſhip of Allat and al Uzza, and the reſt of their ancient idols, after the deceaſe of every one in whoſe heart there was faith equal to a grain of muſtard-ſeed, none but the very worſt of men being left alive. For God, they ſay, will ſend a cold odoriferous wind, blowing from Syria Damaſcena, which ſhall ſweep away the ſouls of all the faithful, and the Koran itſelf, ſo that men will remain in the groſſeſt ignorance for 100 years. 11. The diſcovery of a vaſt heap of gold and ſilver by the retreating of the Euphrates, which will be the deſtruction of many. 12. The demolition of the Caaba, or temple of Mecca, by the Ethiopians. 13. The ſpeaking of beaſts and inanimate things. 14. The breaking out of fire in the province of Hejaz; or, according to others, in Yaman. 15. The appearance of a man of the deſcendants of Kahtan, who ſhall drive men before him with his ſtaff. 16. The coming of the Mohdi, or director; concerning whom Mahomet propheſied, that the world ſhould not have an end till one of his own family ſhould govern the Arabians, whoſe name ſhould be the ſame with his own name, and whoſe father's name ſhould alſo be the ſame with his father's name; and who ſhould fill the earth with righteouſneſs. This perſon the Shiites believe to be now alive, and concealed in ſome ſecret place till the time of his manifeſtation; for they ſuppoſe him no other than the laſt of the twelve Imams, named Mahomet Abu'lkaſem, as their prophet was; and the ſon of Haſſan al Aſkeri, the eleventh of that ſucceſſion. He was born at Sermanrai, in the 255th year of the Hejra. From this tradition, it is to be preſumed, an opinion pretty current among the Chriſtians took its riſe, that the Mahometans are in expectation of their prophet's return. 17. A wind which ſhall ſweep away the ſouls of all who have but a grain of faith in their hearts, as has been mentioned under the tenth ſign.

Theſe are the greater ſigns, which, according to their doctrine, are to precede the reſurrection, but ſtill leave the hour of it uncertain; for the immediate ſign of its being come will be the firſt blaſt of the trumpet, which they believe will be ſounded three times. The firſt they call the *blaſt of conſternation*; at the hearing of which all creatures in heaven and earth ſhall be ſtruck with terror, except thoſe whom God ſhall pleaſe to exempt from it. The effects attributed to this firſt ſound of the trumpet are very wonderful: for they ſay, the earth will be ſhaken, and not only all buildings, but the very mountains levelled; that the heavens ſhall melt, the ſun be darkened, the ſtars fall, on the death of the angels, who, as ſome imagine, hold them ſuſpended between heaven and earth; and the ſea ſhall be troubled and dried up, or, according to others, turned into flames, the ſun, moon, and ſtars being thrown into it: the Koran, to expreſs the greatneſs of the terror of that day, adds, that women who give ſuck ſhall abandon the care of their infants, and even the ſhe camels which have gone ten months with young (a moſt valuable part of the ſubſtance of that nation) ſhall be utterly neglected. A farther effect of this blaſt will be that concourſe of beaſts mentioned in the Koran, though ſome doubt whether it be to precede the reſurrection or not. They who ſuppoſe it will precede, think that all kinds of animals, forgetting their reſpective natural fierceneſs and timidity, will run together into one place, being terrified by the ſound of the trumpet and the ſudden ſhock of nature.

The Mahometans believe that this firſt blaſt will be followed by a ſecond, which they call the *blaſt of exanimation*; by which all creatures both in heaven and earth ſhall die or be annihilated, except thoſe which God ſhall pleaſe to exempt from the common fate; and this, they ſay, ſhall happen in the twinkling of an eye, nay in an inſtant; nothing ſurviving except God alone, with paradiſe and hell, and the inhabitants of thoſe two places, and the throne of glory. The laſt who ſhall die will be the angel of death.

Forty years after this will be heard the *blaſt of reſurrection*, when the trumpet ſhall be ſounded the third time by Iſraſil, who, together with Gabriel and Michael will be previouſly reſtored to life, and, ſtanding on the rock of the temple of Jeruſalem, ſhall, at God's command, call together all the dry and rotten bones, and other diſperſed parts of the bodies, and the very hairs, to judgment. This angel, having, by the divine order, ſet the trumpet to his mouth, and called together all the ſouls from all parts, will throw them into his trumpet, from whence, on his giving the laſt ſound, at the command of God, they will fly forth like bees, and fill the whole ſpace between heaven and earth, and then repair to their reſpective bodies, which the opening earth will ſuffer to ariſe; and the firſt who ſhall ſo ariſe, according to a tradition of Mahomet, will be himſelf. For this birth the earth will be prepared by the rain above-mentioned, which is to fall continually for 40 years, and will reſemble the ſeed of a man, and be ſupplied from the water under the throne of God, which is called *living water*; by the efficacy and virtue of which the dead bodies ſhall ſpring forth from their graves, as they did in their mother's womb, or as corn ſprouts forth by common rain, till they become perfect; after which breath will be breathed into them, and they will ſleep in their ſepulchres till they are raiſed to life at the laſt trump.

When thoſe who have riſen ſhall have waited the limited time, the Mahometans believe God will at length appear to judge them; Mahomet undertaking the office of interceſſor, after it ſhall have been declined by Adam, Noah, Abraham, and Jeſus, who ſhall beg deliverance only for their own ſouls. They ſay, that on this ſolemn occaſion God will come in the clouds ſurrounded by angels, and will produce the books wherein the actions of every perſon are recorded by their guardian angels, and will command the prophets to bear witneſs againſt thoſe to whom they have been reſpectively ſent. Then every one will be examined concerning all his words and actions uttered and done by him in this life; not as if God needed any information in theſe reſpects, but to oblige the perſon to make public confeſſion and acknowledgment of God's juſtice. The particulars of which they ſhall give an account, as Mahomet himſelf enumerated them, are, of their time, how they ſpent it; of their wealth, by what means they acquired it, and how they employed it; of their bodies, wherein they exerciſed them; of their knowledge and learning, what uſe they made of them. To the queſtions we have mentioned each perſon ſhall anſwer, and make his defence in the beſt manner he can, endeavouring to excuſe himſelf by caſting the blame of his evil deeds on others; ſo that a diſpute ſhall ariſe even between the ſoul and the body, to which of them their guilt ought to be imputed: the ſoul ſaying, *O Lord, my body I received from thee; for thou createdſt me without a hand to lay hold with, a foot to walk with, an eye to ſee with, or an underſtanding to apprehend with, till I came and entered into this body; therefore puniſh it eternally, but deliver me.* The body, on the other ſide, will make this apology: *O Lord, thou createdſt me like a ſtock of wood, having neither hand that I could lay hold with, nor foot that I could walk with, till this ſoul, like a ray of light, entered into me, and my tongue began to ſpeak, my eye to ſee, and my foot to walk; therefore puniſh it eternally, but deliver me.* But God will propound to them the following parable of the blind man and the lame man, which, as well as the preceding diſpute, was borrowed by the Mahometans from the Jews. A certain king, having a pleaſant garden, in which were ripe fruits, ſet two perſons to keep it, one of whom was blind, and the other lame; the former not being able to ſee the fruit, nor the latter to gather it: the lame man, however, ſeeing the fruit, perſuaded the blind man to take him upon his ſhoulders, and by that means he eaſily gathered the fruit; which they divided between them. The lord of the garden coming ſome time after, and inquiring after his fruit, each began to excuſe himſelf: the blind man ſaid he had no eyes to ſee with; and the lame man, that he had no feet to approach the trees. But the king, ordering the lame man to be ſet on the blind, paſſed ſentence on and puniſhed them both. And in the ſame manner will God deal with the body and the ſoul. As theſe apologies will not avail on that day, ſo it will be in vain for any one to deny his evil actions; ſince men and angels, and his own members, nay, the very earth itſelf, will be ready to bear witneſs againſt him.

At this examination, they alſo believe, that each perſon will have the book wherein all the actions of his life are written delivered to him: which books the righteous will receive into their right hand, and read with great pleaſure and ſatisfaction; but the ungodly will be obliged to take them, againſt their wills, in their left, which will be bound behind their backs, their right hand being tied up to their necks.

To ſhow the exact juſtice which will be obſerved on this great day of trial, the next thing they deſcribe is the balance, wherein all things ſhall be weighed. They ſay it will be held by Gabriel; and that it is of ſo vaſt a ſize, that its two ſcales, one of which hangs over paradiſe, and the other over hell, are capacious enough to contain both heaven and hell. Though ſome are willing to underſtand what is ſaid in the Koran concerning this balance allegorically, and only as a figurative repreſentation of God's equity; yet the more ancient and orthodox opinion is, that they are to be taken literally; and ſince words and actions, being mere accidents, are not capable of being themſelves weighed, they ſay that the books wherein they are written will be thrown into the ſcales, and according as thoſe wherein the good or evil actions are recorded ſhall preponderate, ſentence will be given: thoſe whoſe balances laden with good works ſhall be heavy, will be ſaved; but thoſe whoſe balances are light, will be condemned. Nor will any one have cauſe to complain that God ſuffers any good action to paſs unrewarded, becauſe the wicked for the good they do have their reward in this life, and therefore can expect no favour in the next.

This examination being paſt, and every one's works weighed in a juſt balance, that mutual retaliation will follow, according to which every creature will take vengeance one of another, or have ſatisfaction made them for the injuries which they have ſuffered. And, ſince there will then be no other way of returning like for like, the manner of giving this ſatisfaction will be by taking away a proportional part of the good works of him who offered the injury, and adding it to thoſe of him who ſuffered it. Which being done, if the angels (by whoſe miniſtry this is to be performed) ſay, *Lord, we have given to every one his due, and there remaineth of this perſon's good works ſo much as equalleth the weight of an ant*, God will, of his mercy, cauſe it to be doubled unto him, that he may be admitted into paradiſe; but if, on the contrary, his good works be exhauſted, and there remain evil works only, and there be any who have not yet received ſatisfaction from him, God will order that an equal weight of their ſins be added unto his, that he may be puniſhed for them in their ſtead, and he will be ſent to hell laden with both. This will be the method of God's dealing with mankind. As to brutes, after they ſhall have likewiſe taken vengeance of one another, he will command them to be changed into duſt; wicked men being reſerved to more grievous puniſhment, ſo that they ſhall cry out, on hearing this ſentence paſſed on the brutes, *Would to* GOD *that we were duſt alſo.* As to the genii, many Mahometans are of opinion, that ſuch of them as are true believers, will undergo the ſame fate as the irrational animals, and have no other reward than the favour of being converted into duſt; and for this they quote the authority of their prophet.

The trials being over, and the aſſembly diſſolved, the Mahometans hold, that thoſe who are to be admitted into paradiſe will take the right-hand way, and thoſe who are deſtined to hell fire will take the left; but both of them muſt firſt paſs the bridge called in Arabic *al Sirat*, which they ſay is laid over the midſt of hell, and deſcribe to be finer than a hair, and ſharper than the edge of a ſword; ſo that it ſeems very difficult to conceive how any one ſhall be able to ſtand upon it: for which reaſon, moſt of the ſect of the Motazalites reject it as a fable; though the orthodox think it a ſufficient proof of the truth of this article, that it was ſeriouſly affirmed by him who never aſſerted a falſehood, Mahometaniſm.

meaning their prophet: who, to add to the difficulty of the paſſage, has likewiſe declared, that this bridge is beſet on each ſide with briars and hooked thorns: which will however be no impediment to the good; for they ſhall paſs with wonderful eaſe and ſwiftneſs, like lightning, or the wind, Mahomet and his Moſlems leading the way; whereas the wicked, what with the ſlipperineſs and extreme narrowneſs of the path, the intangling of the thorns, and the extinction of the light which directed the former to paradiſe, will ſoon miſs their footing, and fall down headlong into hell, which is gaping beneath them.

As to the puniſhment of the wicked, the Mahometans are taught, that hell is divided into ſeven ſtories or apartments, one below another, deſigned for the reception of as many diſtinct claſſes of the damned. The firſt, which they call *Jehennam*, they ſay, will be the receptacle of thoſe who acknowledged one God, that is, the wicked Mahometans; who, after having there been puniſhed according to their demerits, will at length be releaſed. The ſecond, named *Ladha*, they aſſign to the Jews; the third, named *al Hotama*, to the Chriſtians; the fourth, named *al Sair*, to the Sabians; the fifth, named *Sakar*, to the Magians; the ſixth, named *al Jahim*, to the idolaters; and the ſeventh, which is the loweſt and worſt of all, and is called *al Hawyat*, to the hypocrites, or thoſe who outwardly profeſſed ſome religion, but in their hearts were of none. Over each of theſe apartments they believe there will be ſet a guard of angels, 19 in number; to whom the damned will confeſs the juſt judgment of God, and beg them to intercede with him for ſome alleviation of their pain, or that they may be delivered by being annihilated.

Mahomet has, in his Koran and traditions, been very exact in deſcribing the various torments of hell, which, according to him, the wicked will ſuffer both from intenſe heat and exceſſive cold. We ſhall, however, enter into no detail of them here; but only obſerve, that the degrees of theſe pains will alſo vary in proportion to the crimes of the ſufferer, and the apartment he is condemned to; and that he who is puniſhed the moſt lightly of all will be ſhod with ſhoes of fire, the fervour of which will cauſe his ſkull to boil like a cauldron. The condition of theſe unhappy wretches, as the ſame prophet teaches, cannot be properly called either *life* or *death;* and their miſery will be greatly increaſed by their deſpair of being ever delivered from that place, ſince, according to that frequent expreſſion in the Koran, *they muſt remain therein for ever*. It muſt be remarked, however, that the infidels alone will be liable to eternity of damnation; for the Moſlems, or thoſe who have embraced the true religion, and have been guilty of heinous ſins, will be delivered thence after they ſhall have expiated their crimes by their ſufferings. The time which theſe believers ſhall be detained there, according to a tradition handed down from their prophet, will not be leſs than 900 years, nor more than 7000. And, as to the manner of their delivery, they ſay that they ſhall be diſtinguiſhed by the marks of proſtration on thoſe parts of their bodies with which they uſed to touch the ground in prayer, and over which the fire will therefore have no power; and that, being known by this characteriſtic, they will be releaſed by the mercy of God, at the interceſſion of Mahomet and the bleſſed: whereupon thoſe who ſhall have been dead, will be reſtored to life, as has been ſaid; and thoſe whoſe bodies ſhall have contracted any ſootineſs or filth from the flames and ſmoke of hell, will be immerſed in one of the rivers of paradiſe, called the *river of life*, which will waſh them whiter than pearls.

The righteous, as the Mahometans are taught to believe, having ſurmounted the difficulties, and paſſed the ſharp bridge abovementioned, before they enter paradiſe, will be refreſhed by drinking at the *pond* of their prophet, who deſcribes it to be an exact ſquare of a month's journey in compaſs; its water, which is ſupplied by two pipes from al Cawthar, one of the rivers of paradiſe, being whiter than milk or ſilver, and more odoriferous than muſk, with as many cups ſet around it as there are ſtars in the firmament; of which water whoever drinks will thirſt no more for ever. This is the firſt taſte which the bleſſed will have of their future and now near-approaching felicity.

Though paradiſe be ſo very frequently mentioned in the Koran, yet it is a diſpute among the Mahometans whether it be already created, or to be created hereafter; the Motazalites and ſome other ſectaries aſſerting, that there is not at preſent any ſuch place in nature, and that the paradiſe which the righteous will inhabit in the next life will be different from that from which Adam was expelled. However, the orthodox profeſs the contrary, maintaining that it was created even before the world, and deſcribe it, from their prophet's traditions, in the following manner.

They ſay it is ſituated above the ſeven heavens (or in the ſeventh heaven), and next under the throne of God; and, to expreſs the amenity of the place, tell us, that the earth of it is of the fineſt wheat-flour, or of the pureſt muſk, or, as others will have it, of ſaffron: that its ſtones are pearls and jacinths, the walls of its buildings enriched with gold and ſilver, and that the trunks of all its trees are of gold: among which the moſt remarkable is the tree called *Tuba*, or the tree of happineſs. Concerning this tree, they fable, that it ſtands in the palace of Mahomet, though a branch of it will reach to the houſe of every true believer; that it will be laden with pomegranates, grapes, dates, and other fruit, of ſurpriſing bigneſs, and of taſtes unknown to mortals. So that, if a man deſire to eat of any particular kind of fruit, it will immediately be preſented him; or, if he chooſe fleſh, birds ready dreſſed will be ſet before him, according to his wiſh. They add, that the boughs of this tree will ſpontaneouſly bend down to the hand of the perſon who would gather of its fruits, and that it will ſupply the bleſſed not only with food, but alſo with ſilken garments, and beaſts to ride on ready ſaddled and bridled, and adorned with rich trappings, which will burſt forth from its fruits; and that this tree is ſo large, that a perſon, mounted on the fleeteſt horſe, would not be able to gallop from one end of its ſhade to the other in 100 years.

As plenty of water is one of the greateſt additions to the pleaſantneſs of any place, the Koran often ſpeaks of the rivers of paradiſe as a principal ornament thereof: ſome of theſe rivers, they ſay, flow with water, ſome with milk, ſome with wine, and others with honey; all taking their riſe from the root of the tree Tuba.

But all theſe glories will be eclipſed by the reſplendent and raviſhing girls of paradiſe, called, from their large black eyes, *Hur al oyun*, the enjoyment of whoſe company will be a principal felicity of the faithful. Theſe, they ſay, are created, not of clay, as mortal women are, but of pure muſk; being, as their prophet often affirms in his Koran, free from all natural impurities, defects, and inconveniences incident to the ſex, of the ſtricteſt modeſty, and ſecluded from public view in pavilions of hollow pearls, ſo large, that as ſome traditions have it, one of them will be no leſs than four paraſangs (or, as others ſay, 60 miles) long, and as many broad.

The name which the Mahometans uſually give to this happy manſion, is *al Jannat*, or *the garden;* and ſometimes they call it, with an addition, *Jaunat al Ferdaws*, "the garden of paradiſe;" *Jannat Aden*, "the garden of Eden," (tho' they generally interpret the word *Eden*, not according to its acceptation in Hebrew, but according to its meaning in their own tongue, wherein it ſignifies a *ſettled* or *perpetual habitation:) Jannat al Mawa*, "the garden of abode;" *Jannat al Naim*, "the garden of pleaſure;" and the like: by which ſeveral appellations, ſome underſtand ſo many different gardens, or at leaſt places of different degrees of felicity, (for they reckon no leſs than 100 ſuch in all,) the very meaneſt whereof will afford its inhabitants ſo many pleaſures and delights, that one would conclude they muſt even ſink under them, had not Mahomet declared, that, in order to qualify the bleſſed for a full enjoyment of them, God will give to every one the abilities of 100 men.

6. God's abſolute decree and predeſtination both of good and evil. The orthodox doctrine is, that whatever hath or ſhall come to paſs in this world, whether it be good, or whether it be bad, proceedeth entirely from the divine will, and is irrevocably fixed and recorded from all eternity in the preſerved table. God having ſecretly predetermined not only the adverſe and proſperous fortune of every perſon in this world, in the moſt minute particulars, but alſo his faith or infidelity, his obedience or diſobedience, and conſequently his everlaſting happineſs or miſery after death; which fate or predeſtination it is not poſſible by any foreſight or wiſdom, to avoid.

Of this doctrine Mahomet makes great uſe in his Koran for the advancement of his deſigns; encouraging his followers to fight without fear, and even deſperately, for the propagation of their faith, by repreſenting to them, that all their caution could not avert their inevitable deſtiny, or prolong their lives for a moment; and deterring them from diſobeying or rejecting him as an impoſtor, by ſetting before them the danger they might thereby incur of being, by the juſt judgment of God, abandoned to ſeduction, hardneſs of heart, and a reprobate mind, as a puniſhment for their obſtinacy.

II. *Religious practice.* 1. The firſt point is *prayer*, under which are alſo comprehended thoſe legal waſhings or purifications which are neceſſary preparations thereto.

Of theſe purifications there are two degrees, one called *ghoſl*, being a total immerſion or bathing of the body in water; and the other called *wodu*, (by the Perſians, *abdeſt*,) which is the waſhing of their faces, hands, and feet, after a certain manner. The firſt is required in ſome extraordinary caſes only, as after having lain with a woman, or been polluted by emiſſion of ſeed, or by approaching a dead body; women alſo being obliged to it after their courſes or childbirth. The latter is the ordinary ablution in common caſes, and before prayer, and muſt neceſſarily be uſed by every perſon before he can enter upon that duty. It is performed with certain formal ceremonies, which have been deſcribed by ſome writers, but much eaſier apprehended by ſeeing them done, than by the beſt deſcription.

That his followers might be more punctual in this duty, Mahomet is ſaid to have declared, that *the practice of religion is founded on cleanlineſs*, which is the *one half of the faith*, and *the key of prayer*, without which it will not be heard by God. That theſe expreſſions may be the better underſtood, *al Ghazali* reckons four degrees of purification; of which the firſt is the cleanſing of the body from all pollution, filth, and excrements; the ſecond, the cleanſing of the members of the body from all wickedneſs and unjuſt actions; the third, the cleanſing the heart from all blameable inclinations and odious vices; and the fourth, the purging a man's ſecret thoughts from all affections which may divert their attendance on God; adding, that the body is but as the outward ſhell, in reſpect to the heart, which is as the kernel.

Circumciſion, though it be not ſo much as once mentioned in the Koran, is yet held, by the Mahometans, to be an ancient divine inſtitution, confirmed by the religion of Iſlam, and, though not ſo abſolutely neceſſary but that it may be diſpenſed with in ſome caſes, yet highly proper and expedient. The Arabs uſed this rite for many ages before Mahomet, having probably learned it from Iſhmael, tho' not only his deſcendants, but the Hamyarites and other tribes practiſed the ſame. The Iſhmaelites, we are told, uſed to circumciſe their children, not on the eighth day, as is the cuſtom of the Jews, but when about 12 or 13 years old, at which age their father underwent that operation; and the Mahometans imitate them ſo far as not to circumciſe children before they may be able at leaſt diſtinctly to pronounce that profeſſion of their faith, *There is no* God *but* God, Mahomet *is the apoſtle of* God; but pitch on what age they pleaſe for the purpoſe, between 6 and 16, or thereabouts.

Prayer was by Mahomet thought ſo neceſſary a duty, that he uſed to call it *the pillar of religion*, and *the key of paradiſe;* and when the Thakifites, who dwelt at Tayef, ſending, in the ninth year of the Hegira, to make their ſubmiſſion to the prophet, after the keeping of their favourite idol had been denied them, begged at leaſt, that they might be diſpenſed with as to their ſaying of their appointed prayers, he anſwered, *That there could be no good in that religion wherein was no prayer.*

That ſo important a duty, therefore, might not be neglected, Mahomet obliged his followers to pray five times every 24 hours, at certain ſtated times; viz. 1. In the morning before ſun-riſe: 2. When noon is paſt, and the ſun begins to decline from the meridian: 3. In the afternoon, before ſun-ſet: 4. In the evening, after ſun ſet, and before day be ſhut in; and, 5. After the day is ſhut in, and before the firſt watch of the night. For this inſtitution he pretended to have received the divine command from the throne of God himſelf, when he took his night-journey to heaven; and the obſerving of the ſtated times of prayer is frequently inſiſted on in the Koran, though they be not particularly preſcribed therein. Accordingly, at the aforeſaid times, of which public notice is given by the Muedhdhins, or Criers, from the ſteeples of their moſques, (for they uſe no bells,) every conſcientious Moſlem prepares himſelf for prayer, which he performs either in the moſque or any other place, provided it be clean, after a preſcribed form, and with a certain number of praiſes or ejaculations, (which the more ſcrupulous count by a ſtring of beads) and uſing certain poſtures of worſhip; all which have been particularly ſet down and deſcribed, tho' with ſome few miſtakes, by other writers, and ought not to be abridged, unleſs in ſome ſpecial caſes, as on a journey, on preparing for battle, &c.

For the regular performance of the duty of prayer among the Mahometans, beſides the particulars abovementioned, it is alſo requiſite that they turn their faces, while they pray, towards the temple of Mecca; the quarter where the ſame is ſituated, being, for that reaſon, pointed out within their moſques by a nich, which they call *al Mehrab;* and without, by the ſituation of the doors opening into the galleries of the ſteeples: there are, alſo, tables calculated for the ready finding out their Keblah, or part towards which they ought to pray, in places where they have no other direction.

2. *Alms* are of two ſorts, *legal* and *voluntary*. The *legal alms* are of indiſpenſable obligation, being commanded by the law, which directs and determines both the portion which is to be given, and of what things it ought to be given; but the *voluntary alms* are left to every one's liberty, to give more or leſs, as he ſhall ſee fit. The former kind of alms ſome think to be properly called *zacat*, and the latter *ſadakat;* tho' this name be alſo frequently given to the legal alms. They are called *zacat*, either becauſe they *increaſe* a man's ſtore by drawing down a bleſſing thereon, and produce in his ſoul the virtue of liberality; or becauſe they *purify* the remaining part of one's ſubſtance from pollution, and the ſoul from the filth of avarice; and *ſadakat*, becauſe they are a proof of a man's ſincerity in the worſhip of God. Some writers have called the legal alms *tithes*, but improperly, ſince in ſome caſes they fall ſhort, and in others exceed that proportion.

3. *Faſting* is a duty of ſo great moment, that Mahomet uſed to ſay it was *the gate of religion*, and that the *odour of the mouth of him who faſteth is more grateful to* God *than that of muſk;* and al Ghazali reckons faſting *one fourth part of the faith*. According to the Mahometan divines, there are three degrees of faſting: 1. The reſtraining the belly and other parts of the body from ſatisfying their luſts; 2. The reſtraining the ears, eyes, tongue, hands, feet, and other members, from ſin; and, 3. The faſting of the heart from worldly cares, and reſtraining the thoughts from every thing beſides God.

The Mahometans are obliged, by the expreſs command of the Koran, to faſt the whole month of Ramadan, from the time the new-moon firſt appears, till the appearance of the next new moon; during which time they muſt abſtain from eating, drinking, and women, from day-break till night or ſun-ſet. And this injunction they obſerve ſo ſtrictly, that, while they faſt, they ſuffer nothing to enter their mouths, or other parts of their body, eſteeming the faſt broken and null, if they ſmell perfumes, take a clyſter or injection, bathe, or even purpoſely ſwallow their ſpittle; ſome being ſo cautious, that they will not open their mouths to ſpeak, leſt they ſhould breathe the air too freely: the faſt is alſo deemed void, if a man kiſs or touch a woman, or if he vomit deſignedly. But after ſun-ſet they are allowed to refreſh themſelves, and to eat and drink, and enjoy the company of their wives till day-break; though the more rigid begin the faſt again at midnight. This faſt is extremely rigorous and mortifying when the month of Ramadan happens to fall in ſummer, (for the Arabian year being lunar, each month runs thro' all the different ſeaſons in the courſe of 33 years) the length and heat of the days making the obſervance of it much more difficult and uneaſy than in winter.

The reaſon given why the month of Ramadan was pitched on for this purpoſe is, that on that month the Koran was ſent down from heaven. Some pretend, that Abraham, Moſes, and Jeſus, received their reſpective revelations in the ſame month.

4. The pilgrimage to Mecca is ſo neceſſary a point of practice, that, according to a tradition of Mahomet, he who dies without performing it may as well die a Jew or a Chriſtian; and the ſame is expreſsly commanded in the Koran.

The temple of Mecca ſtands in the midſt of the city, and is honoured with the title of *Maſjad al elharam*, i. e. *the ſacred or inviolable temple*. What is principally reverenced in this place, and gives ſanctity to the whole, is a ſquare ſtone building, called the Caaba; (ſee that article).

To this temple every Mahometan, who has health and means ſufficient, ought, once at leaſt in his life, to go on pilgrimage; nor are women excuſed from the performance of this duty. The pilgrims meet at different places near Mecca, according to the different parts from whence they come, during the months of Shawal and Dhu'lkaada; being obliged to be there by the beginning of Dhu'lhajja; which month, as its name imports, is peculiarly ſet apart for the celebration of this ſolemnity.

At the place above-mentioned the pilgrims properly commence ſuch; when the men put on the Ihram or ſacred habit, which conſiſts only of two woollen wrappers, one wrapped about their middle to cover their privities, and the other thrown over their ſhoulders, having their heads bare, and a kind of ſlippers which cover neither the heel nor the inſtep, and ſo enter the ſacred territory in their way to Mecca. While they have this habit on, they muſt neither hunt nor fowl, (though they are allowed to fiſh;) which precept is ſo punctually obſerved, that they will not kill even a louſe or flea if they find them on their bodies: there are ſome noxious animals, however, which they have permiſſion to kill during the pilgrimage, as kites, ravens, ſcorpions, mice, and dogs given to bite. During the pilgrimage, it behoves a man to have a conſtant guard over his words and actions; to avoid all quarrelling or ill-language, all converſe with women, and all obſcene diſcourſe; and to apply his whole attention to the good work he is engaged in.

The pilgrims, being arrived at Mecca, immediately viſit the temple; and then enter on the performance of the preſcribed ceremonies, which conſiſt chiefly in going in proceſſion round the Caaba, in running between the mounts Safa and Merwa, in making the ſtation on mount Arafat, and ſlaying the victims, and ſhaving their heads in the valley of Mina.

In compaſſing the Caaba, which they do ſeven times, beginning at the corner where the black ſtone is fixed, they uſe a ſhort quick pace the three firſt times they go round it, and a grave ordinary pace the four laſt; which, it is ſaid, was ordered by Mahomet, that his followers might ſhew themſelves ſtrong and active to cut off the hopes of the infidels, who gave out that the immoderate heats of Medina had rendered them weak. But the aforeſaid quick pace they are not obliged to uſe every time they perform this piece of devotion, but only at ſome particular times. So often as they paſs by the black ſtone, they either kiſs it, or touch it with their hand and kiſs that.

The running between Safa and Merwa is alſo performed ſeven times, partly with a ſlow pace, and partly running: for they walk gravely till they come to a place between two pillars; and there they run, and afterwards walk again; ſometimes looking back, and ſometimes ſtopping, like one who had loſt ſomething, to repreſent Hagar ſeeking water for her ſon; for the ceremony is ſaid to be as ancient as her time.

On the ninth of Dhu'lhajja, after morning-prayer, the pilgrims leave the valley of Mina, whither they come the day before; and proceed in a tumultuous and ruſhing manner to mount Arafat, where they ſtay to perform their devotions till ſun-ſet: then they go to Mozdaliſa, an oratory between Arafat and Mina; and there ſpend the night in prayer and reading the Koran. The next morning by day-break they viſit *al Maſher al Karam*, or "the ſacred monument;" and, departing thence before ſun-riſe, haſte by Batn Mohaſſer to the valley of Mina, where they throw ſeven ſtones at three marks or pillars, in imitation of Abraham, who, meeting the devil in that place, and being by him diſturbed in his devotions, or tempted to diſobedience when he was going to ſacrifice his ſon, was commanded by God to drive him away by throwing ſtones at him; though others pretend this rite to be as old as Adam, who alſo put the devil to flight in the ſame place and by the ſame means.

This ceremony being over, on the ſame day, the tenth of Dhu'lhajja, the pilgrims ſlay their victims in the ſaid valley of Mina; of which they and their friends eat part, and the reſt is given to the poor. Theſe victims muſt be either ſheep, goats, kine, or camels; males, if of either of the two former kinds; and females, if of either of the latter; and of a fit age. The ſacrifices being over, they ſhave their heads and cut their nails, burying them in the ſame place; after which the pilgrimage is looked on as completed: though they again viſit the Caaba, to take their leave of that ſacred building.

MAHOMETANS, thoſe who believe in the religion and divine miſſion of Mahomet. See MAHOMET, MAHOMETANISM, and ALCORAN.

MAIDEN, an inſtrument for beheading criminals.

Of the uſe and form of this inſtrument Mr Pennant gives the following account. "It ſeems to have been confined to the limits of the foreſt of Hardwick, or the 18 towns and hamlets within its precincts. The time when this cuſtom took place is unknown; whether Earl Warren, lord of this foreſt, might have eſtabliſhed it among the ſanguinary laws then in uſe againſt the invaders of the hunting rights, or whether it might not take place after the woollen manufactures at Halifax began to gain ſtrength, is uncertain. The laſt is very probable; for the wild country around the town was inhabited by a lawleſs ſet, whoſe depredations on the cloth-tenters might ſoon ſtifle the efforts of infant induſtry. For the protection of trade, and for the greater terror of offenders by ſpeedy execution, this cuſtom ſeems to have been eſtabliſhed, ſo as at laſt to receive the force of law, which was, 'That if a felon be taken within the liberty of the foreſt of Hardwick, with goods ſtolen out, or within the ſaid precincts, either hand-habend, back-berand, or confeſſion'd, to the value of thirteen-pence halfpenny, he ſhall, after three market-days or meeting-days within the town of Halifax, next after ſuch his apprehenſion, and being condemned, be taken to the gibbet, and there have his head cut from its body.'

"The offender had always a fair trial; for as ſoon as he was taken, he was brought to the lord's bailiff at Halifax: he was then expoſed on the three markets (which here were held thrice in a week), placed in a ſtocks, with the goods ſtolen on his back, or, if the theft was of the cattle kind, they were placed by him; and this was done both to ſtrike terror into others, and to produce new informations againſt him. The bailiff then ſummoned four freeholders of each town within the foreſt to form a jury. The felon and proſecutors were brought face to face; the goods, the cow, or horſe, or whatſoever was ſtolen, produced. If he was found guilty, he was remanded to priſon, had a-week's time allowed for preparation, and then was conveyed to this ſpot, where his head was ſtruck off by this machine. I ſhould have premiſed, that if the criminal, either after apprehenſion, or in the way to execution, could eſcape out of the limits of the foreſt (part being cloſe to the town), the bailiff had no farther power over him; but if he ſhould be caught within the precincts at any time after, he was immediately executed on his former ſentence.

"This privilege was very freely uſed during the reign of Elizabeth: the records before that time were loſt. Twenty-five ſuffered in her reign, and at leaſt twelve from 1623 to 1650; after which I believe the privilege was no more exerted.

"This machine of death is now deſtroyed; but I ſaw one of the ſame kind in a room under the parliament-houſe at Edinburgh, where it was introduced by the Regent Morton, who took a model of it as he paſſed through Halifax, and at length ſuffered by it himſelf. It is in form of a painter's eaſel, and about ten feet high: at four feet from the bottom is a croſs bar, on which the felon lays his head, which is kept down by another placed above. In the inner edges of the frame are grooves; in theſe is placed a ſharp ax, with a vaſt weight of lead, ſupported at the very ſummit with a peg; to that peg is faſtened a cord, which the executioner cutting, the ax falls, and does the affair effectually, without ſuffering the unhappy criminal to undergo a repetition of ſtrokes, as has been the caſe in the common method. I muſt add, that if the ſufferer is condemned for ſtealing a horſe, or a cow, the ſtring is tied to the beaſt, which, on being whipped, pulls out the peg, and becomes the executioner."

MAIDSTONE, a town of Kent, in England, ſeated on the river Medway, a branch of which runs through it. It is a large, populous, and agreeable place; and the aſſizes for the county are held here. It is a corporation, has a free ſchool, and ſends two members to parliament. E. Long. 0. 37. N. Lat. 51. 20.

MAIENNE, a conſiderable, handſome, and populous town in France, with the title of a duchy; ſeated on a river of the ſame name, in W. Long. 0. 35. N. Lat. 48. 18.

MAIGNAN (Emanuel), a religious minim, and one of the greateſt philoſophers of his age, was born of an ancient and noble family at Thouloufe in 1601. Like the famous Paſcal, he became a complete mathematician without the aſſiſtance of a teacher; and filled the profeſſor's chair at Rome in 1636, where, at the expence of Cardinal Spada, he publiſhed his book *De Perſpectiva Horaria*. He returned to Thouloufe in 1650, and was created provincial: the king, who in 1660 entertained himſelf with the machines and curioſities in his cell, made him offers by Cardinal Mazarine, to draw him to Paris; but he humbly deſired to ſpend the remainder of his days in a cloyſter. He publiſhed a courſe of philoſophy, 4 vols 8vo, at Thouloufe; to the ſecond edition of which he added two treatiſes, one againſt the vortices of Deſcartes, and the other on the ſpeaking trumpet invented by Sir Samuel Morland. He is ſaid to have ſtudied even in his ſleep, his very dreams being employed in theorems, the demonſtrations of which would awaken him with joy. He died in 1676.

MAJESTY, a title given to kings, which frequently ſerves as a term of diſtinction.—Thus, the emperor is called *Sacred Majeſty*, *Imperial Majeſty*, and *Cæſarian Majeſty*: The king of France is called *His Moſt Chriſtian Majeſty*; and when he treats with the emperor, the word *ſacred* is added: And the king of Spain is termed *His Moſt Catholic Majeſty*. With reſpect to other kings, the name of the kingdom is added; as *His Britannic Majeſty*, *His Poliſh Majeſty*, &c. Formerly princes were more ſparing in giving titles, and more modeſt in claiming them: before the reign of Charles V. the king of Spain had only the title of *Highneſs*; and before that of Henry VIII. the kings of England were only addreſſed under the titles of *Grace* and *Highneſs*.

MAII INDUCTIO, an ancient cuſtom for the prieſt and people of country-villages to go in proceſſion to ſome adjoining wood on a May-day morning; and return in a kind of triumph, with a May-pole, boughs, flowers, garlands, and other tokens of the ſpring. This *May-game*, or rejoicing at the coming of the ſpring, was for a long time obſerved, and ſtill is in ſome parts of England; but there was thought to be ſo much heathen vanity in it, that it was condemned and prohibited within the dioceſe of Lincoln, by the good old biſhop Groſthead.

MAIL (MACULA), a coat of mail, ſo called from the French *maille*, which ſignifies a ſquare figure, or the hole of a net: ſo *maille de houbergeons* was a coat of mail, becauſe the links or joints in it reſemble the ſquares of a net.

MAIL is likewiſe uſed for the leather bag wherein letters are carried by the poſt.

Action of MAILS *and Duties*, in Scots law. See LAW, p. (90), § 7. and p. (102), § 20.

MAIM, MAIHEM, or *Mayhem*, in law, a wound by which a perſon loſes the uſe of a member that might have been a defence to him; as when a bone is broken, a foot, hand, or other member cut off, or an eye put out; though the cutting off an ear or noſe, or breaking the hinder-teeth, was formerly held to be no maim. A maim by caſtration was anciently puniſhed with death, and other maims with loſs of member for member; but afterwards they were only puniſhed by fine and impriſonment. It is now enacted by the ſtatute 22 & 23 Car. II. that if any perſon, from malice aforethought, ſhall diſable any limb or member of any of the king's ſubjects with an intent to diſfigure him, the offender, with his aiders and abettors, ſhall be guilty of felony without benefit of clergy; though no ſuch attainder ſhall corrupt the blood, or occaſion forfeiture of lands, &c.

MAIMBOURG (Louis), born at Nanci in 1610, became a Jeſuit in 1626; and acquired reputation as a teacher, but yet more by the many hiſtories which he publiſhed. The Janſeniſts criticiſed his hiſtory of Arianiſm, and that of the *Iconoclaſtes*; and his hiſtory of Calviniſm, publiſhed in 1681, ſtirred up a violent paper-war againſt him, the operations whereof he left entirely to his enemies, without giving himſelf any trouble offenſively or defenſively. He was degraded by the general of the Jeſuits, on account of his having declared too boldly in favour of the Gallican church againſt the Ultramontains. He retired into the abbey of St Victor, where he died in 1686.

He ought not to be confounded with *Theodore Maimbourg* his couſin; who embraced Calviniſm, afterwards returned to the Romiſh church, returned back to the reformed religion, embraced Socinianiſm, and died at London about the year 1693, after having publiſhed ſome works.

MAIMONIDES (Moſes), or MOSES THE SON OF MAIMON, a celebrated rabbi, called by the Jews *the eagle of the doctors*, was born of an illuſtrious family at Cordova in Spain, in 1131. He is commonly named *Moſes Ægyptius*, becauſe he ſettled in Egypt, where he ſpent his whole life in quality of phyſician to the ſultan. Here he opened a ſchool, which was ſoon filled with pupils from all parts; from Alexandria and Damaſcus eſpecially, whoſe proficiency under him ſpread his fame all over the world. He was no leſs eminent in philoſophy, mathematics, and divinity, than in medicine. Caſaubon affirms it may be truly ſaid of him, as Pliny of old ſaid of Diodorus Siculus, that "he was the firſt of his tribe who ceaſed to be a trifler." It would be tedious to enumerate all the works of Maimonides;

ſome were written originally in Arabic, but are now extant only in Hebrew tranſlations. "Thoſe (ſays Collier,) who deſire to learn the doctrine and the canon law contained in the Talmud, may read Maimonides's compendium of it in good Hebrew, in his book intitled *Iad;* wherein they will find great part of the fables and impertinences in the Talmud entirely diſcarded. But the *More Nevochim* is the moſt valued of all his works; deſigned to explain the obſcure words, phraſes, metaphors, &c. in Scripture, which, when literally interpreted, have either no meaning or appear abſurd.

MAIN, an epithet uſually applied by ſailors to whatever is principal, as oppoſed to whatever is inferior or ſecondary. Thus the main land is uſed in contradiſtinction to an iſland or peninſula; and the mainmaſt, the main-wale, the main-keel, and the main-hatchway, are in like manner diſtinguiſhed from the fore and mizen maſts, the channel-wales, the falſe keel, and the fore and after hatchways, &c.

MAINOUR, Manour, or *Meinour*, (from the French *manier*, i. e. *manu tractare*), in a legal ſenſe denotes the thing that a thief taketh away or ſtealeth: As to be taken with the *mainour*, (*Pl. Cor.* fol. 179.) is to be taken with the thing ſtolen about him: And again (*fol.* 194.) it was preſented, that a thief was delivered to the ſheriff or viſcount, together with the *mainour:* And again, (*fol.* 186.) if a man be indicted, that he feloniouſly ſtole the goods of another, where, in truth, they are his own goods, and the goods he brought into the court as the *mainour;* and if it be demanded of him, what he ſaith to the goods, and he diſclaim them; though he be acquitted of the felony, he ſhall loſe the goods: And again, (*fol.* 149.) if the defendant were taken with the *manour*, and the *manour* be carried to the court, they, in ancient times would arraign him upon the *manour*, without any appeal or indictment. *Cowel.* See *Blackſt. Comment.* Vol. III. 71. Vol. IV. 303.

MAINPRIZE. See *Falſe* Imprisonnent.

The writ of mainprize, *manucaptio*, is a writ directed to the ſheriff, (either generally, when any man is impriſoned for a bailable offence, and bail hath been refuſed; or ſpecially, when the offence or cauſe of commitment is not properly bailable below), commanding him to take ſureties for the priſoner's appearance, uſually called *mainpernors*, and to ſet him at large. Mainpernors differ from bail, in that a man's bail may impriſon, or ſurrender him up before the ſtipulated day of appearance; mainpernors can do neither, but are barely ſureties for his appearance at the day: bail are only ſureties that the parties be anſwerable for the ſpecial matter for which they ſtipulate, mainpernors are bound to produce him to anſwer all charges whatever. See Habeas *Corpus*.

MAINTENANCE, in law, bears a near relation to Barretry; being an officious intermeddling in a ſuit that no way belongs to one, by maintaining or aſſiſting either party with money or otherwiſe, to proſecute or defend it: a practice that was greatly encouraged by the firſt introduction of uſes. This is an offence againſt public juſtice, as it keeps alive ſtrength and contention, and perverts the remedial proceſs of the law into an engine of oppreſſion. And therefore, by the Roman law, it was a ſpecies of the *crimen falſi*, to enter into any confederacy, or do any act to ſupport another's law-ſuit, by money, witneſſes, or patronage. A man may, however, maintain the ſuit of his near kinſman, ſervant, or poor neighbour, out of charity and compaſſion, with impunity. Otherwiſe the puniſhment by common law is fine and impriſonment; and by the ſtatute 32 Hen. VIII. c. 9. a forfeiture of 10l.

Maintenon.

MAINTENON (Madame de), a French lady of extraordinary fortune, deſcended from an ancient family, and whoſe proper name was *Frances Daubigne*, was born in 1635. Her parents by misfortunes being ill able to ſupport her, ſhe fell to the care of her mother's relations; to eſcape which ſtate of dependence, ſhe was induced to marry that famous old buffoon the abbe Scarron, who ſubſiſted himſelf only on a penſion allowed him by the court for his wit and parts. She lived with him many years, which Voltaire makes no ſcruple to call the happieſt years of her life; but when he died in 1660, ſhe found herſelf as indigent as ſhe was before her marriage. Her friends indeed endeavoured to get her huſband's penſion continued to her, and preſented ſo many petitions to the king about it, all beginning with "The widow Scarron moſt humbly prays your majeſty's, &c." that he was quite weary of them, and has been heard to exclaim, "Muſt I always be peſtered with the widow Scarron?" At laſt, however, through the recommendation of Madame de Monteſpan, he ſettled a much larger penſion on her, with a genteel apology for making her wait ſo long; and afterward made choice of her to take care of the education of the young duke of Maine, his ſon by Madame de Monteſpan. The letters ſhe wrote on this occaſion charmed the king, and were the origin of her advancement; her perſonal merit effected all the reſt. He bought her the lands of Maintenon, the only eſtate ſhe ever had; and finding her pleaſed with the acquiſition, called her publicly *Madam de Maintenon;* which was of great ſervice to her in her good fortune, by releaſing her from the ridicule attending that of Scarron. Her elevation was to her only a retreat; the king came to her apartment every day after dinner, before and after ſupper, and continued there till midnight: here he did buſineſs with his miniſters, while Madam de Maintenon, employed in reading or needle-work, never ſhewed any deſire to talk of ſtate-affairs, and carefully avoided all appearance of cabal or intrigue; ſhe did not even make uſe of her power to dignify her own relations. About the latter end of the year 1685, Lewis XIV. married her, he being then in his 48th and ſhe in her 50th year; and that piety with which ſhe inſpired the king to make her a wife inſtead of a miſtreſs, became by degrees a ſettled diſpoſition of mind. She prevailed on Lewis to found a religious community at St Cyr, for the education of 300 young ladies of quality; and here ſhe frequently retired from that melancholy of which ſhe complains ſo pathetically in one of her letters, and which few ladies will ſuppoſe ſhe ſhould be liable to in ſuch an elevated ſituation. But, as M. Voltaire ſays, if any thing could ſhew the vanity of ambition, it would certainly be this letter. Madame de Maintenon could have no other uneaſineſs than the uniformity of her manner of living with a great king; and this made her once ſay to the count Daubigné her brother, "I can hold it no longer; I wiſh I was dead." The anſwer he made to her was, "You have then a promiſe to marry the Almighty?" Lewis, however, died before her in 1715; when ſhe retired wholly to St Cyr, and ſpent the reſt of her days in acts of devotion; and what is moſt ſurpriſing is, that her huſband left no certain proviſion for her, recommending her only to the duke of Orleans. She would accept no more than a penſion of 80,000 livres, which was punctually paid her till ſhe died in 1719. A collection of her letters has been publiſhed, and tranſlated into Engliſh; from which familiar intercourſes her character will be better known than from deſcription.

MAJOR, in the art of war, the name of ſeveral officers of very different ranks and functions.

MAJOR *of a regiment of Foot*, the next officer to the lieutenant-colonel, generally promoted from the eldeſt captain: he is to take care that the regiment be well exerciſed, to ſee it march in good order, and to rally it in caſe of being broke in action: he is the only officer among the infantry that is allowed to be on horſeback in time of action, that he may the more readily execute the colonel's orders.

MAJOR *of a regiment of Horſe*, as well as foot, ought to be a man of honour, integrity, underſtanding, courage, activity, experience, and addreſs: he ſhould be maſter of arithmetic, and keep a detail of the regiment in every particular: he ſhould be ſkilled in horſemanſhip, and ever attentive to his buſineſs: one of his principal functions is, to keep an exact roſter of the officers for duty: he ſhould have a perfect knowledge in all the military evolutions, as he is obliged by his poſt to inſtruct others, &c.

Town-MAJOR, the third officer in order in a garriſon, and next to the deputy-governor. He ſhould underſtand fortification, and has a particular charge of the guards, rounds, patroles, and centinels.

Brigade-MAJOR, is a particular officer appointed for that purpoſe only in camp: he goes every day to head-quarters to receive orders from the adjutant-general: there they write exactly whatever is dictated to them: from thence they go and give the orders, at the place appointed for that purpoſe, to the different majors or adjutants of the regiments which compoſe that brigade, and regulate with them the number of officers and men which each are to furniſh for the duty of the army; taking care to keep an exact roſter, that one may not give more than another, and that each march in their tour: in ſhort, the major of brigade is charged with the particular detail in his own brigade, in much the ſame way as the adjutant-general is charged with the general detail of the duty of the army. He ſends every morning to the adjutant-general an exact return, by batttalion and company, of the men of his brigade miſſing at the retreat, or a report expreſſing that none are abſent: he alſo mentions the officers abſent with or without leave.

As all orders paſs through the hands of the majors of brigade, they have infinite occaſions of making known their talents and exactneſs.

MAJOR *of Artillery*, is alſo the next officer to the lieutenant-colonel. His poſt is very laborious, as the whole detail of the corps particularly reſts with him; and for this reaſon all the non-commiſſioned officers are ſubordinate him, as his title of *ſerjeant-major* imports: in this quality they muſt render him an exact account of every thing which comes to their knowledge, either regarding the duty or wants of the artillery and ſoldiers. He ſhould poſſeſs a perfect knowledge of the power of artillery, together with all its evolutions. In the field he goes daily to receive orders from the brigade-major, and communicates them with the parole to his ſuperiors, and then dictates them to the adjutant. He ſhould be a very good mathematician, and be well acquainted with every thing belonging to the train of artillery, &c.

MAJOR *of Engineers*, commmonly with us called *ſub-director*, ſhould be very well ſkilled in military architecture, fortification, gunnery, and mining. He ſhould know how to fortify in the field, to attack and defend all ſorts of poſts, and to conduct the works in a ſiege, &c. See ENGINEER.

Aid-MAJOR, is on ſundry occaſions appointed to act as major, who has a pre-eminence above others of the ſame denomination. Our horſe and foot-guards have their guidons, or ſecond and third majors.

Serjeant-MAJOR, is a non-commiſſioned officer, of great merit and capacity, ſubordinate to the adjutant, as he is to the major. See SERJEANT.

Drum-MAJOR, is not only the firſt drummer in the regiment, but has the ſame authority over his drummers as the corporal has over his ſquad. He inſtructs them in their different beats; is daily at orders with the ſerjeants, to know the number of drummers for duty. He marches at their head when they beat in a body. In the day of battle, or at exerciſe, he muſt be very attentive to the orders given him, that he may regulate his beats according to the movements ordered.

Fiſe-MAJOR, is he that plays the beſt on that inſtrument, and has the ſame authority over the fifers as the drum-major has over the drummers. He teaches them their duty, and appoints them for guards, &c.

MAJOR, in law, a perſon who is of age to manage his own affairs. By the civil law a man is not a major till the age of 25 years; in England, he is a major at 21, as in Normandy at 20.

MAJOR, in logic, is underſtood of the firſt propoſition of a regular ſyllogiſm. It is called *major*, becauſe it has a more extenſive ſenſe than the minor propoſition, as containing the principal term. See LOGIC.

MAJOR and *Minor*, in muſic, are applied to concords which differ from each other by a ſemi-tone. See CONCORD.

Major tone is the difference between the fifth and fourth; and major ſemi-tone the difference between the major fourth and the third. The major tone ſurpaſſes the minor by a comma.

MAJOR-*Domo*, an appellation formerly given to the ſteward or maſter of the king's houſehold.

MAJOR (John), a ſcholaſtic divine and hiſtorian, was born at Haddington, in the province of Eaſt Lothian in Scotland. It appears from ſome paſſages in his writings, that he reſided a while both at Oxford and Cambridge. He went to Paris in 1493, and ſtudied in the college of St Barbe, under the famous John Boulac. Thence he removed to that of Montacute, where he began to ſtudy divinity under the celebrated Standouk. In the year 1498, he was entered of the college of Navarre. In 1505, he was created doctor divinity; returned to Scotland in 1519, and taught theology during ſeveral years in the univerſity of St Andrews. But at length, being diſguſted with the quarrels of his countrymen, he went back to Paris, and reſumed his lectures in the college of Montacute, where he had ſeveral pupils, who afterwards became men of great eminence. About the year 1530, he returned once more to Scotland, and was choſen profeſſor of theology at St Andrew's, of which he afterwards became provoſt; and there died in 1547, aged 78. His logical treatiſes form one immenſe folio; his commentary on Ariſtotle's phyſics makes another; and his theological works amount to ſeveral volumes of the ſame ſize. The maſſes of crude and uſeleſs diſquiſition, were the admiration of his cotemporaries. A work, leſs prized in his own age, was to make him known to poſterity. His book *De Geſtis Scotorum*, was firſt publiſhed at Paris by Badius Aſcenſius, in the year 1521. He rejects in it ſome of the fictions of former hiſtorians; and would have had greater merit if he had rejected more. He intermingles the hiſtory of England with that of Scotland; and has incurred the cenſure of ſome partial writers, for giving an authority to the authors of the former nation, which he refuſes to thoſe of his own. Bede, Caxton, and Froiſſard, were exceedingly uſeful to him. What does the greateſt honour to this author is, the freedom with which he has cenſured the rapacity and indolence of eccleſiaſtics, and the ſtrain of ridicule with which he treats the pope's ſupremacy. The ſtyle in which he wrote does not deſerve commendation. Biſhop Spotiſwood calls it *Sorbonnic* and *barbarous*.

MAJORCA, an iſland of the Mediterranean, lying between Yvica on the weſt and Minorca on the eaſt. Theſe three iſlands were anciently called *Baleares*, ſuppoſed to be from the ſkill of their inhabitants in ſlinging, for which they were very remarkable. Originally they belonged to the Carthaginians; but during the wars of that people with the Romans, they ſeem to have regained their liberty. In 122 B. C. they were ſubdued by Metellus the Roman conſul, who treated the inhabitants with ſuch cruelty, that out of 30,000 he ſcarce left 1000 alive. He then built two cities on Majorca; one called *Palma*, now *Majorca*, to the eaſt; the other to the weſt, named *Pollentia*, now no longer in being. The iſland continued ſubject to the Romans, and to the nations who over-ran the weſtern part of the empire, for many ages. At laſt it was ſubdued by the Moors about the year 800. By them the iſland was put in a much better condition than it ever was before or ſince. The Moors being very induſtrious, and alſo populous, ſurrounded the whole coaſt with fortifications, that is, with a kind of towers and lines between them; cultivated every ſpot in the iſland that was not either rock or ſand; and had no fewer than 15 great towns, whereas now there are not above three. Neither was it at all difficult for the Mooriſh monarch to bring into the field an army much ſuperior in number to the inhabitants that are now upon it, taking in all ranks, ſexes, and ages. In 1229, the iſland was ſubdued by the king of Arragon, who eſtabliſhed in it a new kingdom feudatory to that of Arragon, which was again deſtroyed in 1341 by the ſame monarchs; and ever ſince, the iſland hath been ſubject to Spain, and hath entirely loſt its importance. It is about 60 miles long, and 45 broad. The air is clear and temperate, and, by its ſituation, the heat in ſummer is ſo qualified by the breezes, that it is by far the moſt pleaſant of all the iſlands in the Mediterranean. There are ſome mountains; but the country is generally flat, and of ſuch an excellent ſoil, that it produces great quantities of corn as good in its kind as any in Europe. Oil, wine, and ſalt, are very plentiful, as alſo black cattle and ſheep; but deer, rabbits, and wildfowl, abound ſo much, that they alone are ſufficient for the ſubſiſtence of the inhabitants. There are no rivers, but a great many ſprings and wells, as well as ſeveral good harbours. The inhabitants are robuſt, active, and good ſeamen.

MAJORCA, a handſome, large, rich, and ſtrong town, in the iſland of the ſame name, with a biſhop's ſee. It contains about 6000 houſes, and 22 churches, beſides the cathedral. The ſquares, the cathedral, and the royal palace, are magnificent ſtructures. A captain-general reſides there, who commands the whole iſland; and there is a garriſon againſt the incurſion of the Moors. It was taken by the Engliſh in 1706; but was retaken in 1715, ſince which time it has been in the hands of the Spaniards. It is ſeated on the ſouth-weſt part of the iſland, where there is a good harbour, 70 miles north-eaſt of Yvica, 120 ſouth-eaſt of Barcelona, 140 eaſt of Valencia, and 300 from Madrid. E. Long 2. 55. N. Lat. 39. 36.

MAIRE (Streights le), a paſſage to Cape Horn, ſituated between Terra del Fuego and Staten iſland; which, being diſcovered by Le Maire, obtained his name. It is now, however, leſs made uſe of than formerly, ſhips going round Staten Iſland as well as Terra del Fuego.

MAITLAND (John), Lord Thyrleſtone, chancellor of Scotland, was the ſon of Richard Maitland of Lithingtoun, and brother to ſecretary Lithingtoun. He was born in the year 1545, educated in Scotland, and was afterwards ſent to France to ſtudy the law. On his return to his native country, he commenced advocate; in which profeſſion his abilities became ſo eminently conſpicuous, that in the year 1584, he was made ſecretary of ſtate to king James VI. and, on the death of the earl of Arran, the year following, created lord high chancellor of Scotland.

The chancellor's power and inflnence created him many enemies among the Scots nobility, who made ſeveral attempts to deſtroy him, but without ſucceſs. In 1589, he attended the king on his voyage to Norway, where his bride, the princeſs of Denmark, was detained by contrary wind. The marriage was immediately conſummated, and they returned with the queen to Copenhagen, where they ſpent the enſuing winter. During their reſidence in Denmark, the chancellor became intimately acquainted with the celebrated Tycho Brahe.

Towards the end of the year 1592, the chancellor incurred the queen's diſpleaſure, for refuſing to relinquiſh his lordſhip of Muſſelburgh, which ſhe claimed as being a part of Dumfermline. He abſented himſelf for ſome time from court; but was at length reſtored to favour, and died of a lingering illneſs in the year 1595, much regretted by the king. Spotiſwood and Johnſton give him the character of a man of great learning and political abilities. His epigrams are printed in *Del. Poet. Scot.* vol. ii.

MAIZE, or INDIAN *Corn*. See ZEA.

MAKI. See LEMUR.

MALABAR, the name given to a great part of the weſt coaſt of the peninſula, on this ſide of the Ganges, from the kingdom of Baglala to Cape Comorin, or only from the north extremity of the kingdom of Canara as far as Cape Comorin. It is bounded by the mountains of Balligate on the eaſt; by Decan on the north; and on the weſt and ſouth is waſhed by the Indian ſea.

MALACCA, the moſt ſoutherly part of the great peninſula beyond the Ganges, is about 600 miles in length, and contains a kingdom of the ſame name. It is bounded by the kingdom of Siam on the north; by the bay of Siam and the Indian ocean, on the eaſt; and by the ſtreights of Malacca, which ſeparate it from the iſland of Sumatra, on the ſouth-weſt. This country is more to the ſouth than any other in the Eaſt Indies; and comprehends the towns and kingdoms of Patan, Pahan, Igohor, Pera, Queda, Borkelon, Ligor; and to the north the town and kingdom of Tanaſſery, where the Portugueſe formerly carried on a great trade. This laſt either does or did belong to the king of Siam. The people of Malacca are in general ſubject to the Dutch, who poſſeſs all the ſtrong places on the coaſt, and compel them to trade on their own terms, excluding all other nations of Europe from having any commerce with the natives.

The Malays are governed by feudal laws. A chief, who has the title of *king* or *ſultan*, iſſues his commands to his great vaſſals, who have other vaſſals in ſubjection to them in a ſimilar manner. A ſmall part of the nation live independent, under the title of *oranicai* or *noble*, and ſell their ſervices to thoſe who pay them beſt; while the body of the nation is compoſed of ſlaves, and live in perpetual ſervitude.

The generality of theſe people are reſtleſs, fond of navigation, war, plunder, emigrations, colonies, deſperate enterprizes, adventures, and gallantry. They talk inceſſantly of their honour, and their bravery; whilſt they are univerſally conſidered by thoſe with whom they have intercourſe, as the moſt treacherous, ferocious people on earth. This ferocity, which the Malays qualify under the name of *courage*, is ſo well known to the European companies who have ſettlements in the Indies, that they have univerſally agreed in prohibiting the captains of their ſhips who may put into the Malay iſlands, from taking on board any ſeamen from that nation, except in the greateſt diſtreſs, and then on no account to exceed two or three. It is not in the leaſt uncommon for an handful of theſe horrid ſavages ſuddenly to embark, attack a veſſel by ſurpriſe, maſſacre the people, and make themſelves maſter of her. Malay batteaux, with 24 or 30 men, have been known to board European ſhips of 30 or 40 guns, in order to take poſſeſſion of them, and murder with their poignards great part of the crew. Thoſe, who are not ſlaves, go always armed: they would think themſelves diſgraced if they went abroad without their poignards, which they call *crit*. As their lives are a perpetual round of agitation and tumult, they cannot endure the long flowing garments in uſe among the other Aſiatics. Their habits are exactly adapted to their ſhapes, and loaded with a multitude of buttons, which faſten them cloſe to their bodies.

The country poſſeſſed by the Malays is in general very fertile. It abounds with odoriferous woods, ſuch as the aloes, the ſandal, and the caſſia. The ground is covered with flowers of the greateſt fragrance, of which there is a perpetual ſucceſſion throughout the year. There are abundance of mines of the moſt precious metals, ſaid to be richer even than thoſe of Brazil or Peru, and in ſome places are mines of diamonds. The ſea alſo abounds with excellent fiſh, together with ambergreaſe, pearls, and thoſe delicate birds-neſts ſo much in requeſt in China, formed in the rocks with the ſpawn of fiſhes, and the foam of the ſea, by a ſpecies of ſmall-ſized ſwallow peculiar to thoſe ſeas. Theſe are of ſuch an exquiſite flavour, that the Chineſe for a long time purchaſed them for their weight in gold, and ſtill buy them at an exceſſive price. See BIRDS-*Neſts*.

Notwithſtanding all this plenty, however, the Malays are miſerable. The culture of the lands, abandoned to ſlaves, is fallen into contempt. Theſe wretched labourers, dragged inceſſantly from their ruſtic employments by their reſtleſs maſters, who delight in war and maritime enterpriſes, have never time or reſolution to give the neceſſary attention to the labouring of their grounds; of conſequence the lands for the moſt part are uncultivated, and produce no kind of grain for the ſubſiſtence of the inhabitants. The ſago tree indeed ſupplies in part the defect of grain. It is a ſpecies of the palm-tree, which grows naturally in the woods to the height of about 20 or 30 feet; its circumference being ſometimes from five to ſix. Its ligneous bark is about an inch in thickneſs, and covers a multitude of long fibres, which being interwoven one with another envelope a maſs of a gummy kind of meal. As ſoon as this tree is ripe, a whitiſh duſt, which tranſpires thro' the pores of the leaves, and adheres to their extremities, indicates that the trees are in a ſtate of maturity. The Malays then cut them down near the root, divide them into ſeveral ſections, which they ſplit into quarters: they then ſcoop out the maſs of mealy ſubſtance, which is enveloped by and adheres to the fibres; they dilute it in pure water, and then paſs it through a ſtraining bag of fine cloth, in order to ſeparate it from the fibres. When this paſte has loſt part of its moiſture by evaporation, the Malays throw it into a kind of earthen veſſel of different ſhapes, where they allow it to dry and harden. Their paſte is wholeſome nouriſhing food, and preſerves for many years.

MALACCA, the capital of the country of the ſame name, is ſituated in a flat country cloſe to the ſea. The walls and fortifications are founded on a ſolid rock, and are carried up to a great height; the lower part of them is waſhed by the ſea at every tide, and on the land-ſide is a wide canal or ditch, cut from the ſea to the river, which makes it an iſland. In 1641 it was taken from the Portugueſe by the Dutch, ſince which time it has continued in their poſſeſſion. In this city there are a great many broad ſtreets; but they are very badly paved. The houſes are tolerably well built, and ſome of them have gardens behind or on one ſide. The inhabitants conſiſt of a few Dutch, many Malayans, Moors, Chineſe, and other Indians, who are kept in awe by a fortreſs, which is ſeparated from the city by a river, and by good walls and baſtions, as well as by ſtrong gates, and a draw-bridge that is on the eaſtern ſide. The city is well ſituated for trade and navigation. E. Long. 102. 2. N. Lat. 2. 12.

MALACHI, or the prophecy of MALACHI, a canonical book of the Old Teſtament, and the laſt of the 12 leſſer prophets, Malachi propheſied about 300 years before Chriſt, reproving the Jews for their wickedneſs after their return from Babylon, charging them with rebellion, ſacrilege, adultery, profaneneſs, and infidelity; and condemning the prieſts for being ſcandalouſly careleſs in their miniſtry: at the ſame time not forgetting to encourage the pious few, who, in that corrupt age, maintained their integrity. This prophet diſtinctly points at the Meſſiah, who was ſuddenly to come to his temple, and to be introduced by Elijah the prophet, that is, by John the Baptiſt, who came in the ſpirit and power of Elias, or Elijah.

MALACIA, in medicine, is a languiſhing diſorder incident to pregnant women, in which they long ſometimes for one kind of food and ſometimes for another, and eat it with extraordinary greedineſs.

MALACOPTERYGEOUS, among ichthyologiſts, an appellation given to ſuch fiſhes as have the rays of their fins bony, but not pointed or ſharp at the extremities like thoſe of ancanthopterygeous fiſhes.

MALACOSTOMOUS FISHES, thoſe deſtitute of teeth in the jaws, called in Engliſh *leather-mouthed*, as the tench, carp, bream, &c.

MALAGA, an ancient, rich, and ſtrong town of Spain, in the kingdom of Grenada, with two caſtles, a biſhop's ſee, and a good harbour, which renders it a trading place. It is frequented by the Engliſh and Dutch, who bring their veſſels there to load them with fruits and wine. It is ſeated on the Mediterranean ſea, at the foot of a craggy mountain. E. Long. 4. 56. N. Lat. 36. 51.

MALAGMA, a cataplaſm. See CATAPLASM.

MALDIVIA ISLANDS, a cluſter of ſmall iſlands in the Indian ocean, 500 miles ſouth weſt of the continent of the iſland of Ceylon. They are about 1000 in number, and are very ſmall; extending from the ſecond degree of ſouth latitude to the ſeventh degree north latitude. They are generally black low lands, ſurrounded by rocks and ſands. The natives are of the ſame complexion with the Arabians, profeſs the Mahometan religion, and are ſubject to one ſovereign. The channels between the iſlands are very narrow, and ſome of them are fordable. They produce neither rice, corn, nor herbage; but the natives live upon cocoanuts, and other fruits, roots, and fiſh. They have little or nothing to barter with, unleſs the ſhells called *cowrys*, or *blackmore's teeth*, with which they abound; and theſe ſerve inſtead of ſmall coin in many parts of India.

MALDONAT (John), a Spaniſh Jeſuit born in 1534, was accuſed of hereſy, and of procuring a fraudulent will in ſeducing the preſident de St Andre at Paris to bequeath his eſtate to the Jeſuits. Peter Gondi acquitted him of the firſt charge, and the parliament of Paris of the other. He retired after theſe troubles to Bourges, but went to Rome by order of pope Gregory XIII. to take care of the publication of the Septuagint; and there, finiſhing his commentary on the goſpels in 1582, he died in the beginning of the following year. He wrote, beſides, Commentaries on Jeremiah, Baruch, Ezekiel, and Daniel; a treatiſe on the ſacraments, on grace, on original ſin; and ſeveral other pieces printed at Paris in 1677, in folio. His ſtyle is clear, lively, and eaſy. He does not ſervilely follow the ſcholaſtic divines; but is pretty free, and ſometimes ſingular, in his ſentiments.

MALE, among zoologiſts, that ſex of animals which has the parts of generation ſituated externally. See SEX and GENERATION.

The term *male* has alſo, from ſome ſimilitude to that ſex in animals, been applied to ſeveral inanimate things; thus we ſay, a male flower, a male ſcrew, &c. See MAS *Planta*, MASCULUS *Flos*, and SCREW; alſo FEMALE and FLOS.

MALEBRANCHE (Nicholas), an eminent French metaphyſician, the ſon of Nicholas Malebranche, ſecretary to the French king, was born in 1638, and admitted into the congregation of the oratory in 1660. He at firſt applied himſelf to the ſtudy of languages and hiſtory: but afterwards meeting with Des Cartes's *Treatiſe of Man*, he gave himſelf up entirely to the ſtudy of philoſophy. In 1699, he was admitted an honorary member of the Royal Academy of Sciences at Paris. Notwithſtanding he was of a delicate conſtitution, he enjoyed a pretty good ſtate of health till his death, which happened in 1715, at the age of 77. Father Malebranche read little, but thought a great deal. He deſpiſed that kind of philoſophy which conſiſts only in knowing the opinions of other men, ſince a perſon may know the hiſtory of other mens thoughts without thinking himſelf. He could never read ten verſes together without diſguſt, He meditated with his windows ſhut, in order to keep out the light, which he found to be a diſturbance to him. His converſation turned upon the ſame ſubjects as his books; but was mixed with ſo much modeſty and deference to the judgment of others, that it was extremely and univerſally deſired. His books are famous; particularly his *Recherche de la Verite*, i. e. Search after truth: his deſign in which is, to point to us the errors in which we are daily led by our ſenſes, imagination, and paſſions; and to preſcribe a method for diſcovering the truth, which he does, by ſtarting the notion of ſeeing all things in God. And hence he is led to think and ſpeak merely of human knowledge, either as it lies in written books, or in the book of nature, compared with that light which diſplays itſelf from the ideal world; and by attending to which, with pure and defecate minds, he ſuppoſes knowledge to be moſt eaſily had. The fineneſs of this author's ſentiments, together with his fine manner of expreſſing them, made every body admire his genius and abilities; but he has generally paſſed for a viſionary philoſopher. Mr Locke, in his examination of Malebranche's opinion of ſeeing all things in God, ſtyles him an acute and ingenious author;" and tells us, that there are "a great many very fine thoughts, judicious reaſonings, and uncommon reflections, in his *Recherche*." But Mr Locke, in that piece, endeavours to refute the chief principles of his ſyſtem. He wrote many other pieces beſides what we have mentioned, all tending ſome way or other to confirm his main ſyſtem, eſtabliſhed in the

Recherche, and to clear it from the objections whichs were brought againſt it, or from the conſequence which were deduced from it: and if he has not attained what he aimed at in theſe ſeveral productions, he has certainly ſhown great abilities, and a vaſt force of genius.

MALHERBE (Francis de), the beſt French poet of his time, was born at Caen about the year 1556, of a noble and ancient family. He quitted Normandy at 17 years of age; and went into Provence, where he attached himſelf to the family of Henry Angouleme, the natural ſon of king Henry II. and was in the ſervice of that prince till he was killed by Altoviti in 1586. At length cardinal de Perron, being informed of his merit and abilities, introduced him to Hen. IV. who took him into his ſervice. After that monarch's death, queen Mary de Medicis ſettled a penſion of 500 crowns upon our poet, who died at Paris in 1628. The beſt and moſt complete edition of his poetical works is that of 1666, with Menage's remarks. Malherbe ſo far excelled all the French poets who preceded him, that Boileau conſiders him as the father of French poetry: but he compoſed with great difficulty, and put his mind on the rack, in correcting what he wrote. He was a man of a ſingular humour, blunt in his behaviour, and without religion. When the poor uſed to promiſe him, that he would pray to God for him, he anſwered them, that "he did not believe they could have any great intereſt in heaven, ſince they were left in ſuch a bad condition upon earth; and that he ſhould be better pleaſed if the duke de Luyne, or ſome other favourite, had made him the ſame promiſe." He would often ſay that "the religion of gentlemen was that of their prince." During his laſt ſickneſs he had much ado to reſolve to confeſs to a prieſt; for which he gave this facetious reaſon, that "he never uſed to confeſs but at Eaſter." And ſome few moments before his death, when he had been in a lethargy two hours, he awaked on a ſudden to reprove his landlady, who waited on him, for uſing a word that was not good French; ſaying to his confeſſor who reprimanded him for it, that "he could not help it, and he would defend the purity of the French language to the laſt moment of his life.

MALIGNANT, among phyſicians, a term applied to diſeaſes of a very dangerous nature, and generally infectious; ſuch are the dyſentery, hoſpital-fever, &c. in their worſt ſtages.

Malignity among phyſicians ſignifies much the ſame with contagion. See CONTAGION.

MALL, SEA-MALL, or *Sea-mew*, in ornithology. See LARUS.

MALLARD, in ornithology. See ANAS.

MALLEABLE, a property of metals whereby they are capable of being extended under the hammer.

MALLENDERS, in farriery. See there, § xxxiii.

MALLET, (David, Eſq;) a North-Briton, was tutor to the duke of Montroſe, and to his brother lord George Graham; and became ſecretary to the late prince of Wales. He married a lady of very conſiderable fortune, and was made keeper of the book of entries for ſhips in the port of London. He died in 1765.

He was the editor of a new and complete edition of lord Bacon's works, to which he prefixed a life of that great man; and publiſhed the philoſophical works of the late lord Bolinbroke, agreeable to his lordſhip's laſt will and teſtament. His dramatic pieces are, 1. Eurydice, a tragedy. 2. Muſtapha, a tragedy. 3. Alfred, a maſque; written in conjunction with Mr James Thomſon, author of the Seaſons. Britannia, a maſque, 1775. 5. Elvira, a tragedy, altered from La Motte; who founded this play on the famous ſtory of Agnes de Caſtro, which Camoens has ſo beautifully introduced in his Luſiad.—Mr Mallet's tragedy was acted with moderate applauſe at Drury-Lane playhouſe in January 1763. The indifferent ſucceſs it met with may, in part, be aſcribed to the unlucky juncture in which it appeared; at a time when party-prejudice ran high againſt the Scottiſh nation, on account of the unpopular adminiſtration of the earl of Bute, to whom Elvira was dedicated.

Mr Mallet's other works are collected in 3 vols 12mo; among which the moſt conſiderable are, 1. That ſweet ballad intitled *William and Margaret*. 2. The Excurſion, a poem in two cantos. 3. Amyntor and Theodora, or the Hermit.—This laſt piece was originally intended for the ſtage, but the author choſe afterwards to alter his plan. There was likewiſe an additional collection of poems by the author, publiſhed in 1762, in a thin volume octavo, conſiſting of ſmall pieces on ſeveral occaſions.

MALLEVILLE (Claud de), a French poet, born at Paris, was one of the firſt members of the French academy, and gained a prize from Voiture and other ingenious men. He became ſecretary to M. de Baſſompierre, to whom he performed important ſervices while he was in priſon; and with the rewards he received for them he purchaſed the place of ſecretary to the king. He was likewiſe ſecretary to the French academy, and died in 1647. He wrote ſonnets, ſtanzas, elegies, epigrams, ſongs, madrigals, and a paraphraſe on ſome of the Pſalms. His ſonnets are moſt eſteemed.

MALLICOLLO, one of the new Hebrides iſlands in the ſouth-ſea, and the moſt conſiderable of them all next to *Eſpiritu Santo*. It is 18 leagues long from ſouth-eaſt to north-weſt; its greateſt breadth, which is at the ſouth-eaſt end, is eight leagues; the north-weſt end is two-thirds its breadth, and narrower in the middle one-third. This contraction is occaſioned by a wide and deep bay on the ſouth-weſt ſide. It appears to be very fertile, and well inhabited; the land on the ſea-coaſt is rather low, and lies with a greater ſlope from the hills which are in the middle of the iſland: latitude 16 deg. 28 min. ſouth; 167 deg. 56 min. eaſt. On inquiring of the natives the name of this iſland, they were anſwered that it was Mallicollo, which has a near reſemblance to Manicollo, the name which Quiros received for it 160 years before. He did not indeed viſit the iſland, but had his intelligence from the natives.

The ſouth coaſt, which was moſt attentively examined by captain Cook, is luxuriantly clothed with wood and other vegetables, from the ſea-ſhore to the very ſummits of the hills. To the north-weſt, the country is leſs woody, but more agreeably interſected by lawns, ſome of which appeared to be cultivated. The vegetable productions of this country ſeemed to be llo.

be in great variety; cocoa-nuts, bread-fruit, bananas, ſugar-canes, yams, eddoes and turmeric: but captain Cook thought the fruits here not ſo good as at the Society and Friendly Iſles. Hogs, and common poultry, are their domeſtic animals; and as the frequent ſqueaking of pigs was heard in the woods, it was concluded that the former are in conſiderable numbers here. A brace of Taheitian puppies was given them, with a view to ſtock the country with that ſpecies of animal: theſe they received with ſtrong ſigns of ſatisfaction. The woods appeared to be inhabited by many ſpecies of birds. Here was caught a ſhark, which meaſured nine feet in length, on which the ſhip's company feaſted with great reliſh: this ſhark, when cut open, was found to have the bony point of an arrow ſticking in its head, having been ſhot quite through the ſkull. The wound was healed ſo perfectly, that not the ſmalleſt veſtige of it appeared on the outſide: a piece of the wood ſtill remained ſticking to the bony point, as well as a few fibres with which it had been tied on; but both the wood and the fibres were ſo rotted, as to crumble into duſt at the touch. Two large reddiſh fiſh of the ſea-bream kind were likewiſe caught, on which moſt of the officers and ſome of the petty officers dined the next day. The night following every one who had eaten of them was ſeized with violent pains in the head and bones, attended with a ſcorching heat all over the ſkin, and numbneſs in the joints; even ſuch hogs and dogs as had partaken of theſe fiſh, gave ſtrong ſymptoms of being poiſoned: one hog, who had eaten of the garbage, ſwelled to a great ſize, and died at night: ſeveral dogs were affected in the ſame manner; they groaned moſt piteouſly, had violent reachings, and could hardly drag their limbs along. Theſe fiſh were ſuppoſed to have been of the ſame ſort with thoſe which Quiros mentions to have produced ſimilar effects on board his ſhip, and which he calls *pargos*, which is the Spaniſh name for the ſea-bream. Perhaps theſe fiſh are not always poiſonous; but, like many ſpecies in the Weſt and Eaſt-Indies, may acquire that quality by feeding on poiſonous vegetables: which concluſion is ſupported by the circumſtance of the inteſtines have been found to be more poiſonous than the reſt. The effects of this poiſon on the officers continued for near a fortnight, during which time their pains returned every night, their teeth were looſe, and their gums and palate excoriated.

The natives of Mallicollo are deſcribed as the moſt ugly, ill-proportioned people imaginable, and in every reſpect different from the other iſlanders in the South-Sea: they are of a very dark colour, and diminutive ſize; with long heads, flat faces, and monky countenances; their hair, in general, black or brown, ſhort and curly, but not quite ſo ſoft and woolly as that of a negro. Their beards are very ſtrong, criſp, and buſhy, and generally black and ſhort. But what ſerves greatly to increaſe their natural deformity is, a cuſtom which they have of wearing a belt, or cord, round their waiſt: this rope is as thick as a man's finger; and is tied ſo tight round their belly, that it would be fatal to a perſon unaccuſtomed from infancy to ſuch an unnatural ligature; for it cuts ſuch a deep notch acroſs the navel, that the belly ſeems in a manner divided, one part being above and the other below the rope. The men go quite naked, except a piece of cloth, or leaf, uſed as a wrapper. Moſt other nations invent ſome kind of covering from motives of ſhame; but here a roll of cloth, continually faſtened to the belt, rather diſplays than conceals, and is the oppoſite of modeſty. Beſides having the flat broad noſe and projecting cheek-bones of a negro, and a very ſhort forehead, many increaſed their natural uglineſs, by painting their faces and breaſts with a black colour. Some few had a ſmall cap on the head made of matted-work. They wear bracelets of white and black ſhells, which preſs the upper arm ſo cloſely, that they have been put on when the wearer was very young: this tends, as well as the belt, to reduce the Mallicolleſe to that ſlender ſhape which characteriſes them. The depreſſion of their foreheads is ſuppoſed to be artificial, as the heads of infants may be ſqueezed into any kind of form.

Mallicollo.

The firſt natives that were ſeen carried clubs in their hands, and waded into the water, carrying green boughs, the univerſal ſign of peace. In a day's time they ventured to come within a few yards of the ſhip's boat, which was ſent out; when they dipped their hands to the ſea, and gathering ſome water in their palms, poured it on their heads. The officers in the boat, in compliance with their example, did the ſame, with which the Indians appeared to be much pleaſed. They repeated the word *tomarr*, or *tomarro*, continually; which ſeemed to be an expreſſion among them equivalent to *tayo* among the Society-Iſlands. The greater part were now armed with bows and arrows, and a few with ſpears. At length they ventured near the ſhip, and received a few preſents of Taheitian cloth, which they eagerly accepted, and handed up their arrows in exchange, ſome of which were pointed with wood, and ſome with bone, and daubed with a black gummy ſtuff which was ſuppoſed to be poiſoned; but its effects were tried on a dog, without producing any dangerous ſymptoms. They continued about the ſhip, talking with great vociferation, but at the ſame time in ſuch a good-humoured manner as was very entertaining. On looking ſtedfaſtly at one of them, he began to chatter with great fluency, and "grinned horribly a ghaſtly ſmile." Some continued about the ſhip till midnight; finding, however, at length, that they were but little noticed, for the captain wanted to get rid of them, they returned on ſhore, where the ſound of ſinging and beating their drums was heard all night. Mr Forſter ſuppoſes there may be 50,000 inhabitants on this extenſive iſland, which contains more than 600 ſquare miles. "We ought (ſays he) to figure to ourſelves this country as one extenſive foreſt; they have only begun to clear and plant a few inſulated ſpots, which are loſt in it like ſmall iſlands in the Pacific Ocean." Perhaps, if we could ever penetrate through the darkneſs which involves the hiſtory of this nation, we might find that they have arrived in the South-Sea much later than the natives of the Friendly and Society-Iſlands: ſo much at leaſt is certain, that the latter appear to be a race totally diſtinct from the former; their form, their language, and their manners, ſtrongly mark this difference. The natives, on ſome parts of New-Guinea and Papua, ſeem to correſpond, in many particulars, with what has been obſerved of the Mallicolleſe. They differ likewiſe very widely from the light-coloured inhabitants of the South-Sea, by keep-

Mallicollo.

ing their bodies entirely free of punctures. Whatever theſe people ſaw, they coveted; but they never repined at a refuſal. The looking-glaſſes which were given them were highly eſteemed, and they took great pleaſure in viewing themſelves; ſo that theſe ugly people ſeemed to have more conceit than the beautiful nation at O-Taheitee and the Society Iſlands. Early the next morning the natives came off to the ſhip in their canoes, and four or five of them went on board without any arms. They ſoon became familiar, and, with the greateſt eaſe, climbed up the ſhrouds to the maſt-head; when they came down, the captain took them into his cabbin, and gave them medals, ribbons, nails, and pieces of red-baize. They appeared the moſt intelligent of any nation that had been ſeen in the South-Sea: they readily underſtood the meaning conveyed by ſigns and geſtures; and in a few minutes taught the gentlemen of the ſhip ſeveral words in their language, which appeared to be wholly diſtinct from that general language of which ſo many dialects are ſpoken at the Society-Iſlands, the Marqueſas, Friendly-Iſles, Eaſter Iſland, and New-Zeeland. Their language was not difficult to pronounce, but contained more conſonants than any of them. Mr Forſter, and ſome of the gentlemen from the ſhip, went on ſhore, and converſed with the natives, who with great good-will ſat down on the ſtump of a tree to teach them their language. They were ſurpriſed at the readineſs of their gueſts to remember, and ſeemed to ſpend ſome time in pondering how it was poſſible to preſerve the ſound by ſuch means as pencils and paper. They were not only aſſiduous in teaching; but had curioſity enough to learn the language of the ſtrangers, which they pronounced with ſuch accuracy as led their inſtructors to admire their extenſive faculties and quick apprehenſion. Obſerving their organs of ſpeech to be ſo flexible, they tried the moſt difficult ſounds in the European languages, and had recourſe to the compound Ruſſian *ſhtch*, all of which they pronounced at the firſt hearing, without the leaſt difficulty. They preſently learned the Engliſh numerals, which they repeated rapidly on their fingers; ſo that what they wanted in perſonal beauty was amply compenſated to them in acuteneſs of underſtanding. They expreſs their admiration by hiſſing like a gooſe.

Their muſic is not remarkable either for harmony or variety, but ſeemed to be of a more lively turn than that at the Friendly-iſlands. Their behaviour to their viſitants was, in general, harmleſs, but cautious: they gave them no invitation to ſtay among them; for they ſeemed not to reliſh the proximity of ſuch powerful people, being probably accuſtomed to acts of violence and outrage from their neighbours. "In ſome of their countenances, (ſays Mr Forſter), we thought we could trace a miſchievous, ill-natured diſpoſition; but we might miſtake jealouſy for hatred."

Very few women were ſeen, but thoſe few were no leſs ugly than the men: they were of ſmall ſtature, and their heads, faces, and ſhoulders, were painted red. Thoſe who were grown up, and probably married, had ſhort pieces of a kind of cloth, or rather matting, round their waiſts, reaching nearly to their knees; the reſt had only a ſtring round the middle, with a wiſp of ſtraw; and the younger ones, from infancy to the age of ten years, went ſtark naked, like the boys of the ſame age. The women were not obſerved to have any finery in their ears or round their necks and arms, it being faſhionable in this iſland for the men only to adorn themſelves; and wherever this cuſtom prevails, the other ſex is commonly oppreſſed, deſpiſed, and in a ſtate of ſervility. Here the women were ſeen with bundles on their backs, which contained their children; the men ſeemed to have no kind of regard for them. None of them came off to the ſhip, and they generally kept at a diſtance when any party landed from the boat. They perforate the cartilage of the noſe between the noſtrils; and thruſt therein a piece of white ſtone about an inch and a half long, which is bent like the curvature of a bow. The houſes here are, like thoſe of the other iſles, rather low, and covered with a palm-thatch. Some were incloſed or walled round with boards, and the entrance to theſe was by a ſquare hole at one end.

Their weapons are bows and arrows, and a club about two feet and a half in length, made of the caſuarina wood, commonly knobbed at one end, and well poliſhed. This weapon they hang on their right ſhoulder, from a thick rope made of a kind of graſs. It appeared to be preſerved for cloſe engagements, after having emptied the quiver. On the left wriſt they wear a circular wooden plate, neatly covered, and joined with ſtraw, about five inches in diameter, upon which they break the violence of the recoiling bow-ſtring, and preſerve their arm unhurt. Their arrows are made of a ſort of reed; and are ſometimes armed with a long ſharp point made of the red wood, and ſometimes with a very hard point made of bone: and theſe points are all covered with a ſubſtance which was ſuppoſed to be poiſoned. Indeed the people themſelves confirmed theſe ſuppoſitions, by making ſigns to the gentlemen of the ſhip not to touch the point, and giving them to underſtand that if they were pricked by them they would die: they are very careful of them themſelves, and keep them always wrapt up in a quiver. Some of theſe arrows are armed with two or three points each, with ſmall prickles on the edge to prevent the arrow being drawn out of the wound. Repeated and effectual trials of the virulence of this poiſon were made upon dogs, but they gave no ſigns of being hurt by it.

Their food ſeems to be principally vegetables, ſince they apply themſelves to huſbandry. As hogs and fowls are bred here, the natives, doubtleſs, feaſt ſometimes on pork and poultry; and as they have canoes, it may be ſuppoſed that they draw a part of their ſubſiſtence from the ocean. The greateſt number of canoes that were ſeen along-ſide the ſhip at one time did not exceed 10, or, according to Mr Forſter, 14, and no more than four or five people in each: they were ſmall, not exceeding two feet in length, of indifferent workmanſhip, and without ornament; but provided with an outrigger.

After ſome ſlight indications of a hoſtile intention on the part of the natives, which they had ſhewn in their canoes whilſt about the ſhip, captain Cook, with a party of marines in two boats, landed in the face of 400 or 500 Indians who were aſſembled on the ſhore. Tho' they were all armed with bows and arrows, clubs and ſpears, they made not the leaſt oppoſition; on the contrary, ſeeing the captain advance alone, unarmed, with only a green branch in his hand, one of them, who ſeemed to be a chief, giving his bow and arrows to another, met him in the water, bearing alſo a green branch. When they met, the branches were exchanged; and the chief led the captain by the hand up to the crowd, to whom he immediately diſtributed preſents: in the mean time the marines were landed, and drawn up upon the beach. The captain then made ſigns that he wanted wood, and they by ſigns gave him permiſſion to cut down the trees. A ſmall pig was preſently brought, and preſented to the captain, who in return gave the bearer a piece of cloth. It was expected, from this inſtance, that an exchange of proviſions for various articles of merchandize would take place: but theſe expectations proved fallacious; no more pigs were procured, and only about half a dozen cocoa-nuts, and a ſmall quantity of freſh water. As theſe iſlanders were poſſeſſed of hogs as well as fowls, their backwardneſs to part with either might be owing to the little eſtimation in which they held ſuch articles as were tendered in barter; for they ſet no value on any nails, or any other kind of iron-tools, and held all the gew-gaws of finery equally cheap. They would now and then exchange an arrow for a piece of cloth, but very ſeldom would part with a bow. After ſending on board what wood had been cut, the party all embarked, and the natives diſperſed. When the ſhip was about to leave this iſland, captain Cook gives the following relation: "When the natives ſaw us under ſail, they came off in canoes, making exchanges with more confidence than before, and giving ſuch extraordinary proofs of their honeſty as ſurpriſed us. As the ſhip at firſt had freſh way thro' the water, ſeveral of the canoes dropped aſtern after they had received goods, and before they had time to deliver theirs in return; inſtead of taking advantage of this, as our friends at the Society-iſlands would have done, they uſed their utmoſt efforts to get up with us, and deliver what they had already been paid for. One man in particular followed us a conſiderable time, and did not reach us till it was calm, and the thing was forgotten. As ſoon as he came along-ſide, he held up the article, which ſeveral on board were ready to buy: but he refuſed to part with it till he ſaw the perſon to whom he had before ſold it; and to him he gave it. The perſon not knowing the man again, offered him ſomething in return, which he refuſed; and ſhowing him what had been given before, at length made him ſenſible of the nice ſenſe of honour which had actuated this Indian."

MALMSBURY, a town of Wiltſhire in England, pleaſantly ſeated on a hill and on the river Avon, which almoſt ſurrounds it, and over which it has ſix bridges. W. Long. 2. 7. N. Lat. 51. 34.

William of MALMSBURY. See WILLIAM.

MALO (St.), a ſea-port town of France, in Bretagne, with a biſhop's ſee. It has a large well frequented harbour, but difficult of acceſs, on account of the rocks that ſurround it; is a rich, trading place, of great importance, and defended by a ſtrong caſtle. It was bombarded by the Engliſh in 1693, but without ſucceſs. However, in June 1758, they landed-men in Cancalle Bay, who went to the harbour by land, and burnt above 100 ſhips, great and ſmall; and then retired without loſs. It is ſeated on an iſland united to the main land by a cauſeway; is chiefly inhabited by ſeafaring men, who in time of war fit out a great many privateers to cruize upon the Engliſh. W. Long. 1. 57. N. Lat. 48. 39.

MALPIGHI (Marcellus), an eminent Italian phyſician and anatomiſt in the 17th century. He ſtudied under Maſſari and Mariano. The duke of Tuſcany invited him to Piſa, to be profeſſor of phyſic there. In this city he contracted an intimate acquaintance with Borelli, to whom he aſcribed all the diſcoveries he had made. He went back to Bologna, the air of Piſa not agreeing with him. Cardinal Antonio Pignatelli, who had known him while he was legate at Bologna, being choſen pope in 1691, under the name of *Innocent XII.* immediately ſent for him to Rome, and appointed him his phyſician. But this did not hinder him from purſuing his ſtudies, and perfecting his works, which have immortalized his memory. He died in 1694; and his works, with his life written by himſelf prefixed, were firſt collected and printed at London in folio in 1697.

MALPIGHIA, BARBADOES CHERRY; a genus of the triandria order, belonging to the decandria claſs of plants. There are eight or ten ſpecies, all of them ſhrubby evergreens of the warm parts of America, riſing with branchy ſtems from 8 or 10 to 15 or 20 feet high, ornamented with oval and lanceolate entire leaves, and large pentapetalous flowers, ſucceeded by red, cherry-ſhaped, eatable berries; of an acid and palatable flavour; and which, in the Weſt Indies, where they grow naturally, are uſed inſtead of cherries. Three of the ſpecies are reared in our gardens, and make a fine variety in the ſtove. They retain their leaves all the year round; and begin to flower about the end of autumn, continuing in conſtant ſucceſſion till the ſpring; after which they frequently produce and ripen their fruit, which commonly equals the ſize of a ſmall cherry. The flowers are of a pale-red or purple colour. Theſe plants are propagated by ſeed, which muſt be ſown in ſpring, in pots of rich earth: then plunge them in a hot-bed; and when the plants are three or four inches high, prick them in ſeparate ſmall pots, give water, and plunge them in the bark-bed of the ſtove; where, after they have remained a year or two, they may be placed in any part of it. They may even be placed in the open air during a month or two of the hotteſt weather in ſummer; but muſt be carefully ſupplied with water during the whole year.

MALPLAQUET, a village of the Netherlands, in Hainault, famous for a moſt bloody battle fought here on the 11th of September 1709, between the French under old marſhal Villars, and the allies commanded by prince Eugene and the duke of Marlborough. The French army amounted to 120,000 men; and were poſted behind the woods of La Marte and Taniers, in the neighbourhood of Malplaquet. They had fortified their ſituation in ſuch a manner with lines, hedges, and trees laid acroſs, that they ſeemed to be quite inacceſſible. In this ſituation they expected certain victory; and even the common ſoldiers were ſo eager to engage, that they flung away the bread which had been juſt given them, though they had taken no ſuſtenance for a whole day before. The allied army began the attack early in the morning, being favoured by a thick fog. The chief fury of their impreſſion was made upon the left of the enemy; and with ſuch ſucceſs,

ceſs, that, notwithſtanding their lines and barricadoes, the French were in leſs than an hour driven from their entrenchments. But on the enemy's right the combat was ſuſtained with much greater obſtinacy. The Dutch, who carried on the attack, drove them from their firſt line; but were repulſed from the ſecond with great ſlaughter. The prince of Orange, who headed that attack, perſiſted in his efforts with incredible perſeverance and intrepidity, tho' two horſes had been killed under him, and the greater part of his officers ſlain and diſabled. At laſt, however, the French were obliged to yield up the field of battle; but not till after having ſold a dear-bought victory. Villars being dangerouſly wounded, they made an excellent retreat under the conduct of Bouflers, and took poſt near Gueſnoy and Valenciennes. The conquerors took poſſeſſion of the field of battle, on which above 20,000 of their beſt troops lay dead. The loſs of the French, it is ſaid, did not exceed 8000; and marſhal Villars confidently aſſerted, that, if he had not been diſabled, he would have gained an undoubted victory.

MALT. See Brewing.

Malt-*Tax*, is the ſum of 750,000l. raiſed every year by parliament ſince 1697, by a duty of 6d. on the buſhel of malt, and a proportionable ſum on certain liquors, ſuch as cyder and perry, which might otherwiſe prevent the conſumption of malt. This is under the management of the commiſſioners of the exciſe; and is indeed itſelf no other than the annual exciſe. In 1760, an additional perpetual exciſe of 3d. per buſhel was laid upon malt; and in 1763, a proportional exciſe was laid upon cyder and perry, but new-modelled in 1766. See Excise.

MALTA, a celebrated iſland of the Mediterranean, ſituated between the 15th and 16th degrees of eaſt longitude, and between the 35th and 36th degrees of north latitude. It is about 19 or 20 leagues in length, nine or ten in breadth, and 60 in circumference. Anciently it was called *Melita;* and is ſuppoſed by Cluverius, from its ſituation, and other particulars, to be the Hiperia mentioned by Homer, whence the Pheaces were afterwards driven by the Phœnicians, and retired into Scheria and the iſland of Corfu; which is the more probable, as the ancient poet places the mountain Melita in that iſland. He hath likewiſe brought ſome very probable arguments to prove, that Melita or Malta is the ancient *Ogygia;* in which the famed nymph *Calypſo*, daughter of the Ocean and Thetis, received the ſhipwrecked Ulyſſes, and detained him ſeven years.

1 Ancient hiſtory of the iſland.

The moſt ancient poſſeſſors of Malta of whom we have any certain account, were the Carthaginians; from whom it was taken by the Romans; and yet during the whole time that it continued under the power of theſe polite nations, it was almoſt entirely barren. The ſoil was partly ſandy and partly rocky, having ſcarcely any depth of earth; and withal ſo ſtony, that it was hardly capable of producing corn or any other grain except cummin, and ſome ſeeds of a ſimilar nature. Its chief products were figs, melons, honey, cotton, and ſome few other fruits and commodities which the inhabitants exchanged for corn; and in this barren ſtate it ſeems to have continued till it came into the poſſeſſion of the Malteſe knights. It laboured alſo under great ſcarcity of water and fuel: upon all which accounts it was till that time but thinly inhabited, there being only about 30 or 40 boroughs or other villages ſcattered about, and no city except the capital, called alſo *Malta*, and the town and fort of St Angelo, which defended the harbour: ſo that the whole number of its inhabitants did not exceed 12,000, including women and children; the greateſt part of whom were very indigent.

According to an ancient tradition, Malta was firſt poſſeſſed by an African prince named *Battus*, an enemy to queen Dido; from whom it was taken by the Carthaginians, as may be juſtly inferred from ſeveral Punic inſcriptions to be ſeen on ſtone-pillars, and other monuments yet ſtanding. From the Carthaginians it paſſed to the Romans, who made themſelves maſters of it at the ſame time that they ſubdued the iſland of Sicily. Theſe were driven out by the Arabs in the year 828; who were driven out of it in their turn by Roger the Norman, earl of Sicily, who took poſſeſſion of it in 1190: from which time it continued under the dominion of the Sicilian princes till the time of Char. V. when it fell under his power, along with Naples and Sicily. To cover the iſland of Sicily from the Turks, Charles gave the iſland to the *knights of Rhodes*, ſince that time called *knights of Malta*.

Mal to t knig Rho

The origin and hiſtory of theſe knights is given under the article *Knights of* Malta and Rhodes. Here it is ſufficient to obſerve, that in 1530, the knights of Rhodes having been expelled from that iſland by Soliman the Turkiſh ſultan, and deſtitute of an habitation, accepted, tho' not without ſome reluctance on account of its barrenneſs, the offer made them by Charles V. of the iſland of Malta. The grand maſter having cauſed his two large carracks, the galleys of the order, and a good number of other tranſport-ſhips laden with great quantities of arms, ammunition, and troops, to be got ready, he and his knights embarked in the former, with all the effects, records, and treaſure belonging to the order, and the reſt in the latter. In their paſſage they ſuffered very much by a violent ſtorm; in which one of their galleys ſplit upon a rock, and one of the carracks was run aground by the violence of the waves, after having broke her three anchors. She ſtuck ſo faſt, that they expected every moment to ſee her ſplit in pieces; when providentially a contrary wind diſengaged her without damage. This event was counted as a lucky omen, and on the 26th of October that year, all the company were ſafely landed.

At the firſt landing of the Malteſe knights, they found themſelves obliged to lodge in a very poor town or borough at the foot of the hill on which ſtands the caſtle of St Angelo, and where their only habitations were fiſhermens huts. The grand maſter, with the principal knights, took poſſeſſion of the caſtle, where the accommodations were ſomewhat better; tho' theſe too were very mean, and out of repair. Three days after, he took poſſeſſion of the city, which was formerly called *Malta*, but ſince that time hath taken the name of the *Notable City;* and after that, of the whole iſland of Malta, and the neighbouring one of Goſa.

The firſt care of the knights, after having ſettled their authority thro' the two iſlands, was to provide ſome better accommodation for the preſent, and to chooſe a proper place where to fix their habitation.

But as the iſland had no other defence than the old caſtle of St Angelo, and was ſo much expoſed on all ſides, that it would have required greater ſums than their exhauſted treaſury could ſpare, to put it in a proper ſtate of defence; the grand-maſter was obliged to content himſelf with ſurrounding the borough abovementioned, wherein he had ordered new buildings to be reared for the preſent habitation of his knights, with a ſtout wall, to prevent its being ſurpriſed by the Turkiſh and Barbary corſairs. His deſign indeed, at this time, was not to have fixed the abode of the knights in the bare and defenceleſs iſland of Malta, but to ſtay in it only till he had got a ſufficient force to attempt the conqueſt of *Modon*, a town of the Morea, and which was not only a populous and opulent place, but lay very convenient for making an attempt on the iſland of Rhodes, their ancient habitation, and to which they were naturally attached. This, however, did not hinder his taking all proper meaſures for ſecuring Malta as well as Goſa, and laying out a proper plan for ſecuring them from attacks, in caſe the deſign on Modon ſhould fail.

In the mean time, as ſuperſtition was then univerſally prevalent, the grand-maſter, among other precious relics which they had brought from Rhodes, cauſed the arm of St Catharine to be carried in proceſſion to the cathedral. Whilſt they were on their march, one of the centinels gave them notice, that a large Turkiſh merchantman was wrecked on their coaſt. The grand-maſter immediately diſpatched ſome of his knights and ſoldiers thither; who finding Iſaac the patron of the ſhip, a native of Modon, and one Maurithiſala Nocher, an excellent engineer, they were retained in the ſervice of the order, and the latter was immediately employed in fortifying the iſland.

The knights were hardly ſettled in Malta, when the emperor, and other European potentates, endeavoured to engage them in a war with the inhabitants of Barbary, as the city of Tripoli, then held by Charles, was in great danger of falling into the hands of the infidels. The attempt on Modon, however, was firſt made; but it proved unſucceſsful through the baſe avarice of the Malteſe forces: for they having been admitted into the city, during the night began to murder and plunder the inhabitants, without waiting for the arrival of the galleys which were coming to their aſſiſtance. The conſequence was, that the inhabitants armed, and a deſperate battle began; in which the Malteſe, notwithſtanding the utmoſt efforts, were obliged to retire, but not till they had loaded themſelves with plunder, and carried away 800 women captive.

The grand-maſter, looking upon this diſappointment as a ſign that Providence had ordained Malta to be the reſidence of the knights, did not renew his attempts upon Modon; but, in 1532, joined with the emperor againſt the Turks, and ſent a great number of his galleys to join the confederate fleet under the celebrated Andrew Doria. In conſequence of this aid, the undertaking proved ſucceſsful; and in all probability the conqueſt of Modon would have been accompliſhed, had not the ſoldiery, diſcouraged by the bad ſucceſs of the laſt attempt, openly refuſed to proceed, and obliged the emperor to proceed to Coron, another town belonging to the Turks. Through the valour of the Malteſe knights, this place was ſoon obliged to capitulate; and in a ſecond expedition, in 1533, the knights again diſtinguiſhed themſelves in a moſt eminent manner. They were quickly recalled, however, by the grand-maſter to the defence of the iſland, which was now threatened with an invaſion by Barbaroſſa the celebrated Turkiſh corſair, who ſcoured thoſe ſeas at the head of above fourſcore galleys. This invaſion, however, did not take place; and in 1534, the grand-maſter Villiers de L'Iſle Adam died, and was ſucceeded by Perino de Ponte, a native of the town of Aſt in Italy.

The new grand-maſter, who received intelligence of his election at St Euphemia in Calabria, very ſoon after received another expreſs, giving an account of the wars which at that time reigned in Tunis, and the danger that Tripoli as well as Malta was in from Barbaroſſa, who was by this time become maſter both of Algiers and Tunis; upon which he made all the haſte he could to his new government. His firſt care was to ſend a ſtrong reinforcement to Italy; after which, he diſpatched an embaſſy to the emperor, intreating him to equip a powerful fleet againſt Barbaroſſa, without which it would be impoſſible for Tripoli to hold out much longer.

5
Africa invaded by Charles.

By this embaſſy from De Ponte, and another to the ſame purpoſe from Muley Haſſan, the depoſed king of Tunis, Charles was eaſily prevailed on to carry his arms into Africa; in which he was aſſiſted by a great number of the braveſt knights, together with 18 brigantines of different ſizes, four of the beſt Malteſe galleys, and their veſſel called the *great carrack*, of itſelf almoſt equivalent to a ſquadron. In this expedition the knights diſtinguiſhed themſelves in a moſt eminent manner. At the ſiege of Goletta, one of the knights, named *Converſa*, an excellent engineer, by means of a *barcalonga*, got almoſt cloſe to the great tower, which he furiouſly battered with large cannon, while the great carrack, which was behind all the reſt of the veſſels, and by reaſon of its height could fire over them, did prodigious execution. A breach was ſoon made; and hardly was it wide enough to be ſcaled, when the Malteſe knights jumped out of the galleys into their long-boats, and thence into the ſea, with their ſwords in their hands, and waded through the water above their girdles, it being too ſhallow for boats to approach the ſhore. The ſtandard-bearer of the order was the firſt that jumped into the water, and led the reſt to the attack; they claiming every where the poſt of honour. They marched with the greateſt reſolution through the moſt terrible firing, and ſhowers of all kinds of miſſile weapons; and, having gained the ſhore, quickly aſcended the breach, on the top of which they planted their great ſtandard. A great number loſt their lives, and ſcarce one came off unwounded; but the emperor did them the juſtice to own, that the taking the place was chiefly owing to the valour of the Malteſe knights.

6
Deſperate valour of the Malteſe knights.

The city of Tunis was ſoon taken after the fortreſs of Goletta; on the ſurrender of which, the emperor, deſigning to return into Europe, took his laſt dinner on board the great carrack; where he was magnificently entertained, and beſtowed on the ſurviving knights the greateſt encomiums, and marks of his eſteem and gratitude to the owner. Theſe he accompanied

7 Privileges conferred upon them by the emperor.

panied with conſiderable preſents and with two new grants. By the firſt, they were allowed to import corn and other proviſions from Sicily, without paying duty; and by the ſecond, the emperor engaged, that none of the order ſhould enjoy any of the eſtates or revenues, due to Malteſe knights, throughout all his dominions, unleſs they were lawfully authorized by the grand-maſter and his council; or till the originals had been examined and regiſtered by himſelf, or ſuch miniſters as he ſhould appoint for that purpoſe. The fleet then ſet ſail for Malta; where, on their arrival, they received the news of the grand-maſter's death, who was ſucceeded by Didier de Tolon de St Jalle, a native of Provence, and then grand prior of Tholouſe, where he reſided at the time of his election.

8 The Turks make an unſucceſsful attempt on Tripoli.

The preſent grand-maſter was a man of great conduct and bravery, which he had formerly ſhown at the ſiege of Rhodes; and the ſituation of affairs at this time required a perſon of experience. The Turkiſh corſairs, quite tired out with the dreadful havoc made among them by Botigella, grand prior of Piſa, who ſeldom quitted the ſea, and never ſailed out without ſinking ſome of them, or making conſiderable prizes, had agreed to enter into a ſtrong confederacy, either to ſurpriſe the city of Tripoli where his retreat was, or, if that failed, to lay ſiege to it by ſea and land; in either of which attempts, they were ſure of all the aſſiſtance of Barbaroſſa and Hayradin, then lord of Tagiora. This laſt had undertaken the command and conduct of the whole enterpriſe; but the governor being informed of the deſign, prepared to give him a warm reception. Hayradin came thither with his whole force in the dead of the night, and began to ſcale the walls in thoſe places where he reckoned them to be moſt defenceleſs. They no ſooner appeared at the foot of them, than the garriſon, which had been kept up in arms, poured down ſuch ſtreams of wildfire, boiling oil, melted lead, &c. and threw ſuch vollies of ſtones, while the great and ſmall guns ſo annoyed thoſe that ſtood fartheſt off, that great numbers of them were deſtroyed. They perſiſted in the attack, however, with great fury and vigour, till Hayradin, who was foremoſt in one of the ſcalades, was knocked down by a muſket-ſhot from the top of his ladder. He fell into the ditch, and was taken up almoſt dead; upon which his troops inſtantly diſperſed themſelves, and abandoned the enterpriſe. The governor of Tripoli, however, judging that this would not be the laſt viſit of the kind which in all probability he would receive, immediately diſpatched an expreſs to Malta, with propoſals for fortifying the city, and demoliſhing a ſtrong tower on that coaſt named *Alcaid*, which was held by a Turkiſh corſair. His advice being approved of, the commander Botigella, now general of the galleys, was immediately diſpatched with a ſufficient force; who, having landed his men at Tripoli, immediately marched, with them and a body of Arab mercenaries, towards Alcaid; and without ſtaying to open the trenches, or any other covering than his gabions, levelled his artillery againſt it. Hayradin being informed of this, came with his Turks to its defence; but was intercepted by a ſtrong detachment of Malteſe knights at the head of the hired Arabs, and repulſed with loſs; ſo that all he could do was to convey about 50 or 60 Turks into the place, and to annoy the Chriſtians with ſome ſlight ſkirmiſhes. Botigella, perceiving that his cannon did not make ſuch quick diſpatch as he wiſhed, ſent ſome of his galleys; under the ſhelter of which he quickly ſprung a mine, which brought down part of the wall, and buried moſt of the corſairs under it; upon which the reſt, ſeeing the Malteſe knights mount the breach ſword-in-hand, immediately threw down their arms. The tower was then razed to the ground; after which Botigella marched to a town called *Adabus*, whence he drove Hayradin who had intrenched himſelf in it, and gave the plunder to the Arabs. In his return he attacked and took a large Turkiſh galley, the cargo of which was valued at 160,000 crowns, and had on board 200 perſons; ſo that he landed in triumph, and was received with the loud acclamations of the whole order, who came to meet him on his arrival. Soon after the grand-maſter fell ſick and died, and was ſucceeded by John de Homedes.

The Malteſe ſtill continued to behave with their uſual valour againſt the Turks; but, through the negligence of Charles V. almoſt all the places held by the Chriſtians on the African coaſt were reduced by the infidels, and the valour exerted by the Malteſe ſerved only to deſtroy great numbers of them. At laſt the emperor's affairs in Africa were totally ruined by his unſucceſsful expedition againſt **Algiers**, an account of which was given under that article, n°14—20. Here indeed it is thought that the emperor himſelf could not have eſcaped, had not the Malteſe knights repulſed the Turks, who had attacked even the imperial quarters. They purſued them even to the gates of the city, and were in hopes of entering it with them; but the governor having cauſed the gates to be ſhut before the Turks had all got in, the knights were diſappointed. When the Spaniſh troops reimbarked, the Malteſe were alſo of great ſervice in repulſing the enemy; and indeed behaved on both occaſions with ſo much valour and intrepidity, that the reſt of the allies could not ſufficiently admire them. The misfortune, however, was, that the loſs they ſuffered, both of men and ſhips, eſpecially by ſome of their beſt commanders, more than counterbalanced the glory they had gained. The emperor, before they parted, gave them the moſt ample teſtimony of his ſatisfaction and gratitude, as far as words and encomiums could go; after which, the Malteſe commander ſet ſail, with the ſmall remains of his knights, in three ſhattered veſſels, and arrived ſafely at the port of Malta about the end of November 1548.

9 The e ror ſav by the lour of Malteſe knights

While the Malteſe were employed in this unfortunate expedition, the iſland was ſo terribly annoyed by the Turkiſh and other corſairs, that the port was in ſome meaſure blocked up by them; whilſt the coaſts, both here and of Goſa, lay expoſed to frequent inſults and depredations, and often to the loſs of their inhabitants. This obliged the Malteſe admiral Simeoni to refit his galleys with all poſſible expedition, and again put to ſea in queſt of theſe enemies. In this enterpriſe he ſucceeded ſo well, that he ſent home a great number of the corſair captains in chains. Being obliged to put in at the port of Tripoli, the governor informed him, that he had juſt received an expreſs from the king of Tunis, acquainting him that Barbaroſſa was making the moſt preſſing complaints to the Porte againſt the Malteſe knights, whilſt his lieutenant Morat Haga was making great preparations at Tachora for the ſiege of Tripoli, which he doubted not would be followed by that of Tunis; the king having become odious to the Turks and Moors, on account of his alliance with the emperor; after whoſe late diſaſter a great number of towns in that kingdom had revolted from him, and a much greater number of his ſubjects had put themſelves under the protection of the Algerine monarch, who was expected ſhortly from Conſtantinople at the head of a powerful fleet.

10
The Turks take Tripoli, and reſolve to expel the knights from Malta.

On the receipt of theſe unwelcome news, an embaſſy was ſent to the emperor, in order to perſuade him to cauſe the fortifications of Tripoli be repaired; but without ſucceſs. All that could be obtained was fair words and promiſes; the conſequence of which was, that the Malteſe made moſt violent and almoſt incredible exertions againſt their enemies, till at laſt Soliman reſolved to expell the knights from Malta, as he had before done from Rhodes. To this he was chiefly inſtigated by Dragut, an old experienced corſair, who had obtained the command of his fleet after the death of Barbaroſſa. The ſiege was accordingly commenced in 1551; but, by a ſtratagem, the Turkiſh commander was induced to depart. However, he reduced the caſtle of Goſa and the city of Tripoli. Nothing happened of great conſequence from that time till the year 1564, when freſh complaints being made to Soliman, he propoſed, in a grand council, where moſt of his officers attended, to extirpate the knights altogether. This deſign was ſtrenuouſly oppoſed by Hali, one of Dragut's moſt experienced captains, who offered the moſt ſolid reaſons againſt it; but being overruled by the reſt, an expedition againſt Malta was reſolved upon. One of the ſultan's firſt cares was to ſend ſome ſpies, in the diſguiſe of fiſhermen, to take a full view of the iſland, who found means to bring him an exact plan of it, with all its fortifications, havens, ſtrength, and the number of its inhabitants, &c. whilſt he was haſtening his armaments againſt it. By this time, as the Malteſe had very little reaſon to doubt that the Turkiſh armaments were deſigned againſt their iſland, the viceroy of Sicily, Don Garcia, was ordered by his maſter to take it in his way to the caſtle of Goletta, in order to conſult with the grand-maſter about the neceſſary means for oppoſing ſuch a formidable power. The grand-maſter acquainted him, that, in caſe of an attack upon Malta, he ſhould want both men and corn: upon which the viceroy engaged to ſupply him with both, on his return to Sicily; in pledge of which he left one of his ſons with him, who was afterwards admitted into the order. He was no ſooner departed, than the grand-maſter ſummoned all the knights of the order, diſperſed through ſeveral parts of Europe, to repair to him. Thoſe that were in Italy raiſed a body of 2000 foot, to which the viceroy of Sicily added two companies of Spaniſh forces. All the galleys of the order were employed in tranſporting theſe troops, together with all manner of proviſions and ammunition, into the iſland; and the knights that were in it, in diſtributing, diſciplining, and exerciſing their new levies, as well as the Malteſe militia, againſt the ſiege. Thus the grand-maſter ſaw himſelf ſtrengthened by the arrival of 600 knights, all of whom brought with them retinues of ſtout good ſervants, fit to aſſiſt in the defence of the iſland; whilſt thoſe, who by reaſon of age, ſickneſs, or other impediments, could not repair to him, ſold their moſt valuable effects in order to aſſiſt him with their purſes. The pope, on his part, contented himſelf with ſending a ſupply of 10,000 crowns; and the king of Spain ordered his viceroy Don Garcia to raiſe an army of 20,000 men, to be ready to ſail thither as ſoon as called for. The grand-maſter employed the remainder of his time in viſiting all the forts, magazines, arſenals, &c. and aſſigning to each tongue their ſeveral poſts, and making all neceſſary preparations, till the Ottoman fleet appeared in ſight on the 18th of May 1565. It conſiſted of 159 large galleys and galleons, carrying on board 30,000 forces, janizaries and ſpahis, beſides the ſlaves at the oar, accompanied by a conſiderable number of other veſſels, laden with artillery, ammunition, and other neceſſaries for a ſiege. The whole armament was commanded by Muſtapha Baſha, an old experienced officer, aged about 85 years, and an old favourite and confidant of the ſultan; of an haughty cruel temper, who made it a merit to violate his word, and to uſe all manner of violence againſt the Chriſtians, eſpecially againſt the Malteſe. This formidable army landed at ſome diſtance from Il Borgo, and ſoon afterwards ſpread themſelves over the country; ſetting fire to the villages, putting the peaſants to the ſword, and carrying off ſuch of the cattle as, notwithſtanding the orders of the grand-maſter, had not been ſecured within the forts and towns.

11
The ſiege commenced.

While the Turks were thus employed, La Valette (the grand-maſter) ſent out De Copier, marſhal of the order, with 200 horſe and 600 foot, to watch their motions. De Copier, an officer of great experience, executed his commiſſion with ſo much prudence and vigour, that, by falling unexpectedly on detached parties, he cut off 1500 Turks, with the loſs only of 80 men.

The Turkiſh general held a council of war as ſoon as all his troops were landed, to aſſiſt him in reſolving where he ſhould begin his attack. Piali, the Turkiſh admiral, agreeably to what he underſtood to have been the ſultan's inſtructions, was of opinion that they ought not to enter upon action till Dragut ſhould arrive. But Muſtapha having received information of the king of Spain's preparations, thought ſomething ought to be done inſtantly for the ſafety of the fleet; which lay at preſent in a creek, where it was expoſed to the violence of the eaſt wind, and might be attacked with great advantage by the Spaniards. On this account he was of opinion, that they ſhould immediately lay ſiege to a fort called *St Elmo*, which ſtood on a neck of land near Il Borgo, having the principal harbour on one ſide of it, and on the other another harbour large enough to contain the whole fleet in ſafety. This propoſal was approved by a majority of the council, and Muſtapha proceeded without delay to carry it into execution.

12
Deſperate defence of fort St Elmo.

La Valette did not expect that a place which was neither ſtrong nor large enough to admit a numerous garriſon, could be defended long againſt ſo great a force as was employed to reduce it; but he thought it neceſſary that the ſiege of this fort ſhould be prolonged as much as poſſible, in order to give the viceroy of Sicily time to come to his relief. With this view, he reſolved to throw himſelf into St Elmo with a ſelect body of troops; and he was preparing to ſet out, when the whole body of knights remonſtrated with ſuch earneſt importunity againſt his leaving the town, that he at laſt conſented to ſuffer the reinforcement, which he had prepared, to be conducted to the fort by a knight called *De Medran*, upon whoſe conduct and intrepidity he could rely with the moſt aſſured confidence.

Not long after De Medran's arrival in the fort, the garriſon made a vigorous ſally, in which they drove the enemy from their entrenchments, and put a number of them to the ſword. But the reſt ſoon recovered from their ſurpriſe; and having returned to the charge, they compelled the Chriſtians to retire. In this rencounter, the vigorous efforts of the Janiſaries were favoured by the wind, which blew the ſmoke of the guns upon the fort, and covered the beſieged with a thick cloud, through which it was impoſſible to diſcern the operations of the enemy. This incident the Turks had the preſence of mind to improve to very great advantage. They ſeized, unperceived, upon the counterſcarps; made a lodgement there with beams, woolſacks, and gabions; and raiſed a battery upon it with incredible expedition. After the ſmoke was diſperſed, the beſieged beheld what had been done with much aſtoniſhment; and they were the more diſquieted, as the fortification which the Turks had raiſed upon the counterſcarp overtopped a ravelin which lay near it, in which the beſieged could no longer appear with ſafety. They reſolved, however, to defend this ravelin as long as poſſible, whatever it ſhould coſt them.

In the mean time Dragut, and another noted Corſair named Uluchiali, arrived with 20 galleys; having, beſides ſlaves and ſeamen, 2500 troops on board. This reinforcement, and the preſence of Draguet, added freſh vigour to the operations of the ſiege. This gallant Corſair expoſed himſelf, on all occaſions, with the utmoſt intrepidity; ſpent whole days in the trenches; and as, beſides his other extraordinary talents, he was particularly ſkilful in the management of artillery, he cauſed ſome new batteries to be raiſed in more advantageous ſituations than had hitherto been made choice of; and kept up a continual fire both on the ravelin above-mentioned and a cavalier that covered the fort, and was one of its principal defences.

This cavalier ſoon became the only defence which could prevent the beſiegers from coming up to the very foot of the wall. Some Turkiſh engineers having approached the ravelin at day-break, to obſerve the effects of their artillery, they perceived a gun-port ſo low, that one of them, when mounted on the ſhoulders of another, looked into it, and ſaw the Chriſtian ſoldiers lying on the ground aſleep. Of this they gave immediate information to the troops; who, advancing as quickly and ſilently as poſſible, and clapping ladders to the gun-hole, got up into the ravelin, and cut moſt of the Chriſtians to pieces.

Between this ravelin and the cavalier lay the ditch, over which the beſieged had thrown a temporary bridge of planks, leading up to the cavalier. The Turks, perceiving this, leaped inſtantly upon the bridge, and attempted to make themſelves maſters of the cavalier, as they already were of the ravelin. But the garriſon was now alarmed; the braveſt of the knights haſtened from different quarters to the poſt of danger; and, after an obſtinate engagement, they compelled the Turks to retire into the ravelin. There, obſerving another way of reaching the cavalier by a path from the bottom of the ditch, they threw themſelves down without dread or heſitation; and having aſcended by this path to the other ſide, they renewed their attack with greater fury than ever. The combat laſted from ſun-riſe till noon, when the knights at laſt proved victorious. About 20 knights and 100 ſoldiers were killed; and near 3000 of the enemy.

As the ravelin was open on the ſide towards the fort, the beſieged pointed ſome cannon againſt it, and made great havock among the infidels. But Muſtapha, ſenſible of the value of the acquiſition he had made, poured in freſh ſoldiers without number, and the pioneers coming forward with wool-ſacks, planks, and gabions, put the troops at length in ſafety, and made a lodgement in the ravelin, of which the garriſon were never afterwards able to diſpoſſeſs them.

The grand-maſter's concern on account of this diſaſter was greatly augmented, by conſidering, that it could not have happened ſo ſoon without ſome negligence on the part of the garriſon. He ſent them, however, an immediate reinforcement; and both the ſiege and the defence were carried on with the ſame vigour as before.

But the ſituation of the beſieged was now become much more dangerous than formerly. The Turks applied with unremitting diligence to heighten the ravelin till it overtopped the wall of the fort; and after this the garriſon could no longer appear upon the parapet with ſafety. Many were killed by the enemy's artillery, ſeveral breaches were made in the wall, and the hearts of the braveſt knights began to fail within them.

13 The knights deſire permiſſion to leave the fort, but are refuſed.

They agreed therefore, though with much reluctance, to apply to the grand maſter for liberty to quit the fort; and they made choice of the chevalier de Medran for their meſſenger. He repreſented, that the fort was in reality no longer tenible; and that, to continue in it, though only for a few days, would infallibly occaſion the deſtruction of the garriſon.

Moſt of the knights in council thought that this requeſt of the garriſon ought to be immediately granted. But la Valette was of a contrary opinion.—This he repreſented to the chevalier de Medran; and ſent him back with inſtructions to remind the knights of the vows which they took, at their entrance into the order, of ſacrificing their lives for its defence. He likewiſe bad him aſſure them, in his name, that he would not fail to ſend them ſuch reinforcements as they ſhould ſtand in need of; and was determined, as ſoon as it ſhould be neceſſary, to come himſelf to their aſſiſtance, with a fixed unalterable purpoſe to lay down his life, ſooner than deliver the fort into the hands of the infidels.

This anſwer had the deſired effect on ſeveral of the knights, and particularly on thoſe whoſe principles of honour and attachment to the order were confirmed by years. But the greater part of them were much diſſatiſfied. They thought the grand-maſter's treatment of them harſh and cruel; and wrote him a letter, ſubſcribed by 53, in which, after repeating their former requeſt, they informed him, that if he did not, on the next night, ſend boats to carry them to the town, they were determined to ſally out into the Turkiſh camp, where they might fall honourably by the ſword, inſtead of ſuffering ſuch an ignominious death as they had reaſon to expect if the fort was taken by ſtorm.

To this letter la Valette replied, "That they were much miſtaken if they expected to ſatisfy their honour by throwing away their lives; ſince it was no leſs their duty to ſubmit to his authority, than to ſacrifice their lives in defence of the order: that the preſervation of the whole depended on their preſent obedience to his commands: that no aid was to be expected from Spain, if the fort were given up. And that if he ſhould yield to their requeſt, and bring them to the town, the town itſelf would then be immediately inveſted; and they, as well as the reſt, ſoon afterwards reduced to a ſituation more deſperate than that from which they were ſo ſolicitous to eſcape, by deſerting an important poſt which they had undertaken to defend." Beſides this letter, he ſent three commiſſioners to examine the ſtate of the fortifications; intending by this meaſure, either to gain time, or to prevent the garriſon from ſinking into deſpair.

Theſe commiſſioners differed very widely in the accounts which they delivered at their return. Two of them thought it impoſſible to defend the fort much longer. But the third, named Conſtantine Caſtriot, a Greek prince, deſcended from the famous Albanian hero Scanderbeg, whether from ignorance, or a conſciouſneſs of greater reſources in his native courage than the other two poſſeſſed, maintained that the garriſon was far from being reduced to the laſt extremity; and to give proof how firmly he was perſuaded of the truth of what he ſaid, he offered to enter the fort himſelf, and to undertake the defence of it with ſuch troops as ſhould be willing to accompany him.

The grand-maſter, ſtrongly impreſſed with a ſenſe of the neceſſity of protracting the ſiege, immediately accepted this offer, and beſtowed the higheſt encomiums on Caſtriot's zeal and reſolution. Nor did Caſtriot find any difficulty in perſuading a ſufficient number to attend him, who were no leſs zealous and reſolute than himſelf. The ſoldiers crowded to his ſtandard, and were emulous to have their names enrolled for that dangerous ſervice in which he had engaged.

When la Valette ſaw the ſpirit by which theſe men were animated, and had no longer any doubt of being able, by their means, to prolong the ſiege of the fort; he ſent a letter to the knights, acquainting them, that he was now willing to give them their diſcharge; and would immediately ſend another garriſon, into whoſe hands, he deſired, they ſhould be ready to deliver up the fort, and come themſelves to the town in the boats in which their ſucceſſors were to be tranſported.

The contents and ſtyle of this letter affected the knights in the moſt ſenſible manner, and rouſed within them that delicate ſenſe of honour by which the order had been ſo long and ſo eminently diſtinguiſhed. —They reſolved without heſitation to remain in the fort till every man ſhould periſh, rather than either deliver it to the new garriſon, or abandon it to the enemy. And they went in a body to the governor, and intreated him to inform the grand-maſter of their repentance, and to join with them in praying that they might be ſuffered to wipe out the remembrance of their fault by their future conduct.

The grand-maſter ſuffered himſelf at laſt to be overcome; and henceforth the garriſon, diſmiſſing all thoughts of their own ſafety, were intent on nothing but how to prolong the defence.

14 Invention of burning hoops.

The grand-maſter ſent them every night freſh troops, to ſupply the place of the killed and wounded; and kept them well furniſhed with proviſions, ammunition, and fire-works. Of theſe laſt he had invented a particular kind, which conſiſted of hoops of wood, covered with wool, and ſteeped in boiling oil and other inflammable liquors, mixed with nitre and gunpowder. To theſe machines they ſet fire, and threw them flaming in the midſt of the enemy when they were crowded together at an aſſault. It happened often, that two or three of the Turks were hooked together and ſcorched to death; and the utmoſt confuſion was produced wherever they were thrown.

The beſieged ſtood much in need of this, and every other inſtrument of miſchief that could be deviſed, for their defence. In ſpite of the moſt vigorous oppoſition, the Turks had caſt a bridge over the ditch, and begun to ſap and undermine the wall. From the 17th of June to the 14th of July, not a ſingle day paſſed without ſome rencounter; and Muſtapha had frequently attempted to ſcale the wall of the fort, but had been as often repulſed with the loſs of ſome of the braveſt of his troops.

Aſhamed at having been detained ſo long before a place of ſuch inconſiderable ſtrength, he reſolved to make one great deciſive effort; and to bring to the aſſault as many of his forces as the ſituation of the place would permit him to employ. He had already made ſeveral breaches; but in order to ſecure the ſucceſs of the aſſault which he now intended, he kept his batteries playing all the 15th without intermiſſion, till the wall on that ſide where he deſigned his attack was almoſt level with the rock. On the 16th, the fleet was drawn up, before ſun-riſe, as near the fort as the depth of the water would allow. Four thouſand muſketeers and archers were ſtationed in the trenches; and the reſt of the troops, upon a ſignal given, advanced to the breach. The garriſon was prepared to receive them; the breach was lined with ſeveral ranks of ſoldiers, having the knights interſperſed among them at certain diſtances. The Turks attempted often to break through this determined band, and to overpower them with their numbers; but their numbers ſerved only to augment the loſs which they ſuſtained. Every ſhot from the fort did execution. The artillery made dreadful havoc among them; and the burning hoops were employed with aſtoniſhing ſucceſs. The novelty of theſe machines, and the ſhrieks of thoſe who were caught in them, added greatly to the terror which they inſpired; and made it impoſſible for the Turkiſh officers to keep their men firm and ſteady in purſuing the advantages which, had they preſerved their ranks, their numbers muſt have infallibly acquired.

At length Muſtapha, after having continued the aſſault for more than ſix hours, without gaining a ſingle inch of ground on the beſieged, gave orders for ſounding a retreat. In this attack the garriſon loſt

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about 20 knights, and 300 ſoldiers; but this loſs was immediately ſupplied by a reinforcement from the town: and Muſtapha was at laſt convinced, that, unleſs the communication between the fort and the town were cut off, it would be impoſſible to bring the ſiege of the former to a period, while any troops remained in the other parts of the iſland. By the advice of Dragut, he reſolved to extend his trenches and batteries on the ſide next the town, till they ſhould reach to that part of the ſea, or great harbour, where thoſe ſupplies were landed which the grand-maſter daily ſent to the garriſon. This undertaking he knew muſt be attended with the utmoſt difficulty, becauſe all the ſpace between his intrenchments, and the point to which it was neceſſary to extend them, lay expoſed to the artillery both of fort St Elmo and St Angelo. In viewing the ground, a Sangiac, in whom he put confidence, was killed by his ſide; and, which was ſtill a more irreparable loſs, Dragut received a mortal wound, of which he died in a few days. This did not, however, diſcourage Muſtapha from purſuing his deſign. By employing his troops and pioneers at the work day and night, without intermiſſion, he at length carried it into execution. Then having planted batteries along the ſhore, and filled his trenches with muſketeers, it was impoſſible for any boat to paſs from the town to the fort, without the moſt imminent danger of either being ſunk or intercepted.

After this precaution, he reſumed with freſh vigour his attempts to take the fort by ſtorm. On the 21ſt, he made four different aſſaults: all of which the garriſon withſtood; and, in repulſing ſo many thouſand brave and well-diſciplined troops, diſplayed a degree of prowefs and fortitude which almoſt exceeds belief, and is beyond the power of deſcription. But this heroic garriſon was now exceedingly reduced in number; and there was the ſtrongeſt reaſon to apprehend, that, in one aſſault more, they muſt inevitably be overpowered, unleſs a reinforcement were ſent them from the town. Of their deſperate ſituation they gave intelligence to the grand-maſter, by one who ſwam acroſs the harbour in the night. The boats were inſtantly filled with knights and other ſoldiers, who generouſly reſolved to devote themſelves to certain deſtruction for the general ſafety, and the preſervation of the fort. They ſet off from the town with as much alacrity as if they had entertained the moſt ſanguine hopes of victory; but they found the Turks every-where ſo much upon their guard, and the lines ſo ſtrongly defended, that, after ſeveral fruitleſs attempts to land, they were at laſt obliged to return, depreſſed with ſorrow for the fate of their brave companions.

The garriſon, now deſpairing of relief, gave themſelves up for loſt; but inſtead of either capitulating or attempting to eſcape, they prepared for death, and paſſed the night in prayer and in receiving the ſacrament; after which they embraced one another tenderly, and then repaired to their reſpective poſts; while ſuch of the wounded as had been diſabled from walking, were, at their own earneſt deſire, carried to the ſide of the breach, where they waited, without diſmay, for the approach of the Turkiſh army.

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15 The fort taken, and the garriſon cut off.

Early in the morning of the 23d of July, the Turks advanced to the aſſault with loud ſhouts, as to certain victory, which they believed ſo ſmall a handful of men as now remained in the fort would not dare to diſpute with them. In this expectation they were diſappointed. The garriſon being reſolved on death, and deſpiſing danger, were more than men; and exerted a degree of prowefs and valour that filled their enemies with amazement. The combat laſted upwards of four hours, till not only every knight, but every ſoldier had fallen, except two or three who ſaved themſelves by ſwimming. The Turkiſh colours were then planted on the ramparts; and the fleet entered the harbour, which the fort commanded, in a kind of triumph. When Muſtapha took a view of the fort, and examined its ſize and fortifications, he could not refrain from ſaying, "What will not the father coſt us, (meaning the town,) when the ſon, who is ſo ſmall, has coſt ſo many thouſands of our braveſt troops?" But this reflection, far from exciting his admiration of that heroic fortitude which he had found ſo difficult to overcome, ſerved only to inſpire him with a brutal fury.

16 Cruelty of Muſtapha.

He ordered all ſuch of the garriſon as were found lying on the breach alive to be ript open, and their hearts torn out: and, as an inſult on the knights and their religion, he cauſed their dead bodies to be ſearched for, and large gaſhes to be made in them, in the form of a croſs; after which he tied them on planks, and threw them into the ſea, to be carried by the wind and tide to the town or fort St Angelo.

17 And of the grand-maſter.

The grand-maſter was at firſt melted into tears at this ſhocking ſpectacle; but his grief was ſoon converted into indignation and revenge: and theſe paſſions betrayed him into an action unworthy of the exalted character which he bore. In order to teach the baſha, as he pretended, to make war with leſs barbarity, he cauſed all the Turks whom he had taken priſoners to be maſſacred; and then putting their heads into his largeſt cannon, he ſhot them into the Turkiſh camp.

In the ſiege which has been related, the order loſt about 1500 men, including 130 of the braveſt knights.

Muſtapha vainly imagined, that, being intimidated by the fate of their companions, they would be now inclined to liſten to terms of capitulation: and in this hope, he ſent an officer with a white flag to one of the gates, attended by a Chriſtian ſlave deſigned to ſerve for his interpreter. The Turk was not allowed to enter within the town; but the Chriſtian was admitted, and was led through ſeveral ranks of ſoldiers under arms by an officer, who, after ſhewing him all the fortifications of the place, deſired him to take particular notice of the depth and breadth of the ditch, and ſaid to him, "See there, the only ſpot we can afford your general; and there we hope ſoon to bury him and all his Janizaries."

This inſulting ſpeech being reported by the ſlave, excited in the fiery mind of the baſha the higheſt degree of wrath and indignation, and made him reſolve to exert himſelf to the utmoſt in the proſecution of the ſiege. His troops, though greatly diminiſhed, were ſtill ſufficient to inveſt at once both the town and the fort of St Michael. He kept a conſtant fire on both; but he intended firſt to apply to the reduction

tion of the latter, which he propoſed to attack both by land and water, at the extremity of the peninſula on which it ſtands. In order to accompliſh this deſign, it was neceſſary he ſhould have ſome ſhipping introduced into the harbour for tranſporting his forces. But the mouth of the harbour having been rendered inacceſſible by a great iron chain and the cannon of St Angelo, his deſign muſt have been relinquiſhed, if Piali had not ſuggeſted an expedient againſt which the grand-maſter had not provided. This was, to make the Chriſtian ſlaves and the crews of the ſhips draw a number of boats, by the ſtrength of their arms, over the neck of land on which ſtood fort St Elmo. Of this propoſal, which Muſtapha immediately adopted, information was carried to the grand-maſter by a Turkiſh officer; who, being by birth a Greek, was touched ſuddenly with remorſe, and deſerted to the Chriſtians. In conſequence of this intelligence, La Valette ſet a great number of hands to work in framing a ſtacado along that part of the promontory where the Turks intended their attack; and at another part, where the depth of the water, or the hardneſs of the bottom, would not admit the ſtacado, he cauſed ſtrong intrenchments to be made upon the beach. Muſtapha, in the mean time, fired inceſſantly upon the fort, while the ſlaves and crews were employed in tranſporting the boats over land into the harbour. At length the baſha, judging that the number of boats which he had tranſported would be ſufficient, and that the breaches which his artillery had made were practicable, reſolved, without further delay, to make an attack both by ſea and land. He was the more confident of ſucceſs, as, ſince the taking of St Elmo, he had received a conſiderable reinforcement, by the arrival of Haſcem, ſon of Barbaroſſa, with 2500 ſelect ſoldiers, commonly called *the Bravoes of Algiers*. Haſcem, who poſſeſſed a conſiderable ſhare of his father's fire, and was ambitious to diſtinguiſh himſelf in the ſultan's ſervice, begged of Muſtapha to intruſt him with the aſſault of fort St Michael; and vaunted, with his natural arrogance, that he would ſoon make himſelf maſter of it ſword-in-hand. The baſha, whether from an opinion of his valour, or an intention to make him learn at his own expence the folly of his preſumption, readily complied with his requeſt; and, having added 6000 men to his Algerines, he promiſed to ſupport him with the reſt of his army.

Haſcem divided his forces with Candeliſſa, an old corſair, his lieutenant; to whom he committed the attack by ſea, whilſt he reſerved that on the land-ſide to himſelf.

Candeliſſa having put his troops on board the boats, ſet out with drums beating, and hautboys and other muſical inſtruments playing, preceded by a boat filled with Mahometan prieſts, ſome of whom were employed in offering prayers to heaven for his ſucceſs, or in ſinging hymns; while others had books in their hands, out of which they read imprecations againſt the Chriſtians. Candeliſſa attempted firſt to break down the ſtacado which had been formed to obſtruct his landing; but finding it much ſtronger than he expected, and that, while he was employed in demoliſhing it, his troops muſt ſuffer greatly from the enemy's fire, he thought it would be eaſier to make a deſcent on that part of the ſhore which the grand-maſter had ſtrengthened with entrenchments. At this important poſt, the Chriſtian troops were commanded by an ancient knight of the name of *Guimeran*. This experienced officer reſerved his fire till the Turks had advanced within a little diſtance of the ſhore, when, by a ſingle diſcharge, he killed about 400 men. This did not prevent the reſt from approaching. Candeliſſa puſhed forwards while the Chriſtians were loading their cannon, and landed at the head of his Algerines. But Guimeran having reſerved ſome cannon charged with grape-ſhot, did dreadful execution among them after they had landed, and many of them began to fly to their boats; which Candeliſſa obſerving, he commanded the boats to be put off to a little diſtance from the ſhore. His troops, perceiving then that they muſt either die or conquer, took courage from deſpair, and advanced boldly to the intrenchment, with ladders for ſcaling it in one hand, and their ſabres in the other. The combatants on both ſides diſplayed the moſt intrepid valour. Great numbers fell, and the ditch was choaked with blood, and with the bodies of the dead and wounded. The Turks at laſt, after an engagement of five hours, reached the top of the entrenchment, and there planted their enſigns. The knights, ſtung with ſhame on account of their retreat, returned with redoubled ardour. But they would probably have been overpowered by the ſuperior number of the enemy, had not the grand-maſter ſent them a ſeaſonable reinforcement, under the admiral de Giou and the chevalier de Quiney; who fell upon the Algerines and Turks with a degree of fury that ſtruck terror into Candeliſſa himſelf, who was noted for his intrepidity. Having ordered the boats to be brought nearer the ſhore, he was among the firſt who fled. His bravoes fought deſperately for ſome time after he had left them; but were at length thrown down from the intrenchments, and compelled to fly to their boats with the utmoſt precipitation. The Chriſtians purſued them, and the batteries continued firing on them without intermiſſion. Many of the boats were ſunk; the water was covered with dead bodies, mangled limbs, ſhields and helmets. Of the 4000 who had been ſent on this enterpriſe, ſcarcely 500 remained, and many of theſe were dangerouſly wounded.

18
The Turks repulſed with great ſlaughter.

Haſcem was not more fortunate in his aſſault by land, than Candeliſſa was by ſea. After having been repulſed at one breach with great ſlaughter, he rallied his troops, and led them on to another, where he fought long and deſperately, till, moſt of the bravoes having fallen by his ſide, he was obliged, with much reluctance and ſorrow, to ſound a retreat.

19
Incredible valour of the Malteſe.

Muſtapha, not unmindful of his promiſe to ſupport him, no ſooner perceived him beginning to retire, than he ordered the Janiſaries, whom he kept under arms, to advance. The garriſon had maintained an engagement with Haſcem for five hours, in the middle of the day, and in the hotteſt ſeaſon of the year; yet, as if they had not been ſubject to the wants and weakneſſes of humanity, they advanced beyond the breach to meet the Janiſaries, and fought apparently with as much vigour and fortitude as before. By the power of ſuperior numbers, they were compelled to fall back within the breach. But there they made the moſt deſperate reſiſtance; and, being reinforced by De Giou and De Quiney, with the troops which had triumphed over Candeliſſa, they at laſt repulſed the Janiſaries with dreadful ſlaughter; after having loſt more than 40 knights, and 200 of the braveſt of the common men.

20
A great number of Turks deſtroyed by a contrivance of their own.

Muſtapha, enraged by this invincible obſtinacy which the Chriſtians diſplayed in their defence, and dreading that the Spaniſh ſuccours, which had been already delayed much longer than he expected, might ſoon arrive, reſolved now to employ his whole force at once; and, while he himſelf proſecuted the ſiege of fort St Michael with one half of his troops, to employ the other, under Piali, againſt the town. More batteries were raiſed. The trenches were advanced ſtill nearer than before. Bridges of ſail-yards and maſts were thrown over the ditches. Mines, notwithſtanding the hard and rocky ſoil, were ſprung. Aſſaults were repeated without number; and the two baſhas, emulous of one another, and each of them agitated with continual anxiety leſt victory ſhould declare firſt for his competitor, exhibited the moſt ſhining proofs of perſonal courage, and exhauſted all the art of war then known in the world. Yet, thro' the determined bravery of the knights, conducted by the grand-maſter with conſummate prudence and indefatigable vigilance, the Turks were baffled in every attempt, and repulſed with ſlaughter. Muſtapha flattered himſelf once with the moſt ſanguine hopes of ſucceſs on his part, from a machine invented by his principal engineer, in the form of a huge caſk bound ſtrongly with iron hoops, and filled with gun powder, nails, chains, bullets, and ſuch other inſtruments of death. After ſetting fire to a train which was faſtened to this machine, it was thrown, by the force of an engine, upon a ravelin that was the principal defence of the fort. But the garriſon, undiſmayed, found means, before it caught fire, to caſt it out again into the midſt of the aſſailants. In a moment afterwards it burſt with dreadful fury, and filled the Turks with conſternation. The knights then ſallied out upon them ſword-in-hand, and, taking advantage of their confuſion, killed many of them, and put the reſt to flight.

Piali had, on ſome occaſions, ſtill more reaſon than Muſtapha to entertain the hopes of victory, altho' the town was much ſtronger than the fort, and La Valette commanded there in perſon. By his batteries he had demoliſhed all the out-works of the place, and had made an immenſe breach in the wall. While his troops were engaged in a furious aſſault, that engroſſed the whole attention of the beſieged from morning till night, he employed a great number of pioneers in raiſing a cavalier or platform of earth and ſtones, cloſe by the breach, and ſo high as to overlook the parapet. Night, in the mean time, came on, and prevented him from carrying any further this great advantage; but he doubted not that next day he ſhould be able to make himſelf maſter of the place.

21
The grand-maſter prevents the knights from abandoning the town.

As ſoon as he had drawn off his forces, a council of the order was convened, and moſt of the knights were of opinion that the town was no longer tenible; that the fortifications which ſtill remained ſhould be blown up; and that the garriſon and inhabitants ſhould retire into the caſtle of St Angelo. But the grand-maſter received this propoſal with horror and indignation. "This would be in effect," ſaid he, "to deliver the whole iſland into the hands of the infidels. Fort St Michael, which has been ſo gallantly defended, and which is preſerved by its communication with the town, would thus be ſoon reduced to the neceſſity of ſurrendering. There is no room in the caſtle of St Angelo for the inhabitants and troops; nor, if there were room, is there water in that fort for ſo great a number." It was then propoſed, that at leaſt the relics of the ſaints and the ornaments of the churches ſhould be carried into the caſtle; and the knights earneſtly intreated the grand-maſter to retire into it himſelf, aſſuring him that they would conduct the defence with the utmoſt vigour and vigilance. "No, my brethren," he replied, "what you propoſe as to the ſacred things would ſerve only to intimidate the ſoldiers. We muſt conceal our apprehenſions. It is here we muſt either die or conquer. And is it poſſible that I, at the age of 71, can end my life ſo honourably as in fighting, together with my friends and brethren, againſt the implacable enemies of our holy faith?" He then told them what he thought proper to be done, and proceeded inſtantly to put it into execution. Having called all the ſoldiers from fort St Angelo, except a few who were neceſſary for managing the artillery, he employed them and the inhabitants all night, in throwing up intrenchments within the breach; after which he ſent out ſome of the braveſt knights, with a ſelect body of troops, to make an attempt on the cavalier. Theſe men ſtole ſoftly along the foot of the wall till they arrived at the place appointed; when they ſet up a loud ſhout, and attacked the guards whom Piali had left there with ſo much fury, that the Turks, believing the whole garriſon had fallen upon them, abandoned their poſt, and fled precipitately to their camp.

The cavalier was immediately fortified, a battery of cannon planted on it, and a parapet raiſed on the ſide towards the enemy. And thus the breach was rendered impracticable; the town put in greater ſecurity than before; and a work, which had been deviſed for its deſtruction, converted into a bulwark for its defence.

The grand maſter had now greater confidence than ever of being able to hold out till the Spaniards ſhould come to his relief. In conſequence of the aſſurances given by Philip and the Sicilian viceroy, he had, long before this time, entertained the hopes of their arrival; and had often earneſtly ſolicited the viceroy to haſten his departure from Meſſina. The conduct of this nobleman was long exceedingly myſterious. The patience of the knights was worn out by his delays; and they, and many others, ſuſpected that the real motive of his conduct was the dread of encountering with an admiral of ſo conſiderable reputation as Piali. But it afterwards appeared that the viceroy had acted agreeably to his inſtructions from the court of Spain. For altho' Philip was, for the reaſons abovementioned, ſincerely intereſted in the preſervation of the knights, and had amuſed them with the moſt flattering promiſes of aſſiſtance; yet he ſeems from the firſt to have reſolved not to expoſe himſelf to danger on that account, and to avoid, if poſſible, a general engagement.

A generous and grateful prince would have acted very differently towards an ally ſo deſerving of his ſupport; and if either generoſity or gratitude had been the leading principle of Philip's conduct, it is probable he would, on this occaſion, have regarded the knights as his own ſubjects; and have thought it no leſs incumbent on him to exert himſelf in their defence, than if they had acknowledged him as their ſovereign.

But Philip was affected by their danger only ſo far as it threatened the tranquillity of his own dominions. He had reſolved to interpoſe in their behalf, rather than to ſuffer them to be overpowered; but he appears to have been very little touched with their calamities, and to have intended to leave them to themſelves, as long as there was any proſpect of their being able to make reſiſtance; by doing which he conſidered, that he would not only preſerve his own ſtrength entire, but might afterwards engage with the Turks when they were exhauſted by the operations of the ſiege.

Philip adhered inflexibly to this plan, notwithſtanding the grand-maſter's repeated importunities, much longer than was conſiſtent with his own ſelfiſh views. For, without a degree of fortitude and proweſs on the part of the garriſon, and a degree of wiſdom, vigilance, and magnanimity on that of the grand-maſter, infinitely higher than there could be reaſon to expect, it muſt have been impoſſible for ſuch a handful of men to have withſtood, for ſo long a time, ſo great a force, and ſuch mighty efforts, as were employed to reduce them. Even the death of the grand-maſter alone, whoſe perſon was expoſed to perpetual danger, would have proved fatal to the knights, long before Philip ſent orders to his viceroy to give them any effectual ſupport; and in this caſe, as his own dominions or his fleet would have been immediately attacked, he would probably have had little reaſon to be ſatisfied with the timid, ungenerous counſels which he purſued.

Whatever judgment may be formed on this head, the viceroy did not think himſelf at liberty to yield to the repeated applications of the grand-maſter, till the operations of the ſiege began to relax, and the Turkiſh forces were reduced from 45,000 to 15,000 or 16,000; of whom many were worn out with the fatigues which they had undergone, and others rendered unfit for action by a bloody-flux, which for ſeveral weeks had raged amongſt them.

In this ſituation of affairs, when it was probable that the knights would, without aſſiſtance, have compelled the Turks to raiſe the ſiege, the viceroy let the grand-maſter know, that he had now received ſuch inſtructions from the king, as put it in his power to ſhew his attachment to the order: that he was not indeed permitted to attack the Turkiſh fleet; but that he would immediately bring him a ſtrong body of troops, whoſe commanders (as he himſelf muſt return to Sicily) were to be entirely ſubject to the grand-maſter's authority till the enemy ſhould be expelled.

The viceroy, altho' ſtill ſuſpected of interpoſing unneceſſary delays, at length fulfilled his promiſe; and on the 7th of September landed 6000 men, under Don Alvaro de Sandé and Aſcanio della Corna, in that part of the iſland which lay at the greateſt diſtance from the Turks; after which, he immediately carried back the fleet to Sicily.

24 The Turks raiſe the ſiege in a panic.

In the mean time, intelligence being brought to Muſtapha that the Spaniards were landed, and marching towards him, he was thrown into the moſt dreadful conſternation. Senſible that his ſoldiers were much diſheartened by their ill ſucceſs, he imagined that he was about to be attacked by a ſuperior army, conſiſting of the braveſt and beſt diſciplined troops in Spain. Without waiting for information of their number, he forthwith raiſed the ſiege, drew his garriſon out of St Elmo, and, leaving all his heavy cannon behind him, embarked his troops with as much precipitation as if the Spaniards with ſuperior forces had been in ſight. He had ſcarcely got on board when a deſerter arrived from the Spaniſh camp, and informed him, that with 15,000 or 16,000 men, he had fled before an army that did not exceed 6000, having no general at their head, and commanded by officers who were independent of one another. The baſha was overwhelmed with ſhame and vexation by this intelligence, and would have immediately diſembarked; but this, he knew, he durſt not attempt without conſulting Piali, Haſcem, and his other principal officers.

While he was deliberating upon it, the grand-maſter improved to the beſt advantage the leiſure that was afforded him. He employed all the inhabitants, men, women, and children, as well as the ſoldiers, in filling up the enemy's trenches, and demoliſhing their works; and put a garriſon without delay into fort St Elmo; in which the Turks now beheld from their ſhips the ſtandard of St John erected, where that of Mahomet had lately ſtood.

This demonſtrated to Muſtapha how much new labour awaited him in caſe he ſhould return to the ſiege; but being enraged againſt himſelf on account of the precipitancy of his retreat, and diſquieted at the thoughts of the reception which he had reaſon to expect from Solyman, he wiſhed to atone for his imprudence, and to wipe off the reproach in which it had involved him, by victory or death. Piali, who, from his jealouſy of the baſha's credit with the ſultan, was not ſorry for the failure of his enterpriſe, repreſented in a council of war convened on this occaſion, That as the troops were much diſpirited and worn out, it would be expoſing them to certain deſtruction, either to lead them againſt the enemy, or to reſume the operations of the ſiege. But a majority of the council were of a different opinion; and it was reſolved to land the forces again without delay.

25 They return, but are defeated.

The Turkiſh ſoldiers complained bitterly of this unexpected reſolution, and obeyed the orders to diſembark with the greateſt reluctance. Their officers were obliged to employ threats with ſome, and force with others. At length the number intended was put on ſhore, and Muſtapha ſet out at their head in ſearch of the enemy.

The grand-maſter had not neglected to give early notice of their march to the Spaniſh commanders, who had intrenched their little army on a ſteep hill, which the Turks would have found almoſt inacceſſible; and it was the opinion of ſome of the principal officers, that they ſhould avail themſelves of the advantage of their ſituation, and ſtand on their defence. But this propoſal was rejected with diſdain by the bold adventrous De Sandé, and the greateſt part of the Spaniſh officers; and the troops were led out of their encampment, to meet the enemy in the open field. This conduct, more fortunate perhaps than prudent, contributed to increaſe the dejection of the Turkiſh ſoldiers, and to facilitate their defeat. Having been dragged

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dragged againſt their inclination to the field of battle, and being attacked by the Spaniards with great fury, both in front and flank, they ſcarcely fought, but, being ſtruck with a ſudden panic, fled with the utmoſt precipitation.

Muſtapha, confounded and enraged by this puſillanimous behaviour of his troops, was hurried along by the violent tide of the fugitives. He fell twice from his horſe, and would have been taken priſoner if his officers had not reſcued him. The Spaniards purſued briſkly till they came to the ſea ſhore. There Piali had his boats ready to receive the Turks, and a number of ſhallops filled with muſketeers drawn up to favour their eſcape. Without this precaution, they muſt all have periſhed; and, even notwithſtanding the protection which it afforded them, the number of their killed amounted to 2000 men, while the victors loſt only 13 or 14 at moſt.

Such, after four months continuance, was the concluſion of the ſiege of Malta, which will be for ever memorable on account of that extraordinary diſplay of the moſt generous and heroic valour by which the knights, ſo few in number, were enabled to baffle the moſt vigorous efforts which could be made to ſubdue them by the moſt powerful monarch in the world. The news of their deliverance gave univerſal joy to the Chriſtian powers; and the name of the grand-maſter excited every where the higheſt admiration and applauſe. Congratulations were ſent him from every quarter; and in many ſtates public rejoicings were celebrated on account of his ſucceſs.

With this ſiege is concluded every thing of importance in the hiſtory of Malta. The power of the Turks began about this time to be ſo much circumſcribed, that they ceaſed to be formidable to the Chriſtian nations, and the knights of Malta had no longer an opportunity of exerting their valour as formerly. They have remained ever ſince in quiet poſſeſſion of their iſland, of which we have the lateſt deſcription from Mr Brydone.

26
Deſcription of the iſland, &c.

“ The approach of the iſland (ſays he) is very fine, although the ſhore is rather low and rocky. It is everywhere made inacceſſible to an enemy, by an infinite number of fortifications. The rock, in many places, has been ſloped into the form of a glacis, with ſtrong parapets and intrenchments running behind it.—On getting aſhore we found ourſelves in a new world indeed.—The ſtreets (of Valetta) crowded with well-dreſſed people, who have all the appearance of health and affluence; and we were conducted by the Engliſh conſul to an inn, which had more the appearance of a palace.

“ After dinner we went to viſit the principal villas of the iſland; particularly thoſe of the grand-maſter and the general of the galleys, which lie contiguous to one another. Theſe are nothing great or magnificent; but they are admirably contrived for a hot climate, where, of all things, ſhade is the moſt deſirable. The orange-groves are indeed very fine, and the fruit they bear ſuperior to any thing of the kind in Spain or Portugal.

“ The aſpect of the country is far from being pleaſing: the whole iſland is a great rock of very white free-ſtone; and the ſoil that covers this rock, is, in moſt places, not more than five or ſix inches deep; yet, what is ſingular, we found their crop in general exceedingly abundant. They account for it from the copious dews that fall during the ſpring and ſummer months; and pretend likewiſe that there is a moiſture in the rock below the ſoil, that is of great advantage to the corn and cotton, keeping its roots perpetually moiſt and cool: without which ſingular quality, they ſay, they could have no crop at all; the heat of the ſun being ſo exceedingly violent.—The whole iſland produces corn only ſufficient to ſupply its inhabitants for five months or little more; but the crop they moſt depend upon is the cotton. They begin to ſow it about the middle of May, and continue till the middle of June; and the time of reaping is in the month of October and beginning of November.

“ They pretend that the cotton produced from this plant, which is ſown and reaped in four months, is of a much ſuperior quality to that of the cotton-tree. I compared them; but I cannot ſay I found it ſo: this is indeed the fineſt; but that of the cotton-tree is by much the ſtrongeſt texture. The plant riſes to the height of a foot and an half; and is covered with a number of nuts or pods full of cotton: Theſe, when ripe, they are at great pains to cut off every morning before ſun-riſe; for the heat of the ſun immediately turns the cotton yellow; which indeed we ſaw from thoſe pods they ſave for ſeed.

“ They manufacture their cotton into a great variety of ſtuffs. Their ſtockings are exceedingly fine. Some of them, they aſſured us, had beed ſold for ten ſequins a pair. Their coverlets and blankets are eſteemed all over Europe. Of theſe the principal manufactures are eſtabliſhed in the little iſland of Gozzo, where the people are ſaid to be more induſtrious than thoſe of Malta, as they are more excluded from the world, and have fewer inducements to idleneſs. Here the ſugar-cane is ſtill cultivated with ſucceſs, though not in any conſiderable quantity.

“ The Malteſe oranges certainly deſerve the character they have of being the fineſt in the world. The ſeaſon continues for upwards of ſeven months, from November till the middle of June; during which time thoſe beautiful trees are always covered with abundance of delicious fruit. Many of them are of the red kind, much ſuperior, in my opinion, to the others, which are rather too luſcious. They are produced, I am told, from the common orange-bud, ingrafted on the pomegranate ſtock. The juice of this fruit is as red as blood, and of a fine flavour. The greateſt part of their crop is ſent in preſents to the different courts of Europe, and to the relations of the chevaliers.

“ The induſtry of the Malteſe in cultivating their little iſland is inconceivable. There is not an inch of ground loſt in any part of it; and where there was not ſoil enough, they have brought over ſhips and boats loaded with it from Sicily, where there is plenty, and to ſpare. The whole iſland is full of incloſures of free-ſtone, which give the country a very uncouth and barren aſpect; and in ſummer reflects ſuch a light and heat, that it is exceedingly diſagreeable and offenſive to the eyes. The incloſures are very ſmall and irregular, according to the inclination of the ground. This, they ſay, they are obliged to obſerve, notwithſtanding the deformity it occaſions; otherwiſe the floods, to which they are ſubject, would ſoon carry off their ſoil.

“ The iſland is covered over with country-houſes and villages, beſides ſeven cities, for ſo they term them; but there are only two, the Valetta, and Citta Vecchia, that by any means deſerve that appellation. Every little village has a noble church, elegantly finiſhed, and adorned with ſtatues of marble, rich tapeſtry, and a large quantity of ſilver-plate.

“ The city of Valetta has certainly the happieſt ſituation that can be imagined. It ſtands upon a peninſula between two of the fineſt ports in the world, which are defended by almoſt impregnable fortifications. That on the ſouth ſide of the city is the largeſt. It runs about two miles into the heart of the iſland; and is ſo very deep, and ſurrounded by ſuch high grounds and fortifications, that they aſſured us the largeſt ſhips of war might ride here in the moſt ſtormy weather, almoſt without a cable.

“ This beautiful baſon is divided into five diſtinct harbours, all equally ſafe, and each capable of containing an immenſe number of ſhipping. The mouth of the harbour is ſcarcely a quarter of a mile broad, and is commanded on each ſide by batteries that would tear the ſtrongeſt ſhip to pieces before ſhe could enter. Beſides this, it is fronted by a quadruple battery, one above the other, the largeſt of which is a *fleur d'eau*, or on a level with the water. Theſe are mounted with about 80 of their heavieſt artillery: ſo that this harbour, I think, may really be conſidered as impregnable; and indeed the Turks have ever found it ſo, and I believe ever will.

“ The harbour on the north ſide of the city, although they only uſe it for fiſhing, and as a place of quarantine, would, in any other part of the world, be conſidered as ineſtimable. It is likewiſe defended by very ſtrong works; and in the centre of the baſon is an iſland on which they have built a caſtle and a lazaret.

“ The fortifications of Malta are indeed a moſt ſtupendous work. All the boaſted catacombs of Rome and Naples are a trifle to the immenſe excavations that have been made in this little iſland. The ditches, of a vaſt ſize, are all cut out of the ſolid rock. Theſe extend for a great many miles, and raiſe our aſtoniſhment to think that ſo ſmall a ſtate has ever been able to make them.

“ One ſide of the iſland is ſo completely fortified by nature, that there was nothing left for art. The rock is of a great height, and abſolutely perpendicular from the ſea for ſeveral miles. It is very ſingular, that on this ſide there are ſtill the veſtiges of ſeveral ancient roads, with the tracks of carriages worn deep in the rocks. Theſe roads are now terminated, by the precipice, with the ſeas beneath; and ſhew, to a demonſtration, that this iſland has formerly been of a much larger ſize than it is at preſent; but the convulſion that occaſioned its diminution is probably much beyond the reach of any hiſtory or tradition. It has been often obſerved, notwithſtanding the very great diſtance of mount Ætna, that this iſland has generally been more or leſs affected by its eruptions; and they think it probable, that on ſome of theſe occaſions a great part of it may have been ſhaken into the ſea.

“ One half of mount Ætna is clearly diſcovered from Malta. They reckon the diſtance near 200 Italian miles. And the people of Malta affirm, that, in great eruptions of the mountain, their whole iſland is illuminated, and from the reflection in the water there appears a great track of fire all the way from Malta to Sicily. The thundering of the mountain is likewiſe diſtinctly heard.

“ We made an expedition through the iſland in coaches drawn by one mule each; the only kind of vehicle the iſland affords. The catacombs, not far from the ancient city of Melita, are a great work: they are ſaid to extend for 15 miles under-ground. Many people, they aſſure us, have been loſt in them by advancing too far; the prodigious number of branches making it next to impoſſible to find the way out again. The great ſource of water that ſupplies the city of Valetta takes its riſe near to this place; and there is an aqueduct, compoſed of ſome thouſand arches, that conveys it from thence to the city. The whole of this immenſe work was finiſhed at the private expence of one of the grand-maſters.

“ Not far from the old city, there is a ſmall church dedicated to St Paul; and, juſt by the church, a miraculous ſtatue of the ſaint, with a viper on his hand; ſuppoſed to be placed on the very ſpot where the houſe ſtood in which he was received after his ſhipwreck on the iſland, and where he ſhook the viper off his hand into the fire without being hurt by it: at which time the Malteſe aſſure us, the ſaint curſed all the venomous animals of the iſland, and baniſhed them for ever. Whether this be the cauſe of it or not, the fact is certain, that there are no venomous animals in Malta. They aſſured us, that vipers had been brought from Sicily, and died almoſt immediately on their arrival.

“ Adjoining to the church, is the celebrated grotto in which the ſaint was impriſoned. It is looked upon with the utmoſt reverence and veneration; and if the ſtories they tell of it be true, it is well entitled to it all. It is exceedingly damp, and produces (I believe by a kind of petrifaction from the water) a whitiſh kind of ſtone, which, they aſſure us, when reduced to powder, is a ſovereign remedy in many diſeaſes, and ſaves the lives of thouſands every year. There is not a houſe in the iſland that is not provided with it: and they tell us there are many boxes of it ſent annually, not only to Sicily and Italy, but likewiſe to the Levant, and to the Eaſt Indies, and (what is conſidered as a daily ſtanding miracle) notwithſtanding this perpetual conſumption, it has never been exhauſted, nor even ſenſibly diminiſhed; the ſaint always taking care to ſupply them with a freſh quantity the day following. I taſted ſome of it, and believe it is a very harmleſs thing. It taſtes like exceeding bad magneſia, and, I believe, has pretty much the ſame effects. They give about a tea-ſpoonful of it to children in the ſmall-pox and in fevers. It produces a copious ſweat about an hour after, and, they ſay, never fails to be of ſervice. It is likewiſe eſteemed a certain remedy againſt the bite of all venomous animals. There is a very fine ſtatue of St Paul, in the middle of this grotto, to which they aſcribe great powers.

“ The grand-maſter of the knights of Malta is more abſolute, and poſſeſſes more power, than moſt ſovereign princes. His titles are, *ſerene highneſs* and *eminence*; and his houſehold-attendance and court are all very princely. As he has the diſpoſal of all lucrative offices, he makes of his councils what he pleaſes; beſides, in all the councils that compoſe the juriſdiction of this little nation, he himſelf preſides, and has two votes. He has the diſpoſal of 21 commanderies, and one priory, every five years; and as there is always a number of expectants, he is very much courted. He is choſen by a committee of 21; which committee is nominated by the ſeven nations, three out of each nation. The election muſt be over within three days of the death of the former grand-maſter; and, during theſe three days, there is ſcarce a ſoul that ſleeps at Malta: all is cabal and intrigue; and moſt of the knights are maſked, to prevent their particular attachments and connections from being known: the moment the election is over, every thing returns to its former channel.

“ The land-force of Malta is equal to the number of men in the iſland fit to bear arms. They have about 500 regulars belonging to the ſhips of war; and 150 compoſe the guard of the prince. The two iſlands of Malta and Gozzo contain about 150,000 inhabitants. The men are exceeding robuſt and hardy. I have ſeen them row for 10 or 12 hours without intermiſſion, and without even appearing to be fatigued. Their ſea-force conſiſts of 4 gallies, 3 galliots, 4 ſhips of 60 guns, and a frigate of 36, beſides a number of the quick-ſailing little veſſels called *ſcampavias*, (literally *runaways*.) Their ſhips, galleys, and fortifications, are not only well ſupplied with excellent artillery, but they have likewiſe invented a kind of ordnance of their own, unknown to all the world beſides. For we found, to our no ſmall amazement, that the rocks were not only cut into fortifications, but likewiſe into artillery, to defend theſe fortifications, being hollowed out, in many places, into the form of immenſe mortars. The charge is ſaid to be about a barrel of gunpowder, over which they place a large piece of wood, made exactly to fit the mouth of the chamber. On this they heap a great quantity of cannon-balls, ſhells, or other deadly materials; and when an enemy's ſhip approaches the harbour, they fire the whole into the air: and they pretend it produces a very great effect; making a ſhower for 200 or 300 yards round, that would ſink any veſſel.

“ Notwithſtanding the ſuppoſed bigotry of the Malteſe, the ſpirit of toleration is ſo ſtrong, that a moſque has been lately built for their ſworn enemies the Turks. Here the poor ſlaves are allowed to enjoy their religion in peace. It happened lately that ſome idle boys diſturbed them during their ſervice; they were immediately ſent to priſon, and ſeverely puniſhed. The police indeed is much better regulated than in the neighbouring countries, and aſſaſſinations and robberies are very uncommon; the laſt of which crimes the grand-maſter puniſhes with the utmoſt ſeverity. He is ſaid to be much more relaxed with regard to the firſt.

“ Perhaps Malta is the only country in the world where duelling is permitted by law. As their whole eſtabliſhment is originally founded on the wild and romantic principles of chivalry, they have ever found it too inconſiſtent with thoſe principles to aboliſh duelling; but they have laid it under ſuch reſtrictions as greatly to leſſen its danger. Theſe are curious enough. The duelliſts are obliged to decide their quarrel in one particular ſtreet of the city; and if they preſume to fight any where elſe, they are liable to the rigour of the law. But, what is not leſs ſingular, but much more in their favour, they are obliged, under the moſt ſevere penalties, to put up their ſwords when ordered to do ſo by a *woman*, a *prieſt*, or a *knight*. Under theſe limitations, in the midſt of a great city, one would imagine it almoſt impoſſible that a duel could ever end in blood; however, this is not the caſe: a croſs is always painted oppoſite to the ſpot where a knight has been killed, in commemoration of his fall. We counted about 20 of theſe croſſes.

“ About three months ago, (Mr Brydone's letter is dated June 7. 1770), two knights had a diſpute at a billiard-table. One of them, after giving a great deal of abuſive language, added a blow; but, to the aſtoniſhment of all Malta, (in whoſe annals there is not a ſimilar inſtance), after ſo great a provocation, he abſolutely refuſed to fight his antagoniſt. The challenge was repeated, and he had time to reflect on the conſequences; but ſtill he refuſed to enter the liſts. He was condemned to make the *amende honorable* in the great church of St John for 45 days ſucceſſively; then to be confined in a dungeon, without light, for five years; after which, he is to remain a priſoner in the caſtle for life. The unfortunate young man who received this blow is likewiſe in diſgrace, as he has not had an opportunity of wiping it out in the blood of his adverſary.

“ The horſe-races of Malta are of a very uncommon kind. They are performed without either ſaddle, bridle, whip, or ſpur; and yet the horſes are ſaid to run full ſpeed, and to afford a great deal of diverſion. They are accuſtomed to the ground for ſome weeks before; and although it is entirely over rock and pavement, there are very ſeldom any accidents. They have races of aſſes and mules performed in the ſame manner four times every year. The rider is only furniſhed with a machine like a ſhoemaker's awl, to prick on his courſer if he is lazy.

“ As Malta is an epitome of all Europe, and an aſſemblage of the younger brothers, who are commonly the beſt, of its firſt families, it is probably one of the beſt academies for politeneſs in this part of the globe; beſides, where every one is entitled by law as well as cuſtom, to demand ſatisfaction for the leaſt breach of it, people are under a neceſſity of being very exact and circumſpect, both with regard to their words and actions.”

Knights of MALTA, otherwiſe called *Hoſpitalers of St John of Jeruſalem.* A religious-military order, whoſe reſidence is in the iſland of Malta, ſituated in the Mediterranean Sea, upon the coaſt of Africa. The Knights of Malta, ſo famous for defending Chriſtendom, had their riſe as follows.

Some time before the journey of Godfrey of Bouillon into the Holy Land, ſome Neapolitan merchants, who traded in the Levant, obtained leave of the caliph of Egypt to build an houſe for thoſe of their nation who came thither in pilgrimage, upon paying an annual tribute. Afterwards they built two churches, and received the pilgrims with great zeal and charity. This example being followed by others, they founded a church in honour of St John, and an hoſpital for the ſick; whence they took the name of *Hoſpitalers*. A little after Godfrey of Bouillon had taken Jeruſalem, in 1099, they began to be diſtinguiſhed by black habits and a croſs with eight points; and, beſides the ordinary vows, they made another, which was to defend the pilgrims againſt the inſults of the infidels. This foundation was completed in 1104, in the reign of Baldwin; and ſo their order became military, into which many perſons of quality entered, and changed the name of *hoſpitalers* into that of *knights*.

When Jeruſalem was taken, and the Chriſtians loſt their power in the Eaſt, the knights retired to Acre or Ptolemais, which they defended valiantly in 1290. Then they followed the king of Cyprus, who gave them Limiſſon in his dominions, where they ſtaid till 1310. That ſame year they took Rhodes, under the grand-maſter Foulques de Villaret, a Frenchman; and next year defended it againſt an army of Saracens: ſince which the grand-maſters have uſed theſe four letters, F. E. R. T. i. e. *Fortitudo ejus Rhodum tenuit;* and the order was from thence called *knights of Rhodes*.

In 1522, Soliman having taken Rhodes, the knights retired into Candia, and thence into Sicily. In 1530, Charles V. gave them the iſland of Malta, to cover his kingdom of Sicily from the Turks. In 1566, Soliman beſieged Malta; but it was gallantly defended by the grand-maſter John de Valette Pariſot, and the Turks obliged to quit the iſland with great loſs.

The knights conſiſted of eight different languages or nations, of which the Engliſh were formerly the ſixth; but at preſent they are but ſeven, the Engliſh having withdrawn themſelves. The firſt is that of Provence, whoſe chief is grand commendator of religion: the ſecond, of Auvergne; whoſe chief is mareſchal of the order: the third, of France, whoſe chief is grand-hoſpitaler: the fourth, of Italy; and their chief, admiral: the fifth, of Arragon; and their chief, grand-conſervator: the ſixth, of Germany; and their chief, grand-bailiff of the order: the ſeventh, of Caſtile; and their chief, grand-chancellor. The chief of the Engliſh was grand-commander of the cavalry.

None are admitted into this order but ſuch as are of noble birth both by father and mother's ſide for four generations, excepting the natural ſons of kings and princes. The knights are of two ſorts; thoſe who have a right to be candidates for the dignity of grand-maſter, called *grand-croſſes;* and thoſe who are only *knights aſſiſtants*, who are taken from good families. They never marry; yet have continued from 1090 to the preſent time.

The order conſiſts of three eſtates; the knights, chaplains, and ſervants at arms. There are alſo prieſts who officiate in the churches; friar-ſervants, who aſſiſt at the offices; and *donnes*, or *demi-croſſes;* but theſe are not reckoned as conſtituent parts of the body. This diviſion was made in 1130, by the grand-maſter Raimond du Puy.

The government of the order is mixed, being partly monarchical, and partly ariſtocratical. The grand-maſter is ſovereign, coins money, pardons criminals, and gives the places of grand-priors, bailiffs, knights, &c. The ordinary council is compoſed of the grand-maſter, and the grand-croſſes. Every language has ſeveral grand priories, and every priory a certain number of commanderies.

The knights are received into this order, either by undergoing the trials preſcribed by the ſtatutes, or by diſpenſation. The diſpenſations are obtained either by the pope's brief, or by a general chapter of the order, and are granted in caſe of ſome defect as to the nobility of their pedigree, eſpecially on the mother's ſide. The knights are received, either as of age, under minority, or pages to the grand-maſter. They muſt be 16 years old complete before they are received: they enter into the noviciate at 17, and are profeſſed at 18. They ſometimes admit infants of one year old; but the expence is about 4000 livres. The grand-maſter has 16 pages who ſerve him, from 12 to 16 years of age. The knights wear on the left-ſide of their cloak or waiſtcoat a croſs of white waxed cloth, with eight points, which is their true badge; that of gold being only for ornament. When they go to war againſt the Turks they wear a red caſſock, with a great white croſs before and behind, without points, which are the arms of the religion. The ordinary habit of the grand-maſter is a ſort of caſſock of tabby-cloth, tied about with a girdle, at which hangs a great purſe, to denote the charitable inſtitution of the order. Over this he wears a velvet gown; and on the left ſide a white croſs with eight points. His yearly revenue is 10,000 ducats. He acknowledges the kings of Spain, and both the Sicilies, as his protectors; and is obliged, by his agreement with the emperor Charles V. to ſuppreſs pirates.

MALTON, a town of the north-riding of Yorkſhire in England, ſeated on the river Derwent, over which there is a good ſtone-bridge. It is compoſed of two towns, the New and the Old; and is well inhabited, accommodated with good inns, and ſends two members to parliament. W. Long. 0. 30. N. Lat. 54. 8.

MALVA, the MALLOW; a genus of the polyandria order, belonging to the monadelphia claſs of plants. There are 24 ſpecies; conſiſting of herbaceous perennials, biennials, and annuals, for medical and ornamental uſes; riſing with erect ſtalks from about half a yard to 10 or 12 feet high, garniſhed with large, roundiſh, lobated leaves, and quinquepetalous flowers. They are all eaſily and plentifully raiſed from ſeed. The leaves of the common mallow are reckoned the firſt of the four emollient herbs: they were formerly in ſome eſteem, as food, for looſening the belly; at preſent, decoctions of them are ſometimes employed in dyſenteries, heat, and ſharpneſs of urine; and, in general, for obtunding acrimonious humours: their principal uſe is in emollient glyſters, cataplaſms, and fomentations. The leaves enter the officinal decoction for glyſters, and a conſerve is prepared from the flowers.

MALVEZZI (Virgilio marquis de), an Italian gentleman, born at Bologna, acquired great reputation by his learning and writings. He was well verſed in polite literature, muſic, law, phyſic, and the mathematics. He ſerved alſo in a diſtinguiſhed poſt in the army of Philip IV. king of Spain, and was employed by him in ſome important negociations. He died at Bologna, in the year 1654, leaving ſeveral works in Spaniſh and Italian. Among the latter, are his Diſcourſes on the Firſt Book of Tacitus: this work has been tranſlated into Engliſh.

MALUS, in botany. See PYRUS.

MAMALUKES, the name of a dynaſty that reigned in Egypt. See that article, n° 98.

MAMBRUN (Peter), an ingenious and learned French Jeſuit, born in the dioceſe of Clermont, in the year 1581. He was one of the moſt perfect imitators of Virgil in Latin poetry, and his poems are of the ſame ſpecies: Thus he wrote *Eclogues; Georgics*, or four books on the culture of the ſoul and the underſtanding; together with a heroic poem intitled *Conſtantine, or Idolatry overthrown*. He ſhewed alſo great critical abilities in a Latin *Peripatetical diſſertation on epic poetry*. He died in 1661.

MAMERTUM, or MAMERTIUM, (anc. geog.), an inland town of the Brutti. *Mamertini*, the people; ſaid to have been expelled their country, and to have been hoſpitably received by the people of Meſſana in Sicily; and thus the Meſſanenſes were called *Mamertini*. *Mamertinum Fretum*, the ſtrait between Italy and Sicily.

MAMMÆ, in anatomy. See there, n° 376.

MAMMON, the god of riches, according to ſome authors; tho' others deny that the word ſtands for ſuch a deity, and underſtand by it only *riches* themſelves. Our Saviour ſays, We *cannot ſerve God and mammon;* that is, be religious and worldly-minded at the ſame time. Our poet Milton makes Mammon to be one of the fallen angels, and gives us his character in the following lines.

> Mammon, the leaſt erected ſpirit that fell
> From heav'n: for ev'n in heaven his looks and thoughts
> Were always downward bent; admiring more
> The riches of heav'n's pavement, trodden gold,
> Than ought divine, or holy elſe enjoy'd,
> In beatific viſion: by him firſt
> Man alſo, and by his ſuggeſtion taught,
> Ranſack'd the centre, and with impious hands
> Rifled the bowels of their mother earth,
> For treaſures better hid. Soon had his crew
> Open'd into the hill a ſpacious wound,
> And digg'd out ribs of gold. Let none admire,
> That riches grow in hell; that ſoil may beſt
> Deſerve the precious bane.

MAMMEA, MAMMEE-*Tree*; a genus of the monogynia order, belonging to the polyandria claſs of plants. There are two ſpecies; both of them large ever-green trees of the hot parts of America and Aſia, and retained here in hot-houſes for variety; both of them adorned with large, oval, oblong, ſtiff leaves, and large quadripetalous flowers, ſucceeded by large round eatable fruit of a moſt exquiſitely rich flavour. They are propagated by ſeed, which is to be ſowed in ſmall pots of light earth, and plunged in the bark-bed, where they will ſoon come up; give gentle waterings, and about Auguſt tranſplant them into ſeparate pots a ſize larger, plunging them into the bark-bed, and giving ſhade and water till freſh-rooted. In this country they muſt never be taken out of the ſtove.

MAN, HOMO, in zoology, is juſtly reckoned at the head of the animal-part of the creation; making a diſtinct genus of that order of quadrupeds which Linnæus calls *anthropomorpha*, from their reſemblance to the human form.

The ſame author diſtinguiſhes the race of mankind, according to their different colours, into the Europeans, or white men; the Americans, or ruddy-coloured men; the Aſiatics, or tawney-coloured men; and thoſe of Africa, or blacks.

Noſce teipſum, "Know thyſelf," is a precept worthy of the lawgiver of Athens, the ancient ſeat of polite literature; an important branch of knowledge, which may be reduced to the following heads. 1. In a religious view, *theologicè*, that you was created with an immortal ſoul, after the image of God. 2. In a moral ſenſe, *moraliter*, that you alone was bleſſed with a rational ſoul, to be employed to the praiſe of the Creator. 3. With reſpect to the other works of the creation, *naturaliter*, that you are conſtituted their lord, for whoſe uſe they were made. 4. In a phyſiological ſenſe, *phyſiologicè*, the moſt perfect and amazing fabric of your body. 5. With regard to diet, *diæteticè*, what things are uſeful, and what hurtful, in this reſpect. 6. In a pathological ſenſe, *pathologicè*, how frail you are, and how ſubject to a thouſand calamities.

Theſe are the heads which, according to Linnæus, comprehend the knowledge of man, conſidered as an individual; a branch of knowledge ſo eſſential to the human race, that, without it, he ſeems to doubt whether any other characters be ſufficient to entitle one to be ranked among mankind: for he adds, *Hæc ſi noveris*, HOMO *es, et à reliquis animalibus diſtinctiſſimum genus*.

The whole of this work may, in ſome reſpect, be accounted an analyſis of MAN; as comprehending his knowledge of God, of himſelf, and of natural and artificial objects.

Iſland of MAN, an iſland in the Iriſh ſea, lying about ſeven leagues north from Angleſey, about the ſame diſtance weſt from Lancaſhire, nearly the like diſtance ſouth-eaſt from Galloway, and nine leagues eaſt from Ireland. Its form is long and narrow, ſtretching from the north-eaſt point of Ayr to the Calf of Man, which lies ſouth-weſt, at leaſt 30 Engliſh miles. Its breadth in ſome places is more than nine miles, in moſt places eight, and in ſome not above five, and contains about 160 ſquare miles.

The firſt author who mentions this iſland is Cæſar; for there can be as little doubt, that, by the *Mona*, of which he ſpeaks in his Commentaries, placing it in the midſt between Britain and Ireland, we are to underſtand Man; as that the *Mona* of Tacitus, which he acquaints us had a fordable ſtreight between it and the continent, can be applied only to Angleſey. Pliny has ſet down both iſlands; *Mona*, by which he intends Angleſey, and *Monabia*, which is Man. In Ptolemy we find *Monaœda*, or *Monaida*, that is, the farther or more remote Môn. Oroſius ſtyles it *Menavia;* tells us, that it was not extremely fertile; and that this, as well as Ireland, was then poſſeſſed by the Scots. Beda, who diſtinguiſhes clearly two Menavian iſlands, names this the *northern Menavia*, beſtowing the epithet of *ſouthern* upon Angleſey. In ſome copies of Nennius, this iſle is denominated *Eubonia;* in others, *Menavia;* but both are explained to mean *Man*. Alured of Beverley alſo ſpeaks of it as one of the Menavian iſlands. The Britons, in their own language, called it *Manaw*, more properly *Main au*, *i. e.* "a little iſland," which ſeems to be Latinized in the word *Menavia*. All which clearly proves, that this ſmall iſle was as early inhabited, and as well known to the reſt of the world, as either Britain or Ireland.

In the cloſe of the firſt century, the Druids, who were the prieſts, prophets, and philoſophers of the old Britons, were finally expelled by Julius Agricola from the ſouthern Mona; and we are told, that they then took ſhelter in the northern. This iſland they found well planted with firs; ſo that they had, in ſome meaſure, what they delighted in moſt, the ſhelter of trees; but, however, not the ſhelter of thoſe trees in which they moſt delighted, viz. the oaks: and therefore theſe they introduced. No hiſtory tells us this; but we learn it from more certain authority, great woods of fir having been diſcovered interred in the bowels of the earth, and here and there ſmall groves of oaks: but as theſe trees are never met with intermixed, ſo it is plain they never grew together; and as the former are by far the moſt numerous, we may preſume them the natural produce of the country, and that the latter were planted and preſerved by the Druids. They gave the people, with whom they lived, and over whom they ruled, a gentle government, wiſe laws, but withal a very ſuperſtitious religion. It is alſo very likely that they hindered them, as much as they could, from having any correſpondence with their neighbours; which is the reaſon that, though the iſland is mentioned by ſo many writers, not one of them, before Oroſius, ſays a word about the inhabitants. A little before his time, that is, in the beginning of the fifth century, the Scots had tranſported themſelves thither, it is ſaid, from Ireland. The tradition of the natives of Man (for they have a traditionary hiſtory,) begins at this period. They ſtyle this firſt diſcoverer *Mannan Mac Lear*; and they ſay that he was a magician, who kept this country covered with miſts, ſo that the inhabitants of other places could never find it. But the ancient chronicles of Ireland inform us, that the true name of this adventurer was *Orbſenius*, the ſon of Alladius, a prince in their iſland; and that he was ſurnamed *Mannanan*, from his having firſt entered the iſland of Man, and *Mac Lir*, i. e. "the offspring of the ſea," from his great ſkill in navigation. He promoted commerce; and is ſaid to have given a good reception to St Patrick, by whom the natives were converted to Chriſtianity.

The princes who ruled after him ſeem to have been of the ſame line with the kings of Scotland, with which country they had a great intercourſe, aſſiſting its monarchs in their wars, and having the education of their princes confided to them in time of peace.

In the beginning of the ſeventh century, Edwin, king of Northumberland invaded the Menavian iſlands, ravaged Man, and kept it for ſome time, when, Beda aſſures us, there were in it about 300 families; which was leſs than a third part of the people in Angleſey, though Man wants but a third of the ſize of that iſland.

The ſecond line of their princes they derive from Orri, who, they ſay, was the ſon of the king of Norway; and that there were 12 princes of this houſe who governed Man. The old conſtitution, ſettled by the Druids, while they ſwayed the ſceptre, was perfectly reſtored; the country was well cultivated, and well peopled; their ſubjects were equally verſed in the exerciſe of arms, and in the knowledge of the arts of peace: in a word, they had a conſiderable naval force, an extenſive commerce, and were a great nation, tho' inhabiting only a little iſle. Guttred the ſon of Orri built the caſtle of Ruſſyn, A. D. 960, which is a ſtrong place, a large palace, and has ſubſiſted now above 800 years. Macao was the ninth of theſe kings, and maintained an unſucceſsful ſtruggle againſt Edgar, who reduced all the little ſovereigns of the different parts of Britain to own him for their lord; and who, upon the ſubmiſſion of Macao, made him his high-admiral, by which title (*archipirata*, in the Latin of thoſe times,) he ſubſcribes that monarch's charter to the abbey of Glaſtonbury.

After the death of Edward the Confeſſor, when Harold, who poſſeſſed the crown of England, had defeated the Norwegians at the battle of Stamford, there was amongſt the fugitives one Goddard Crownan, the ſon of Harold the Black, of Iceland, who took ſhelter in the iſle of Man. This iſle was then governed by another Goddard, who was a deſcendant from Macao, and he gave him a very kind and friendly reception. Goddard Crownan, during the ſhort ſtay he made in the iſland, perceived that his name-ſake was univerſally hated by his ſubjects; which inſpired him with hopes that he might expel the king, and become maſter of the iſland. This he at laſt accompliſhed, after having defeated and killed Fingal the ſon of Goddard, who had ſucceeded his father. Upon this he aſſigned the north part of the iſland to the natives, and gave the ſouth to his own people; becoming, in virtue of his conqueſt, the founder of their third race of princes. However he might acquire his kingdom, he governed it with ſpirit and prudence; made war with ſucceſs in Ireland; gained ſeveral victories over the Scots in the Iſles; and, making a tour through his new-obtained dominions, deceaſed in the iſland of Iſlay. He left behind him three ſons. A civil war breaking out between the two eldeſt, and both of them deceaſing in a few years, Magnus king of Norway coming with a powerful fleet, poſſeſſed himſelf of Man and the iſles, and held them as long as he lived; but, being ſlain in Ireland, the people invited home Olave, the youngeſt ſon of Goddard Crownan, who had fled to the court of England, and been very honourably treated by Henry the Second. There were in the whole nine princes of this race, who were all of them feudatories to the kings of England; and often reſorted to their court, were very kindly received, and had penſions beſtowed upon them. Henry III. in particular, charged Olava, king of Man, with the defence of the coaſts of England and Ireland; and granted him annually for that ſervice 40 marks, 100 meaſures of wheat, and five pieces of wine. Upon the demiſe of Magnus, the laſt king of this iſle, without heirs-male, Alexander III. king of Scots, who had conquered the other iſles, ſeized likewiſe upon this; which, as parcel of that kingdom, came into the hands of Edward I. who directed William Huntercumbe, guardian or warden of that iſle for him, to reſtore it to John Baliol, who had done homage to him for the kingdom of Scotland.

But it ſeems there was ſtill remaining a lady named *Auſtrica*, who claimed this ſovereignty, as couſin and neareſt of kin to the deceaſed Magnus. This claimant being able to obtain nothing from John Baliol, applied herſelf next to king Edward, as the ſuperior lord. He, upon this application, by his writ, which is yet extant, commanded both parties, in order to determine their right, to appear in the king's-bench. The progreſs of this ſuit does not appear; but we know farther, that this lady, by a deed of gift, conveyed her claim to Sir Simon de Montacute; and, after many diſputes, invaſions by the Scots, and other accidents, the title was examined in parliament, in the ſeventh of Edward III. and ſolemnly adjudged to William de Montacute; to whom, by letters-patent, dated the ſame year, that monarch releaſed all claim whatſoever.

In the ſucceeding reign, William Montacute, earl of Saliſbury, ſold it to Sir William Scroop, afterwards earl of Wiltſhire; and, upon his loſing his head, it was granted by Henry IV. to Henry Percy, earl of Northumberland; who, being attainted, had, by the grace of that king, all his lands reſtored, except the iſle of Man, which the ſame monarch granted to Sir John Stanley, to be held by him of the kings his heirs and ſucceſſors, by homage, and a caſt of falcons to be preſented at every coronation. Thus it was poſſeſſed by this noble family, who were created earls of Derby, till the reign of queen Elizabeth; when, upon the demiſe of earl Ferdinand, who left three daughters, it was, as lord Coke tells us, adjudged to thoſe ladies, and from them purchaſed by William earl of Derby, the brother of Ferdinand, from whom it was claimed by deſcent, and adjudged to its preſent poſſeſſor, his grace the duke of Athol.

This iſland, from its ſituation directly in the mouth of the channel, is very beneficial to Britain, by leſſening the force of the tides, which would otherwiſe break with far greater violence than they do at preſent. The air is ſharp, but the winters are not ſevere; froſts ſeldom happen, and are of no great continuance; neither does ſnow lie long upon the ground. But they are frequently expoſed to very high winds, and at other times to miſts, which, however, are not at all unwholeſome. The ſoil towards the north is dry and ſandy, of conſequence unfertile, but not unimproveable; the mountains, which may include near two-thirds of the iſland, are bleak and barren; yet afford excellent peat, and contain ſeveral kinds of metals. They maintain alſo a kind of ſmall ſwine, called PURRS, which are eſteemed excellent pork. In the valleys there is as good paſture, hay, and corn, as in any of the northern counties; and the ſouthern part of the iſland is as fine ſoil as can be wiſhed. They have marl and lime-ſtone ſufficient to render even their pooreſt lands fertile; excellent ſlate, rag-ſtone, black marble, and ſome other kinds for building. They have vegetables of all ſorts, and in the utmoſt perfection; potatoes in immenſe quantities; and, where proper pains have been taken, they have tolerable fruit. They have alſo hemp, flax, large crops of oats and barley, and ſome wheat. Hogs, ſheep, goats, black cattle, and horſes, they have in plenty; and, tho' ſmall in ſize, yet if the country was thoroughly and ſkilfully cultivated, they might improve the breed of all animals, as experience has ſhown. They have rabbits and hares very fat and fine; tame and wild fowl in great plenty; and in their high mountains they they have one airy of eagles, and two of excellent hawks. Their rivulets furniſh them with ſalmon, trout, eels, and other kinds of freſh-water fiſh; on their coaſts are caught cod, turbot, ling, halibut, all ſorts of ſhell-fiſh, (oyſters only are ſcarce, but large and good), and herrings, of which they made anciently a great profit, though this fiſhery is of late much declined.

The commodities of this iſland are not many in number, nor of great value. Their ſlates are eſteemed not inferior to any; their black marble is very hard, and bears a fine poliſh; and, occaſionally, they export ſome of each, as they formerly did a little grain, and a conſiderable quantity of ale; but, of late years, both have been found hardly equal to the home-conſumption. The reſt are lambs-wool, hides, tallow, fiſh-oil, wax, and honey.

The inhabitants of Man, though far from being unmixed, were, perhaps, till within the courſe of the preſent century, more ſo than any other under the dominion of the crown of Great Britain; to which they are very proud of being ſubjects, though, like the inhabitants of Jerſey and Guernſey, they have a conſtitution of their own, and a peculiarity of manners naturally reſulting from a long enjoyment of it.—The Manks tongue is the only one ſpoken by the common people. It is the old Britiſh, mingled with Norſe, or the Norwegian language, and the modern language. The clergy preach and read the common prayer in it; however, a ſhort catechiſm, carefully taught in the ſchools, is the only printed book they have. In ancient times they were diſtinguiſhed by their ſtature, courage, and great ſkill in maritime affairs. They are at this day a briſk, lively, hardy, induſtrious, and well-meaning people. Their frugality defends them from want: and though there are few that abound, there are as few in diſtreſs; and thoſe that are, meet with a cheerful unconſtrained relief. On the other hand, they are choleric, loquacious, and as the law till lately was cheap, and unincumbered with ſolicitors and attornies, not a little litigious. The revenue, in the earl of Derby's time, amounted to about 2500 l. a-year; from which, deducting his civil liſt, which was about 700 l. the clear income amounted to 1800 l. At the ſame time the number of his ſubjects was computed at 20,000.—The ſovereign of Man, though he has long ago waved the title of king, was ſtill inveſted with regal rights and prerogatives; but the diſtinct juriſdiction of this little ſubordinate royalty, being found inconvenient for the purpoſes of public juſtice, and for the revenue, (it affording a commodious aſylum for debtors, outlaws, and ſmugglers), authority was given to the treaſury, by ſtat. 12. Geo. I. c. 28. to purchaſe the intereſt of the then proprietors for the uſe of the crown: which purchaſe was at length completed in the year 1765, and confirmed by ſtat. 5. Geo. III. c. 26. and 39.; whereby the whole iſland and all its dependencies, (except the landed property of the Athol family), their manerial rights and emoluments, and the patronage of the biſhopric and other eccleſiaſtical benefices, are unalienably veſted in the crown, and ſubjected to the regulation of the Britiſh exciſe and cuſtoms.

MANAGE. See MANEGE.

MANATI, in zoology. See TRICHECUS.

MANCA, was a ſquare piece of gold coin, commonly valued at 30 pence; and *mancuſa* was as much as a mark of ſilver, having its name from *manu-cuſa*, being coined with the hand. *Leg. Canut.* But the *manca* and *mancuſa* were not alway of that value; for ſometimes the former was valued at ſix ſhillings, and the latter, as uſed by the Engliſh Saxons, was equal in value to our half-crown. Manca *ſex ſolidis æſtimetur.* Leg. H. I. c. 69. Thorn, in his chronicle, tells us, that mancuſa *eſt pondus duorum ſolidorum et ſex denariorum;* and with him agrees Du Cange, who ſays, that 20 *mancæ* make 50 ſhillings. *Manca* and *mancuſa* are promiſcuouſly uſed in the old books for the ſame money.

MANCANCEL or **MANCHENEEL**. See HIPPOMANE.

MANCHA, a territory of Spain in the province of New Caſtile, lying between the river Guardiana and Andaluſia. It is a mountainous country; and it was here that the famous Don Quixote was ſuppoſed to perform his exploits.

MANCHESTER, a town of Lancaſhire in England, ſituated in W. Long. 2. 42. N. Lat. 53. 27.—Of this place the Rev^{d} Mr Whitaker has publiſhed a hiſtory in two octavo volumes; but as he does not confine himſelf merely to the town of Mancheſter, but takes in many particulars of the hiſtory and antiquities of other parts of Britain, and even Ireland, his work is incapable of abridgement; though in many places of this Dictionary we have made excerpts from particular paſſages of it.—He conjectures that the ſtation was firſt occupied by the Britons about 500 B. C. but that it firſt received any thing like the form of a town 450 years after, or 50 B. C. when the Britons of Cheſhire made an irruption into the territories of their ſouthern neighbours, and of conſequence alarmed the Seſtuntii, or inhabitants of Lancaſhire, ſo much, that they began to build fortreſſes in order to defend their country. Its Britiſh name was *Mancenion*, which was changed by the Romans, who conquered it under Agricola, A. D. 79, into *Mancunium*; from whence comes the preſent name of *Mancheſter*.

The town is now very populous, large, and flouriſhing, and has ſeveral curious manufactures, known at London by the name of *Mancheſter goods*. Their velvets are lately come into great repute, and are much made uſe of for breeches. Its chief ornaments are the college, the market-place, and the collegiate church; which laſt has a ſmall choir of excellent workmanſhip. There is alſo an elegant exchange, and a ſtone-bridge over the river Irwell, the arches of which are extremely high, on account of the nature of the river; which, deſcending from the mountainous part of the country, ſometimes riſes four or five yards in one night.—The town ſends no members to parliament, but has the title of a duchy.

MANCIPLE (*manceps*), a clerk of the kitchen, or caterer; and an officer in the inner temple was antiently ſo called, who is now the ſteward there; of whom Chaucer, the ancient Engliſh poet, ſome time a ſtudent of that houſe thus writes:

> A manciple there was within the temple,
> Of which all caterers might take enſample.

This officer ſtill remains in colleges, in the univerſities.

MANDAMUS, in law, a writ that iſſues out of the court of king's-bench, ſent to a corporation, commanding them to admit or reſtore a perſon to his office. This writ alſo lies where juſtices of the peace refuſe to admit a perſon to take the oaths in order to qualify himſelf for enjoying any poſt or office; or where a biſhop or archdeacon refuſes to grant a probate of a will, to admit an executor to prove it, or to ſwear a church-warden, &c.

MANDARINS, a name given to the magiſtrates and governors of provinces in China, who are choſen out of the moſt learned men, and whoſe government is always at a great diſtance from the place of their birth. Mandarin is alſo a name given by the Chineſe to the learned language of the country; for beſides the language peculiar to every province, there is one common to all the learned in the empire, which is in China what Latin is in Europe; this is called the *mandarin tongue*, or the *language* of the *court*.

MANDATE, in law, a judicial commandment to do ſomething, See the article MANDAMUS.

MANDATE, in the canon law, a reſcript of the pope, commanding an ordinary collator to put the perſon therein named in poſſeſſion of the firſt vacant benefice in his collation.

MANDERSCHEIT, a town of Germany in the circle of the Lower Rhine, and in the electorate of Triers, capital of a county of the ſame name, between the dioceſe of Triers and the duchy of Juliers. E. Long. 6. 32. N. Lat. 50. 20.

MANDEVILLE (Sir John), a phyſician, famous for his travels, was born at St Alban's, about the beginning of the fourteenth century. He had a liberal education, and applied himſelf to the ſtudy of phyſic; but being at length ſeized with an invincible deſire of ſeeing diſtant parts of the globe, he left England in 1332, and did not return till 34 years after. His friends, who had long ſuppoſed him dead, did not know him when he appeared. He had travelled through almoſt all the eaſt, and made himſelf maſter of a great variety of languages. He particularly viſited Scythia, Armenia the Greater and Leſs, Egypt, Arabia, Syria, Media, Meſopotamia, Perſia, Chaldea, Greece, Dalmatia, &c. His rambling diſpoſition did not ſuffer him to reſt; for he left his own country a ſecond time, and died at Liege in the Netherlands, in 1372. He wrote an Itinerary, or an account of his travels, in Engliſh, French, and Latin.

MANDEVILLE (Bernard de), an eminent writer in the eighteenth century, was born in Holland, where he ſtudied phyſic, and took the degree of doctor in that faculty. He afterwards came over into England, and in 1714 publiſhed a poem, intitled, "The Grumbling Hive, or Knaves turned honeſt;" upon which he afterwards wrote remarks, and publiſhed the whole at London, 1723, in 8vo, under the title of, "The Fable of the Bees, or private Vice made public Benefits; with an Eſſay on Charity and Charity-ſchools, and a Search into the Nature of Society." This book was preſented by the jury of Middleſex in July the ſame year, and ſeverely animadverted upon in "A letter to the Right Honourable Lord C. printed in the London Journal of Saturday July 27. 1723." Our author publiſhed a vindication. His book was attacked by ſeveral writers, He publiſhed other pieces, and died in 1724.

MANDRAGORA, in botany. See ATROPA.

lord. He, upon this application, by his writ, which is yet extant, commanded both parties, in order to determine their right, to appear in the king's-bench. The progreſs of this ſuit does not appear; but we know farther, that this lady, by a deed of gift, conveyed her claim to Sir Simon de Montacute; and, after many diſputes, invaſions by the Scots, and other accidents, the title was examined in parliament, in the ſeventh of Edward III. and ſolemnly adjudged to William de Montacute; to whom, by letters-patent, dated the ſame year, that monarch releaſed all claim whatſoever.

In the ſucceeding reign, William Montacute, earl of Saliſbury, ſold it to Sir William Scroop, afterwards earl of Wiltſhire; and, upon his loſing his head, it was granted by Henry IV. to Henry Percy, earl of Northumberland; who, being attainted, had, by the grace of that king, all his lands reſtored, except the iſle of Man, which the ſame monarch granted to Sir John Stanley, to be held by him of the kings his heirs and ſucceſſors, by homage, and a caſt of falcons to be preſented at every coronation. Thus it was poſſeſſed by this noble family, who were created earls of Derby, till the reign of queen Elizabeth; when, upon the demiſe of earl Ferdinand, who left three daughters, it was, as lord Coke tells us, adjudged to thoſe ladies, and from them purchaſed by William earl of Derby, the brother of Ferdinand, from whom it was claimed by deſcent, and adjudged to its preſent poſſeſſor, his grace the duke of Athol.

This iſland, from its ſituation directly in the mouth of the channel, is very beneficial to Britain, by leſſening the force of the tides, which would otherwiſe break with far greater violence than they do at preſent. The air is ſharp, but the winters are not ſevere; froſts ſeldom happen, and are of no great continuance; neither does ſnow lie long upon the ground. But they are frequently expoſed to very high winds, and at other times to miſts, which, however, are not at all unwholeſome. The ſoil towards the north is dry and ſandy, of conſequence unfertile, but not unimproveable; the mountains, which may include near two-thirds of the iſland, are bleak and barren; yet afford excellent peat, and contain ſeveral kinds of metals. They maintain alſo a kind of ſmall ſwine, called PURRS, which are eſteemed excellent pork. In the valleys there is as good paſture, hay, and corn, as in any of the northern counties; and the ſouthern part of the iſland is as fine ſoil as can be wiſhed. They have marl and lime-ſtone ſufficient to render even their pooreſt lands fertile; excellent ſlate, rag-ſtone, black marble, and ſome other kinds for building. They have vegetables of all ſorts, and in the utmoſt perfection; potatoes in immenſe quantities; and, where proper pains have been taken, they have tolerable fruit. They have alſo hemp, flax, large crops of oats and barley, and ſome wheat. Hogs, ſheep, goats, black cattle, and horſes, they have in plenty; and, tho' ſmall in ſize, yet if the country was thoroughly and ſkilfully cultivated, they might improve the breed of all animals, as experience has ſhown. They have rabbits and hares very fat and fine; tame and wild fowl in great plenty; and in their high mountains they they have one airy of eagles, and two of excellent hawks. Their rivulets furniſh them with ſalmon, trout, eels, and other kinds of freſh-water fiſh; on their coaſts are caught cod, turbot, ling, halibut, all ſorts of ſhell-fiſh, (oyſters only are ſcarce, but large and good), and herrings, of which they made anciently a great profit, though this fiſhery is of late much declined.

The commodities of this iſland are not many in number, nor of great value. Their ſlates are eſteemed not inferior to any; their black marble is very hard, and bears a fine poliſh; and, occaſionally, they export ſome of each, as they formerly did a little grain, and a conſiderable quantity of ale; but, of late years, both have been found hardly equal to the home-conſumption. The reſt are lambs-wool, hides, tallow, fiſh-oil, wax, and honey.

The inhabitants of Man, though far from being unmixed, were, perhaps, till within the courſe of the preſent century, more ſo than any other under the dominion of the crown of Great Britain; to which they are very proud of being ſubjects, though, like the inhabitants of Jerſey and Guernſey, they have a conſtitution of their own, and a peculiarity of manners naturally reſulting from a long enjoyment of it.—The Manks tongue is the only one ſpoken by the common people. It is the old Britiſh, mingled with Norſe, or the Norwegian language, and the modern language. The clergy preach and read the common prayer in it; however, a ſhort catechiſm, carefully taught in the ſchools, is the only printed book they have. In ancient times they were diſtinguiſhed by their ſtature, courage, and great ſkill in maritime affairs. They are at this day a briſk, lively, hardy, induſtrious, and well-meaning people. Their frugality defends them from want: and though there are few that abound, there are as few in diſtreſs; and thoſe that are, meet with a cheerful unconſtrained relief. On the other hand, they are choleric, loquacious, and as the law till lately was cheap, and unincumbered with ſolicitors and attornies, not a little litigious. The revenue, in the earl of Derby's time, amounted to about 2500 l. a-year; from which, deducting his civil liſt, which was about 700 l. the clear income amounted to 1800 l. At the ſame time the number of his ſubjects was computed at 20,000.—The ſovereign of Man, though he has long ago waved the title of king, was ſtill inveſted with regal rights and prerogatives; but the diſtinct juriſdiction of this little ſubordinate royalty, being found inconvenient for the purpoſes of public juſtice, and for the revenue, (it affording a commodious aſylum for debtors, outlaws, and ſmugglers), authority was given to the treaſury, by ſtat. 12. Geo. I. c. 28. to purchaſe the intereſt of the then proprietors for the uſe of the crown: which purchaſe was at length completed in the year 1765, and confirmed by ſtat. 5. Geo. III. c. 26. and 39.; whereby the whole iſland and all its dependencies, (except the landed property of the Athol family), their manerial rights and emoluments, and the patronage of the biſhopric and other eccleſiaſtical benefices, are unalienably veſted in the crown, and ſubjected to the regulation of the Britiſh exciſe and cuſtoms.

MANAGE. See MANEGE.

MANATI, in zoology. See TRICHECUS.

MANCA, was a ſquare piece of gold coin, commonly valued at 30 pence; and *mancuſa* was as much as a mark of ſilver, having its name from *manu-cuſa*, being coined with the hand. *Leg. Canut.* But the *manca* and *mancuſa* were not alway of that value; for ſometimes the former was valued at ſix ſhillings, and the latter, as uſed by the Engliſh Saxons, was equal in value to our half-crown. Manca *ſex ſolidis æſtimetur.* Leg. H. 1. c. 69. Thorn, in his chronicle, tells us, that mancuſa *eſt pondus duorum ſolidorum et ſex denariorum;* and with him agrees Du Cange, who ſays, that 20 *mancæ* make 50 ſhillings. *Manca* and *mancuſa* are promiſcuouſly uſed in the old books for the ſame money.

MANCANCEL or MANCHENEEL. See HIPPOMANE.

MANCHA, a territory of Spain in the province of New Caſtile, lying between the river Guardiana and Andaluſia. It is a mountainous country; and it was here that the famous Don Quixote was ſuppoſed to perform his exploits.

MANCHESTER, a town of Lancaſhire in England, ſituated in W. Long. 2. 42. N. Lat. 53. 27.—Of this place the Rev^{d} Mr Whitaker has publiſhed a hiſtory in two octavo volumes; but as he does not confine himſelf merely to the town of Mancheſter, but takes in many particulars of the hiſtory and antiquities of other parts of Britain, and even Ireland, his work is incapable of abridgement; though in many places of this Dictionary we have made excerpts from particular paſſages of it.—He conjectures that the ſtation was firſt occupied by the Britons about 500 B. C. but that it firſt received any thing like the form of a town 450 years after, or 50 B. C. when the Britons of Cheſhire made an irruption into the territories of their ſouthern neighbours, and of conſequence alarmed the Seſtuntii, or inhabitants of Lancaſhire, ſo much, that they began to build fortreſſes in order to defend their country. Its Britiſh name was *Mancenion*, which was changed by the Romans, who conquered it under Agricola, A. D. 79, into *Mancunium;* from whence comes the preſent name of *Mancheſter*.

The town is now very populous, large, and flouriſhing, and has ſeveral curious manufactures, known at London by the name of *Mancheſter goods.* Their velvets are lately come into great repute, and are much made uſe of for breeches. Its chief ornaments are the college, the market-place, and the collegiate church; which laſt has a ſmall choir of excellent workmanſhip. There is alſo an elegant exchange, and a ſtone-bridge over the river Irwell, the arches of which are extremely high, on account of the nature of the river; which, deſcending from the mountainous part of the country, ſometimes riſes four or five yards in one night.—The town ſends no members to parliament, but has the title of a duchy.

MANCIPLE (*manceps*), a clerk of the kitchen, or caterer; and an officer in the inner temple was antiently ſo called, who is now the ſteward there; of whom Chaucer, the ancient Engliſh poet, ſome time a ſtudent of that houſe thus writes:

> A manciple there was within the temple,
> Of which all caterers might take enſample.

This officer ſtill remains in colleges, in the univerſities.

MANDAMUS, in law, a writ that iſſues out of the court of king's-bench, ſent to a corporation, commanding them to admit or reſtore a perſon to his office. This writ alſo lies where juſtices of the peace refuſe to admit a perſon to take the oaths in order to qualify himſelf for enjoying any poſt or office; or where a biſhop or archdeacon refuſes to grant a probate of a will, to admit an executor to prove it, or to ſwear a church-warden, &c.

MANDARINS, a name given to the magiſtrates and governors of provinces in China, who are choſen out of the moſt learned men, and whoſe government is always at a great diſtance from the place of their birth. Mandarin is alſo a name given by the Chineſe to the learned language of the country; for beſides the language peculiar to every province, there is one common to all the learned in the empire, which is in China what Latin is in Europe; this is called the *mandarin tongue*, or the *language* of the *court*.

MANDATE, in law, a judicial commandment to do ſomething, See the article MANDAMUS.

MANDATE, in the canon law, a reſcript of the pope, commanding an ordinary collator to put the perſon therein named in poſſeſſion of the firſt vacant benefice in his collation.

MANDERSCHEIT, a town of Germany in the circle of the Lower Rhine, and in the electorate of Triers, capital of a county of the ſame name, between the dioceſe of Triers and the duchy of Juliers. E. Long. 6. 32. N. Lat. 50. 20.

MANDEVILLE (Sir John), a phyſician, famous for his travels, was born at St Alban's, about the beginning of the fourteenth century. He had a liberal education, and applied himſelf to the ſtudy of phyſic; but being at length ſeized with an invincible deſire of ſeeing diſtant parts of the globe, he left England in 1332, and did not return till 34 years after. His friends, who had long ſuppoſed him dead, did not know him when he appeared. He had travelled through almoſt all the eaſt, and made himſelf maſter of a great variety of languages. He particularly viſited Scythia, Armenia the Greater and Leſs, Egypt, Arabia, Syria, Media, Meſopotamia, Perſia, Chaldea, Greece, Dalmatia, &c. His rambling diſpoſition did not ſuffer him to reſt; for he left his own country a ſecond time, and died at Liege in the Netherlands, in 1372. He wrote an Itinerary, or an account of his travels, in Engliſh, French, and Latin.

MANDEVILLE (Bernard de), an eminent writer in the eighteenth century, was born in Holland, where he ſtudied phyſic, and took the degree of doctor in that faculty. He afterwards came over into England, and in 1714 publiſhed a poem, intitled, "The Grumbling Hive, or Knaves turned honeſt;" upon which he afterwards wrote remarks, and publiſhed the whole at London, 1723, in 8vo, under the title of, "The Fable of the Bees, or private Vice made public Benefits; with an Eſſay on Charity and Charity-ſchools, and a Search into the Nature of Society." This book was preſented by the jury of Middleſex in July the ſame year, and ſeverely animadverted upon in "A letter to the Right Honourable Lord C. printed in the London Journal of Saturday July 27. 1723." Our author publiſhed a vindication. His book was attacked by ſeveral writers, He publiſhed other pieces, and died in 1724.

MANDRAGORA, in botany. See ATROPA.

MANDRAKE, in botany. See Atropa.

MANE, the hair hanging down from a horſe's neck; which ſhould be long, thin, and fine; and if frizzled, ſo much the better.

MANEGE, or Manage, the exerciſe of riding the great horſe; or the ground ſet apart for that purpoſe; which is ſometimes covered, for continuing the exerciſe in bad weather; and ſometimes open, in order to give more liberty and freedom both to the horſeman and horſe. See Horsemanship.

The word is borrowed from the French *manage*, and that from the Italian *maneggio*; or, as ſome will have it, *a manu agendo*, acting with the hand.

MANES, in the Pagan ſyſtem of theology, a general name for the infernal deities or gods of hell.—The ancients comprehended under manes not only Pluto, Proſerpine, and Minos; but the ſouls likewiſe of the deceaſed were taken into the number, and eſteemed gods of hell. It was uſual to erect altars and offer libations to the manes of deceaſed friends and relations. One branch of the magic art among the Pagans conſiſted in conſulting the manes of the dead in matters of importance; this was called *necromancy*. See Necromancy.

MANES, the founder of the Manichæan ſyſtem. See Manichees.

MANGANESE, or Magnesia nigra; a mineral ſubſtance uſed in the tinging of glaſs. It is denſe, ponderous, and heavy; in its pureſt and fineſt pieces approaching greatly to the colour of *lapis hæmatites*, being compoſed of regular parallel ſtriæ, diverging from a centre to the circumference. There is another kind, however, more common, of an iron-grey colour, and irregularly ſtreaked like the ſteel-grained lead-ores.

But the moſt common manganeſe is entirely of an irregular ſtructure. It is very heavy, moderately hard, and of a deep duſky grey, approaching to black; tho' ſometimes of a ferruginous brown. It is found in many parts of England and Germany, in large maſſes, of a rude, rugged, and unequal ſurface. It is commonly ſuppoſed to be an ore of iron: but the experiments of Mr Pott and Mr Cronſtedt ſhew, that this ſtone contains little or no iron; and therefore the latter author has made a diſtinct order of this earth, which he calls *terræ magneſiæ*. It has the following properties: 1. It does not efferveſce with acids, tho' they diſſolve ſome part of it, eſpecially when it is calcined: ſpirit of vitriol acquires from it a roſe-colour: aqua regia alſo acquires colour, eſpecially from the black kind. From theſe ſolutions fixed alkalies precipitate a white earth. 2. A ſmall quantity of this earth mixed with glaſs-frit, gives red or purpliſh colours to the glaſs: larger quantities give a deep purple, or even a black. Dr Lewis tells us, that preparations of iron, whoſe colour in glaſs, in a dilute ſtate, is ſometimes yellow, and ſometimes greeniſh or bluiſh, are always of a dark brown or black when the glaſs is overdoſed with them: hence many of the ferruginous earths and ſtones melt into a black glaſs; as the coloured clays, ſeveral ſlates, and the ſtone called *whynn-ſtone*. Black glaſſes or enamels made on this principle, have, however, like the concentrated vegetable liquids, one imperfection; that though of a deep black colour when in maſſes of any conſiderable thickneſs, yet, when ſpread thin, they always betray ſome of the original colour, or of the particular hue which they would have if the colouring matter was in leſs quantity. To this inconvenience the black glaſs made with manganeſe is likewiſe ſubject: and therefore the beſt method of obtaining a perfect black, is by mixing two or more of the abovementioned darkening materials; and inſtead of taking colourleſs glaſs or enamel for the baſis, to uſe fragments of different-coloured pieces, or compoſitions which have been ſpoiled in trying to tinge them of other colours.—The common black glaſs of which beads are made, is coloured with manganeſe only; and hence, when powdered, it looks of a dirty purple: the moſt perfect black uſed by the enamellers is compoſed of manganeſe, zaffre, and ſcales of iron. Manganeſe is alſo uſed to give a glazing to pottery. 3. Fuſed with nitre, or with fixed alkali; it gives to warm water various colours, green, purple, red, or blue; which change by agitating the water. 4. Cronſtedt affirms, that it deflagrates with nitre; Pott ſays it does not. 5. Cronſtedt ſays, that he has ſometimes extracted a ſmall quantity of tin from manganeſe. 6. The ſame author affirms, that the colours given by manganeſe to glaſs are eaſily deſtroyed by arſenic, or calces of tin. 7. Dr Lewis ſuſpects, that it may increaſe the fuſibility of glaſs. An ingenious friend, he tells us, obſerved, that in making impreſſions in different kinds of glaſs, he found this black ſort to be by far the moſt fuſible of any. 8. When manganeſe is fuſed with glaſs, a ſtrong efferveſcence enſues, whence it may be preſumed that theſe two ſubſtances act violently on each other.

MANETHO, an ancient Egyptian hiſtorian, who pretended to take all his accounts from the ſacred inſcriptions on the pillars of Hermes Triſmegiſtus. He was high-prieſt of Heliopolis in the time of Ptolemy Philadelphus, at whoſe requeſt he wrote his hiſtory in Greek; beginning from their gods, and continuing it down to near the time of Darius Codomannus who was conquered by Alexander the Great. His hiſtory of Egypt is a celebrated work, that is often quoted by Joſephus and other ancient authors. Julius Africanus gave an abridgement of it in his Chronology. Manetho's work is however loſt; and there only remain ſome fragments extracted from Julius Africanus, which are to be found in Euſebius's Chronica.

MANFREDI (Euſtachio), a celebrated mathematician, born at Bologna in 1674, where he was elected mathematical profeſſor in 1698. He was made a member of ſeveral academies, and acquired great reputation by his Ephemerides, 4 vols 4to, as well as by other works. He died in 1739.

MANGE, in dogs. See *Diſeaſes of* Dogs.

Mange, in farriery. See there, § xix.

MANGER, is a raiſed trough under the rack in the ſtall, made for receiving the grain or corn that a horſe eats.

Manger, a ſmall apartment, extending athwart the lower-deck of a ſhip of war, immediately within the hauſe-holes, and fenced on the after-part by a partition, which ſeparates it from the other part of the deck behind it. This partition ſerves as a fence to interrupt the paſſage of the water, which occaſionally guſhes in at the hauſe-holes, or falls from the wet cable whilſt it is heaved in by the capſtern. The water, thus prevented from running aft, is immediately returned into the ſea by ſeveral ſmall channels, called *ſcuppers*, cut thro' the ſhip's ſide within the manger. The manger is therefore particularly uſeful in giving a contrary direction to the water that enters at the hauſe-holes, which would otherwiſe run aft in great ſtreams upon the lower deck, and render it extremely wet and uncomfortable, particularly in tempeſtuous weather, to the men who meſs and ſleep in different parts thereof.

MANGET (John-James), an eminent phyſician, born at Geneva in 1652. The elector of Brandenburg made him his firſt phyſician in 1699; in which poſt he continued till his death, which happened at Geneva in 1742. He wrote many works; the moſt known of which are, 1. A collection of ſeveral Pharmacopœias, in folio. 2. *Bibliotheca pharmaceutico-medica*. 3. *Bibliotheca anatomica*. 4. *Bibliotheca chemica*. 5. *Bibliotheca chirurgica*. 6. A *bibliotheca* of all the authors who have written on medicine, in 4 vols folio. All theſe works are in Latin. Daniel le Clerc, the author of a hiſtory of phyſic, aſſiſted him in writing them.

MANGIFERA, the MANGO-TREE; a genus of the monogynia order, belonging to the pentandria claſs of plants. There is but one ſpecies, a native of many parts of the Eaſt Indies, whence it has been tranſplanted to Brazil, and other warm parts of America. It grows to a large ſize; the wood is brittle, the bark rough when old; the leaves are ſeven or eight inches long, and more than two inches broad. The flowers are produced in looſe panicles at the ends of the branches, and are ſucceeded by large oblong kidney-ſhaped plums. This fruit, when fully ripe, is greatly eſteemed in the countries where it grows; but in Europe we have only the unripe fruit brought over in pickle. All attempts to propagate the plant have hitherto proved ineffectual; and Mr Miller is of opinion that the ſtones will not vegetate unleſs they are planted ſoon after they are ripe. He thinks therefore that the young plants ought to be brought over in boxes of earth; after which they may be kept in the tan-bed of the ſtove.

MANGROVE. See RHIZOPHORA.

MANHEIM, a town of Germany, in the Lower Palatinate, with a very ſtrong citadel, and a palace, where the elector Palatine often reſides. It is ſeated at the confluence of the rivers Neckar and Rhine, in E. Long. 8. 33. N. Lat. 49. 25.

MANIA, or MADNESS. See (the *Index* ſubjoined to) MEDICINE.

MANICHEES, or MANICHÆANS, Chriſtian heretics, in the third century; followers of Manes, who made his appearance in the time of the emperor Probus. The hiſtory of this hereſiarch is very extraordinary, and is briefly as follows.

One Terebinthus, a diſciple of Scythianus a magician, having retired out of Paleſtine into Perſia, and finding his opinions and enterpriſes oppoſed by the prieſts and learned men of that country, was obliged to ſhelter himſelf in the houſe of a widow woman, where he was murdered. This woman being heireſs to the money and books of Terebinthus, bought a ſlave named *Cubricus*, whom ſhe afterwards adopted, and had him inſtructed in all the ſciences of Perſia. This man, after the death of the widow, changed his name, to blot out the memory of his former condition, and took that of *Manes*, which, in the Perſian language, ſignifies a *veſſel*.

Some time after, from the books of Terebinthus, he began to broach an impoſture, pretending to be the *Comforter* whom our Saviour promiſed to ſend into the world. This drew to him many followers, and he became the head of a numerous ſect. He taught his diſciples, that there are two principles, the one the author of all good, and the other the author of all evil: a doctrine which he borrowed from the Perſian Magi.

Manes indulged his diſciples in all manner of impurities, and forbad them to give alms to or aſſiſt any who were not of their own ſect. He gave out, that the ſouls of his followers paſſed thro' the elements to the moon, and from thence to the ſun, to be purified; and then went to God, and were re-united with his eſſence: as for the ſouls of all other men, they either went to hell, or were ſent into other bodies. He alleged, that Chriſt had his reſidence in the ſun, the Holy Ghoſt in the air, Wiſdom in the moon, and the Father in the abyſs of light. He denied the reſurrection, and condemned marriage. He forbad the uſe of eggs, cheeſe, milk, and wine, as creatures proceeding from the bad principle. He uſed a different form of baptiſm from that of the church. He taught, that magiſtrates were not to be obeyed, and condemned the moſt lawful wars.

It would be tedious to rehearſe all the impious tenets of this hereſiarch and his followers, of whom pope Leo uſed to ſay, that the devil, who reigned in all other hereſies, had built a fortreſs and raiſed his throne in that of the Manichees, who embraced all the errors and impieties that the ſpirit of man is capable of.

The death of this hereſiarch was as dreadful as his life was impious. The king of Perſia's ſon being ſick, Manes undertook to cure him; upon which the father diſmiſſed the phyſicians, and the patient died. Manes was thrown into priſon, out of which he made his eſcape; but was ſoon after apprehended by the king's ſervants, who cauſed him to be flead alive, and his carcaſe thrown to the wild beaſts.

The Manichees were divided into the *hearers* and the *elect*. Out of the latter they choſe 12, in imitation of the 12 apoſtles: theſe were called *maſters*. There was a 13th, who was a kind of patriarch, or pope, among them. In the fourth century, the emperors made ſevere laws againſt theſe heretics, and a council was held againſt them at Rome.

Although the Manichees profeſſed to receive the books of the New Teſtament, yet, in effect, they took only ſo much of them as ſuited with their opinions, rejecting the reſt as foiſted in by later writers. They publiſhed ſeveral apocryphal books, which they aſcribed to the apoſtles.

The oriental writers tell us, that Manes, being deſirous of paſſing among his followers for ſomething more than human, ſhut himſelf up in a grotto, into which he had ſecretly conveyed proviſions for a year; telling his diſciples he was going to take a journey to heaven, and that he would return at the end of the year. Accordingly, when the year was expired, he came out of his retirement, bringing with him a book full of extraordinary images and figures, which he pretended to have received in heaven. This book they call *ergenk* and *eſtenk*.

MANICORDON, or MANICHORD, a muſical inſtrument in form of a ſpinet; the ſtrings of which, like thoſe of the clarichord, are covered with little pieces of cloth, to deaden as well as to ſoften their ſound, whence it is alſo called the *dumb-ſpinet*.

MANIFESTO; a public declaration made by a prince in writing, ſhowing his intentions to begin a war or other enterpriſe, with the motives that induce him to it, and the reaſons on which he founds his rights and pretenſions.

MANIHOT, or MANIOC. See JATROPHA.

MANILA, LUCONIA, or *Luzon*, the name of the largeſt of the Philippine iſlands in the Eaſt Indies, ſubject to Spain. It had the name of *Luzon* from a cuſtom that prevailed among the natives of beating or bruiſing their rice in wooden mortars, before they either boiled or baked it; luzon, in their language, ſignifying a mortar.

As to ſituation, it is remarkably happy, lying between the eaſtern and weſtern continents, and having China on the north, at the diſtance of about 60 leagues; the iſlands of Japan on the north-eaſt, at the diſtance of about 250 leagues from the neareſt of them; the ocean on the eaſt; the other iſlands on the ſouth; and on the weſt Malacca, Patana, Siam, Cambodia, Cochhin-China, and other provinces of India, the neareſt at the diſtance of 300 leagues.

The middle of this iſland is in the latitude 15° north; the eaſt point in 13° 30′, and the moſt northern point in 19°. The ſhape of it is ſaid to reſemble that of an arm bent; the whole length being about 160 Spaniſh leagues, the greateſt breadth between 30 and 40, and the circumference about 350. As to the longitude, the charts differ, ſome making the middle of the iſland to lie 113° eaſt from London, and others in 160°. The climate is hot and moiſt. One thing is held very extraordinary, that in ſtormy weather there is much lightning and rain, and that thunder is ſeldom heard till this is over. During the months of June, July, Auguſt, and part of September, the weſt and ſouth winds blow, which they call *vendavales*, bringing ſuch rains and ſtorms, that the fields are all overflowed, and they are forced to have little boats to go from one place to another. From October till the middle of December, the north wind prevails; and from that time till May, the eaſt and ſouth-eaſt; which winds are there called *breezes*. Thus there are two ſeaſons in thoſe ſeas, by the Portugueſe called *monzeens;* whence our word *monſoons*, that is, the breezes half the year, with a ſerene dry air; and the vendavales the other half, wet and ſtormy. It is further to be obſerved, that in this climate no vermin breed upon Europeans, though they wear dirty ſhirts, whereas it is otherwiſe with the Indians. The days here being always of an equal length, and the weather never cold, neither their clothes, nor the hour of dining, ſupping, doing buſineſs, ſtudying, or praying, are ever changed; nor is cloth worn, but only againſt the rain.

The air here being, as has been obſerved, very hot and moiſt, is not wholeſome; but is worſe for young men, that come from Europe, than for the old. As for the natives, without uſing many precautions, they live very commonly to fourſcore or 100. The ſoil is ſo rich, that rice grows even on the tops of the mountains, without being watered; and this makes it ſo plentiful, that the Indians value gold ſo little as not to pick it up, though it lies almoſt every where under their feet.

Among the diſadvantages of the iſland, beſides frequent and terrible earthquakes, here are ſeveral burning mountains. The face of the iſland, however, is far from being disfigured by them, or by the conſequences of their exploſions.

The mountaineers, called *Tingiani*, have no particular place of abode, but always live under the ſhelter of trees, which ſerve them inſtead of houſes, and furniſh them with food; and when the fruit is eaten up, they remove where there is a freſh ſort.

Here are 40 different ſorts of palm-trees, the moſt excellent cocoas, wild cinnamon, wild nutmegs, and ſome ſay wild cloves alſo; ebony; ſandal-wood; and the beſt caſſia, and in ſuch plenty, that they feed their hogs with its fruit; all kinds of cattle, and prodigious quantities of gold, amber, and ambergriſe.

There are ſeveral ſorts of people in this iſland beſides the Spaniards, as the Tagalians or Tagaleze, the Pintadoes or painted negroes, the Ilayas or Tinglianos, and the Negrellos. The Tagalians, who are thought to be Malayans by deſcent, are a modeſt, tractable, and well-diſpoſed people. The Pintadoes, or painted negroes, are tall, ſtraight, ſtrong, active, and of an excellent diſpoſition. The Tinglianos, whom ſome ſuppoſe to be deſcended from the Japaneſe, are very brave, yet very courteous and humane. They live entirely on the gifts of nature; and never ſleep under any other ſhade than that of the trees or a cave. The Negrillos, who are held to be the Aborigines of the iſland, are barbarous and brutal to the laſt degree. When they kill a Spaniard, they make a cup of his ſkull and drink out of it.

This iſland is divided into ſeveral provinces, containing divers towns, the chief of which are Manila, Caceres, New-Segovia, Bondo, Paſſacao, Ibalon, Bulaw, Serſocon, or Bagatao, Lampon, Fernandina, Bolinao, Playahonda, Cavite, Mindora, Calcleya, and Balayan.

MANILA, the capital of an iſland of the ſame name in the Eaſt Indies, on the ſouth-eaſt ſide of the iſland, where a large river falls into the ſea, and forms a noble bay 30 leagues in compaſs, to which the Spaniards have given the name of *Bahia*, becauſe the river runs out of the great lake Bahi, which lies at the diſtance of ſix leagues behind it. In compaſs it is two miles, in length one third of a mile; the ſhape irregular, being narrow at both ends, and wide in the middle. On the ſouth it is waſhed by the ſea, and on the north and eaſt by the river; being alſo ſtrongly fortified with walls, baſtions, forts, and batteries.—Manila contains about 30,000 ſouls, who are a very motley race, diſtinguiſhed by ſeveral ſtrange names, and produced by the conjunction of Spaniards, Chineſe, Malabars, Blacks, and others inhabiting the city and iſlands depending on it. Without the walls are large ſuburbs, particularly that inhabited by the Chineſe merchants, called *Sangleys*. In proportion to the ſize of the place, the number of churches and religious houſes is very great. Only ſmall veſſels can up to Manila; but three leagues ſouth of it is the town and port of Cavite, defended by the caſtle of St Philip and capable of receiving the largeſt ſhips. Here ſtands the arſenal where the galleons are built, for which there are from 300 to 600 or 800 men conſtantly employed, who are relieved every month, and while upon duty are maintained at the king's expence. By an earthquake which happened here in 1645, a third part of the city of Manila was deſtroyed, and no leſs than 3000 people periſhed in the ruins.

In the late war, Spain having entered into engagements with France, in conſequence of the family-compact of the houſe of Bourbon, it was found expedient by Britain to declare war alſo againſt Spain. Whereupon a force was ſent out from our Eaſt-India ſettlements, particularly Madraſs, for the conqueſt of the Philippine Iſlands, under general Draper and admiral Corniſh: who, after a ſiege of 12 days, took Manila, on the 6th of October 1762, by ſtorm; but, to ſave ſo fine a city from deſtruction, agreed to accept a ranſom, amounting to a million ſterling, a part of which, it is ſaid, was never paid. The Spaniſh viceroy reſides in this city, and lives like a ſovereign prince. The government is ſaid to be one of the beſt in the gift of the king of Spain. When the city was taken, as above, the archbiſhop, who is a kind of pope in this part of the world, was alſo viceroy. Five large ſhips, loaded with the riches of the Eaſt, as diamonds from Golconda, cinnamon from Ceylon, pepper from Sumatra and Java, cloves and nutmegs from the Moluccas and Banda iſlands, camphire from Borneo, benjamin and ivory from Cambodia, ſilks, tea, and china-ware from China, &c. ſail yearly from hence to Acapulco in Mexico, and return freighted with ſilver, making 400 per cent. profit.

The city of Manila is governed by two alcaides: the reſt of the cities and great towns have each an alcaide; and in every village there is a corrigidore. Appeals from their ſentences are made to the royal court at Manila, in which there are four judges, and a fiſcal or attorney-general; each of theſe judges has a ſalary of 3300 pieces of eight per annum. The viceroy is preſident; and in that quality has an income of 4000 pieces of eight, but he has no vote; yet if the judges are equally divided, the preſident names a doctor of the civil law, who, in virtue of his appointment, has a deciſive voice. The attorney-general, in right of his office, is protector of the Chineſe, in conſideration of which he receives 600 pieces of eight every year. As for the Indians that are in ſubjection, they pay tribute in the following proportions: Young men from 18, and from thence, if they continue ſingle, to the age of 60, pay five rials of plate by way of capitation; as ſingle women likewiſe do from 24 to 50: married men pay ten rials. It is computed, that there are within the compaſs of this government 250,000 Indians, ſubject to his Catholic majeſty, of whom two-fifths hold immediately from the king, and the reſt from lords or proprietors, who pay two rials each for the maintenance of the forces, and the like ſum for the pariſh-prieſt. The royal revenue is computed at about half a million of pieces of eight, excluſive of caſualties. In regard to the military eſtabliſhment, the garriſon of Manila conſiſts of about 800 or 1000 men, and there are about 3000 more in the Philippines. The viceroy is by his office captain-general, with a ſalary of about 4000 pieces of eight.

MANILIUS (Marcus), a Latin poet, whoſe poem had the ill luck to lie buried in ſome German libraries, and was not heard of in the world, until Poggius, about two centuries ago, publiſhed him from ſome old manuſcripts he found there. There is no account to be found of him but what can be drawn from his poem, which is called *Aſtronomicon;* and contains a ſyſtem of the ancient aſtronomy and aſtrology, together with the philoſophy of the Stoics. It conſiſts of five books; though there was a ſixth, which has not been recovered. From the ſtyle, and no mention of the author being found in ancient writers, it is probable he died young. It is collected, however, that he was a Roman of illuſtrious extraction, and lived under the reign of Auguſtus, whom he invokes, though not by name, yet by circumſtances and character that ſuit no other emperor. The beſt editions of Manilius are, that of Joſeph Scaliger in 1600, and that of Bentley at London in 1738.

MANILLE, in commerce, a large braſs ring in the form of a bracelet, either plain or engraven, flat or round.

Manilles are the principal commodities which the Europeans carry to the coaſt of Africa, and exchange with the natives for ſlaves. Theſe people wear them as ornaments on the ſmall of the leg, and on the thick part of the arm above the elbow. The great men wear manilles of gold and ſilver; but theſe are made in the country by the natives themſelves.

MANIOC, or MANIHOT. See JATROPHA.

MANIPULUS, in Roman antiquity, a body of infantry, conſiſting of 200 men, and conſtituting the third part of a cohort. See COHORT.

Among phyſicians, the term *manipulus* ſignifies a handful of herbs or leaves, or ſo much as a man can graſp in his hand at once; which quantity is frequently denoted by the abbreviature, M, or m.

MANIS, the SCALY LIZARD, in zoology, a genus of quadrupeds belonging to the order of bruta, the characters of which are theſe: They have no foreteeth either in the upper or under jaw; the tongue is long and cylindrical; the ſnout is long and narrow; and the body is covered with hard ſcales. There are two ſpecies: 1. The pentadactyla, or ſcaly lizard, with five toes on each foot. The head is ſmaller than the neck; the eyes are very ſmall; the length of the body including the tail, is from ſix to eight feet. The whole body is covered with hard ſcales, excepting the under-part of the head and neck, the breaſt, the belly, and the internal ſide of each leg. Betwixt the ſcales of this animal there are ſome hairs like the briſtles of a hog, browniſh at the points. The ſcales are of a reddiſh colour, very hard, convex above, and concave below. All the parts which want ſcales are naked. The ſcales are unconnected; and the animal can raiſe or lower them at pleaſure, like the quills of the porcupine. When irritated, he erects his ſcales, and rolls himſelf up like a hedge-hog. In this ſituation, neither the lion, tiger, nor any other animal can hurt him. It is ſaid to deſtroy the elephant by twiſting itſelf round his trunk, and compreſſing that tender organ with its hard ſcales. It feeds on lizards and inſects; turns up the ground with its noſe; walks with its claws bent under its feet; grows very fat; and is eſteemed delicate eating; makes no other noiſe than a kind of ſnorting. It is a mild inoffenſive creature, is ſlow of motion, and has no other method of eſcaping the purſuit of man, but by concealing himſelf in crannies of rocks, and in holes which they dig in the ground, and where they likewiſe bring forth their young. It is a native of the Eaſt Indies, and is very rare. Mr Pennant conjectures that it may be a native of Guinea; the *quogeli* of the Negroes, which, Des Marchais ſays, grows to the length of eight feet, of which the tail is four. It lives in woods and marſhy places; feeds on ants, which it takes by laying its long tongue acroſs their paths, which is covered with a viſcous ſaliva, ſo that the inſects which attempt to paſs over it cannot extricate themſelves.

2. The tetradactyla, or ſcaly lizard with four toes on each foot. This ſpecies is very ſimilar to the former; only the tail of it is much longer in proportion to the body; and ſuch parts as want ſcales, inſtead of being naked, are covered with a ſoft hair. It is alſo found in the Eaſt Indies. See Plate CLXII. fig. 4.

MANLEY (Mrs.) the celebrated writer of the *Atalantis*, was the daughter of Sir Roger Manley, the reputed author of the firſt volume of the *Turkiſh Spy*. She loſt her parents very early; and after having been deluded into a falſe marriage by her guardian, who was her couſin, and afterwards deſerted her, ſhe was patronized by the ducheſs of Cleveland, miſtreſs of Charles II. But the ducheſs, being a woman of a very fickle temper, grew tired of Mrs Manley in ſix months time; and diſcharged her upon a pretence, whether groundleſs or not is uncertain, that ſhe intrigued with her ſon. After this ſhe wrote her firſt tragedy, called *Royal Miſchief*, which was acted with great applauſe in 1696; and her apartment being frequented by men of wit and gaiety, ſhe ſoon engaged in amours, and was taken into keeping. Her pen now grew as licentious as her conduct: for, in her retired hours, ſhe wrote four volumes, called *Memoirs of the New Atalantis*; in which ſhe was not only very free in her wanton tales of love-adventures, but ſatirized the characters of many diſtinguiſhed perſonages, eſpecially thoſe who had a principal concern in the Revolution. A proſecution was commenced againſt her for this work; but whether thoſe in power were aſhamed to bring a woman to trial for a few amorous trifles, or whether the laws could not reach her diſguiſed ſatire, ſhe was diſcharged; and a total change of the miniſtry enſuing, Mrs Manley lived in high reputation and gaiety, amuſing herſelf with the converſation of wits, and writing plays, poems, and letters. She died in 1724.

MANLIUS (Capitolinus), the renowned Roman conſul and general, who ſaved the capitol when it was attacked by the Gauls in the night: he was alarmed by the cries of geeſe, which were ever after held ſacred. But being afterwards accuſed of aſpiring at the ſovereignty, he was thrown from the top of the capitol, 384 B. C. See Gaul and Rome.

Manlius (Torquatus), a celebrated conſul and Roman captain; had great wit, but a difficulty in expreſſing himſelf, which induced Manlius Imperioſus, his father, to keep him almoſt by force in the country. Pompey, tribune of the people, enraged at this inſtance of ſeverity, formed a deſign of accuſing Manlius the father before the judges; but Torquatus being informed of it, went to that tribune, and, with a poniard in his hand, made him ſwear that he would not proceed in that accuſation againſt him to whom he owed his life. At length Torquatus was made military tribune, and killed a ſoldier of the Gauls in ſingle combat, from whom he took a gold chain that he wore about his neck. From this action he obtained the name of *Torquatus*. He was conſul in the war againſt the Latins; when he ordered his own ſon to be beheaded, for fighting contrary to his orders, tho' he had gained the victory. He conquered the enemies of the republic, and was ſeveral times made conſul; but at laſt refuſed the conſulſhip, ſaying, That it was no more poſſible for him to bear with the vices of the people, than it was for the people to bear with his ſeverity.

MANNA, in the materia medica, the juice of certain trees of the aſh kind, either naturally concreted on the plants, or exſiccated and purified by art. There are ſeveral ſorts of manna in the ſhops. The larger pieces, called *flake manna*, are uſually preferred; though the ſmaller grains are equally good, provided they are white, or of a pale yellow colour; very light, of a ſweet, not unpleaſant taſte, and free from any viſible impurities. Some people injudiciouſly prefer the fat honey-like manna to the foregoing; this has either been expoſed to a moiſt air, or damaged by ſea or other water. This kind of manna is ſaid to be ſometimes counterfeited by a compoſition of ſugar and honey, mixed with a little ſcammony; there is alſo a factitious manna, which is white and dry, ſaid to be compoſed of ſugar, manna, and ſome purgative ingredient, boiled to a proper conſiſtence. This may be diſtinguiſhed by its weight, ſolidity, untranſparent whiteneſs, and by its taſte, which is different from that of manna.

Manna is a mild, agreeable laxative; and may be given with ſafety to children and pregnant women: nevertheleſs, in ſome particular conſtitutions, it acts very unkindly, producing flatulencies and diſtenſions of the viſcera: theſe inconveniencies may be prevented by the addition of any grateful warm aromatic. It operates ſo weakly, that it does not produce the full effect of a cathartic, unleſs taken in large doſes; and hence it is rarely given in this intention by itſelf. It may be commodiouſly diſſolved in the purging mineral waters, or joined to the cathartic ſalts, ſenna, rhubarb, or the like. Geoffroy recommends actuating it with a few grains of emetic tartar: by this management, he ſays, bilious ſerum will be plentifully evacuated, without any nauſea, gripes, or other inconvenience. It is remarkable, that the efficacy of this drug is greatly promoted, (if the account of Valliſnieri is to be relied on) by a ſubſtance which is itſelf very ſlow of operation, *viz.* caſia. See Casia.

Manna, is alſo a Scripture-term, ſignifying a miraculous kind of food which fell from heaven for the ſupport of the Iſraelites in their paſſage through the wilderneſs, being in form of coriander-ſeeds, its colour like that of bdellium, and its taſte like honey.

They called it *manna*, either from the Hebrew word *manah*, a "gift," to intimate its being a gift from heaven; or from *minnah*, which ſignifies "to prepare," becauſe the manna came to them ready for eating, and needed no preparation but gathering; or from the Egyptian word, *man*, " what is it?" which laſt etymology ſeems the more probable, in regard the Scripture takes notice of the ſurprize they were under when they firſt ſaw this new food deſcend.

Salmaſius, however, prefers another. According to him, the Arabs and Chaldeans uſed the word *man* to ſignify a kind of dew or honey that fell on the trees, and was gathered in great abundance on mount Libanus: on which footing, the Iſraelites did not uſe the term *manna* out of ſurprize, but becauſe they found this food fall with the dew, in the ſame manner as the honey ſo well known under the name of *man*.

Salmaſius adds, that the manna of the Iſraelites was in reality no other than that honey or dew condenſed; and that the one and the other were the ſame with the wild honey wherewith St John was fed in the wilderneſs. So that the miracle did not conſiſt in the formation of any new ſubſtance in favour of the Iſraelites; but in the punctual manner in which it was diſpenſed by Providence for the ſuſtenance of ſo vaſt a multitude.

MANNA-*Tree*, is a ſpecies of the aſh *, called the *fraxinus rotundifolia*, a native of Calabria in Italy. The ſhoots of this tree are much ſhorter, and the joints cloſer together, than thoſe of the common aſh; the ſmall leaves are ſhorter, and deeper ſawed on their edges, and are of a lighter green. The flowers come out from the ſide of the branches, which are of a purple colour, and appear in the ſpring before the leaves come out. This tree is of humble growth, ſeldom riſing more than 15 or 16 feet high in this country.

MANNER, in painting, a habitude that a man acquires in the three principal parts of painting, the management of colours, lights and ſhadows; which is either good or bad according as the painter has practiſed more or leſs after the truth, with judgment and ſtudy. But the beſt painter is he who has no manner at all. The good or bad choice he makes is called *goute*.

MANNERS, the plural noun, has various ſignifications; as, The general way of life, the morals, or habits, of any perſon or people; alſo, Ceremonious behaviour, or ſtudied civility. See the next article.

Good-MANNERS, according to Swift, is the art of making thoſe people eaſy with whom we converſe.

Whoever makes the feweſt perſons uneaſy, is the beſt bred in the company.

As the beſt law is founded upon reaſon, ſo are the beſt manners. And as ſome lawyers have introduced unreaſonable things into common law; ſo likewiſe many teachers have introduced abſurd things into common good-manners.

One principal point of this art is to ſuit our behaviour to the three ſeveral degrees of men; our ſuperiors, our equals, and thoſe below us.

For inſtance, to preſs either of the two former to eat or drink, is a breach of manners; but a tradeſman or a farmer muſt be thus treated, or elſe it will be difficult to perſuade them that they are welcome.

Pride, ill-nature, and want of ſenſe, are the three great ſources of ill-manners: without ſome one of theſe defects, no man will behave himſelf ill for want of experience; or of what, in the language of fools, is called *knowing the world*.

" I defy (proceeds our author) any one to aſſign an incident wherein reaſon will not direct us what we are to ſay or to do in company, if we are not miſled by pride or ill-nature. Therefore, I inſiſt that good ſenſe is the principal foundation of good-manners; but becauſe the former is a gift which very few among mankind are poſſeſſed of, therefore all the civilized nations of the world have agreed upon fixing ſome rules for common behaviour, beſt ſuited to their general cuſtoms, or fancies, as a kind of artificial good-ſenſe to ſupply the defects of reaſon. Without which, the gentlemanly part of dunces would be perpetually at cuffs, as they ſeldom fail when they happen to be drunk, or engaged in ſquabbles about women or play. And, God be thanked, there hardly happeneth a duel in a year, which may not be imputed to one of thoſe three motives. Upon which account, I ſhould be exceedingly ſorry to find the legiſlature make any new laws againſt the practice of duelling; becauſe the methods are eaſy, and many, for a wiſe man to avoid a quarrel with honour, or engage in it with innocence. And I can diſcover no political evil in ſuffering bullies, ſharpers, and rakes, to rid the world of each other by a method of their own, where the law hath not been able to find an expedient.

" As the common forms of good-manners were intended for regulating the conduct of thoſe who have weak underſtandings; ſo they have been corrupted by the perſons for whoſe uſe they were contrived. For theſe people have fallen into a needleſs and endleſs way of multiplying ceremonies, which have been extremely troubleſome to thoſe who practiſe them, and inſupportable to every body elſe; inſomuch that wiſe men are often more uneaſy at the over-civility of theſe refiners, than they could poſſibly be in the converſations of peaſants or mechanics.

" The impertinencies of this ceremonial behaviour are nowhere better ſeen than at thoſe tables where ladies preſide, who value themſelves upon account of their good-breeding; where a man muſt reckon upon paſſing an hour without doing any one thing he hath a mind to, unleſs he will be ſo hardy as to break through all the ſettled decorum of the family. She determineth what he loveth beſt, and how much he ſhall eat; and if the maſter of the houſe happeneth to be of the ſame diſpoſition, he proceedeth in the ſame tyrannical manner to preſcribe in the drinking part: at the ſame time you are under the neceſſity of anſwering a thouſand apologies for your entertainment. And although a good deal of this humour is pretty well worn off among many people of the beſt faſhion, yet too much of it ſtill remaineth, eſpecially in the country; where an honeſt gentleman aſſured me, that having been kept four days againſt his will at a friend's houſe, with all the circumſtances of hiding his boots, locking up the ſtable, and other contrivances of the like nature, he could not remember, from the moment he came into the houſe, to the moment he left it, any one thing wherein his inclination was not directly contradicted; as if the whole family had entered into a combination to torment him.

" But, beſides all this, it would be endleſs to recount the many fooliſh and ridiculous accidents I have obſerved among theſe unfortunate proſelytes to ceremony. I have ſeen a ducheſs fairly knocked down by the precipitancy of an officious coxcomb running to ſave her the trouble of opening a door. I remember, upon a birth-day at court, a great lady was rendered utterly diſconſolate, by a diſh of ſauce let fall by a page directly upon her head-dreſs and brocade, while ſhe gave a ſudden turn to her elbow upon ſome point of ceremony with the perſon who ſat next her. Monſieur Buys, the Dutch envoy, whoſe politics and manners were much of a ſize, brought a ſon with him about 13 years old, to a great table at court. The boy and his father, whatever they put on their plates, they firſt offered round in order, to every perſon in the company; ſo that we could not get a minute's quiet during the whole dinner. At laſt their two plates happened to encounter, and with ſo much violence, that, being china, they broke in twenty pieces, and ſtained half the company with wet ſweetmeats and cream.

" There is a pedantry in manners as in all arts and ſciences, and ſometimes in trades. Pedantry is properly the over-rating any kind of knowledge we pretend to. And if that kind of knowledge be a trifle in itſelf, the pedantry is the greater. For which reaſon I look upon fiddlers, dancing-maſters, heralds, maſters of the ceremony, &c. to be greater pedants than Lipſius, or the elder Scaliger. With theſe kind of pedants, the court, while I knew it, was always plentifully ſtocked: I mean from the gentleman-uſher (at leaſt) incluſive, downward to the gentleman-porter; who are, generally ſpeaking, the moſt inſignificant race of people that this iſland can afford, and with the ſmalleſt tincture of good-manners, which is the only trade they profeſs. For being wholly illiterate, converſing chiefly with each other, they reduce the whole ſyſtem of breeding within the forms and circles of their ſeveral offices: and as they are below the notice of miniſters, they live and die in court under all revolutions, with great obſequiouſneſs to thoſe who are in any degree of credit or favour, and with rudeneſs and inſolence to every body elſe. From whence I have long concluded, that good-manners are not a plant of the court-growth: for if they were, thoſe people who have underſtandings directly of a level for ſuch acquirements, and who have ſerved ſuch long apprenticeſhips to nothing elſe, would certainly have picked them up. For as to the great officers who attend the prince's perſon or councils, or preſide in his family, they are a tranſient body, who have no better a title to good-manners than their neighbours, nor will probably have recourſe to gentlemen-uſhers for inſtruction. So that I know little to be learned at court on this head, except in the material circumſtance of dreſs; wherein the authority of the maids of honour muſt indeed be allowed to be almoſt equal to that of a favourite actreſs.

" I remember a paſſage my lord Bolingbroke told me: That going to receive prince Eugene of Savoy at his landing, in order to conduct him immediately to the queen, the prince ſaid he was much concerned that he could not ſee her majeſty that night: for Monſieur Hoffman (who was then by) had aſſured his highneſs, that he could not be admitted into her preſence with a tied-up periwig; that his equipage was not arrived; and that he had endeavoured in vain to borrow a long one among all his valets and pages. My lord turned the matter to a jeſt, and brought the prince to her majeſty: for which he was highly cenſured by the whole tribe of gentlemen-uſhers; among whom Monſieur Hoffman, an old dull reſident of the emperor's, had picked up this material point of ceremony; and which, I believe, was the beſt leſſon he had learned in five and twenty years reſidence.

" I make a difference between *good-manners* and *good-breeding;* although, in order to vary my expreſſion, I am ſometimes forced to confound them. By the firſt, I only underſtand the art of remembering, and applying, certain ſettled forms of general behaviour. But *good-breeding* is of a much larger extent: for beſides an uncommon degree of literature ſufficient to qualify a gentleman for reading a play, or a political pamphlet, it taketh in a great compaſs of knowledge; no leſs than that of dancing, fighting, gaming, making the circle of Italy, riding the great horſe, and ſpeaking French; not to mention ſome other ſecondary or ſubaltern accompliſhments, which are more eaſily acquired. So that the difference between good-breeding and good-manners lieth in this, That the former cannot be attained to by the beſt underſtandings without ſtudy and labour; whereas a tolerable degree of reaſon will inſtruct us in every part of good-manners without other aſſiſtance.

" I can think of nothing more uſeful upon this ſubject, than to point out ſome particulars wherein the very eſſentials of good-manners are concerned, the neglect or perverting of which doth very much diſturb the good commerce of the world, by introducing a traffic of a mutual uneaſineſs in moſt companies.

" Firſt, a neceſſary part of good-manners is a punctual obſervance of time at our own dwellings, or thoſe of others, or at third places; whether upon matters of civility, buſineſs, or diverſion: which rule, though it be a plain dictate of common reaſon, yet the greateſt miniſter* I ever knew, was the greateſt treſpaſſer againſt it; by which all his buſineſs doubled upon him, and placed him in a continual arrear. Upon which I often uſed to rally him as deficient in point of good-manners. I have known more than one ambaſſador, and ſecretary of ſtate, with a very moderate portion of intellectuals, execute their office with great ſucceſs and applauſe, by the mere force of exactneſs and regularity. If you duly obſerve time for the ſervice of another, it doubles the obligation; if upon your own account, it would be manifeſt folly, as well as ingratitude, to neglect it; if both are concerned, to make your equal or inferior attend on you to his own diſadvantage, is pride and injuſtice.

" Ignorance of forms cannot properly be ſtyled *ill-manners:* becauſe forms are ſubject to frequent changes; and conſequently, being not founded upon reaſon, are beneath a wiſe man's regard. Beſides, they vary in every country; and after a ſhort period of time vary frequently in the ſame: ſo that a man who travelleth, muſt needs be at firſt a ſtranger to them in every court through which he paſſeth; and perhaps, at his return, as much a ſtranger in his own; and, after all, they are eaſier to be remembered or forgotten than faces or names.

" Indeed, among the many impertinencies that ſuperficial young men bring with them from abroad, this bigotry of forms is one of the principal, and more predominant than the reſt; who look upon them not only as if they were matters capable of admitting of choice, but even as points of importance; and therefore

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* *Harl earl of ford, lo high tre ſurer t queen*

fore are zealous upon all occaſions to introduce and propagate the new forms and faſhions they have brought back with them: ſo that, uſually ſpeaking, the worſt-bred perſon in the company, is a young traveller juſt arrived from abroad."

MANOEUVRE, in a military ſenſe, conſiſts ſolely in diſtributing equal motion to every part of a body of troops, to enable the whole to form, or change their poſition, in the moſt expeditious and beſt method, to anſwer the purpoſes required of a battalion, brigade, or line, of cavalry, artillery, or infantry. It has always been lamented, that men have been brought on ſervice without being informed of the uſes of the different manœuvres they have been practiſing; and, having no ideas of any thing but the uniformity of the parade, inſtantly fall into diſorder and confuſion when they loſe the ſtep, or ſee a deviation from the ſtraight lines they have been accuſtomed to at exerciſe. It is a pity to ſee ſo much attention given to ſhow, and ſo little to inſtruct the troops in what may be of uſe to them in real ſervice.—No manœuvre ſhould be executed in preſence of the enemy, unleſs protected by ſome diviſion of the troops.

MANOMETER, or **Manoscope**, an inſtrument to ſhow or meaſure the alterations in the rarity or denſity of the air. The manometer differs from the barometer in this, That the latter only ſerves to meaſure the *weight* of the atmoſphere, or of the column of air over it; but the former, the denſity of the air in which it is found; which denſity depends not only on the weight of the atmoſphere, but alſo on the action of heat and cold, &c. Authors, however, generally confound the two together; and Mr Boyle himſelf gives us a very good manometer of his contrivance, under the name of a *ſtatical barometer*, conſiſting of a bubble of thin glaſs, about the ſize of an orange, which, being counterpoiſed when the air was in a mean ſtate of denſity, by means of a nice pair of ſcales, ſunk when the atmoſphere became lighter, and roſe as it grew heavier.

Another kind of manometers were made uſe of by colonel Roy, in his attempts to correct the errors of the barometer, and are deſcribed in the Philoſophical Tranſactions, Vol. LXVII. p. 689. "They were (ſays he) of various lengths, from four to upwards of eight feet: they conſiſted of ſtraight tubes, whoſe bores were commonly from $\frac{1}{15}$th to $\frac{1}{25}$th of an inch in diameter. The capacity of the tube was carefully meaſured, by making a column of quickſilver, about three or four inches in length, move along it from one end to the other. Theſe ſpaces were ſeverally marked, with a fine-edged file, on the tubes; and transferred from them to long ſlips of paſteboard, for the ſubſequent conſtruction of the ſcales reſpectively belonging to each. The bulb, attached to one end of the manometer at the glaſs-houſe, was of the form of a pear, whoſe point being occaſionally opened, dry or moiſt air could be readily admitted, and the bulb ſealed again, without any ſenſible alteration in its capacity.

"The air was confined by means of a column of quickſilver, long or ſhort, and with the bulb downward or upwards, according to the nature of the propoſed experiment. Here it muſt be obſerved, that, from the adheſion of the quickſilver to the tube, the inſtrument will not act truly, except it be in a vertical poſition; and even then, it is neceſſary to give it a ſmall degree of motion, to bring the quickſilver into its true place; where it will remain in equilibrio, between the exterior preſſure of the atmoſphere on one ſide, and the interior elaſtic force of the confined air on the other.

"Pounded ice and water were uſed to fix a freezing point on the tube; and by means of ſalt and ice, the air was farther condenſed, generally four, and ſometimes five or ſix degrees below zero. The thermometer and manometer were then placed in the tin veſſel, among water which was brought into violent ebullition; where having remained a ſufficient time, and motion being given to the manometer, a boiling point was marked thereon. After this the fire was removed, and the gradual deſcents of the piece of quickſilver, correſponding to every 20 degrees of temperature in the thermometer, were ſucceſſively marked on a deal rod applied to the manometer. It is to be obſerved, that both inſtruments, while in the water, were in circumſtances perfectly ſimilar; that is to ſay, the ball and bulb were at the bottom of the veſſel.

"In order to be certain that no air had eſcaped by the ſide of the quickſilver during the operation, the manometer was frequently placed a ſecond time in melting ice. If the barometer had not altered between the beginning and end of the experiment, the quickſilver always became ſtationary at or near the firſt mark. If any ſudden change had taken place in the weight of the atmoſphere during that interval, the ſame was noted, and allowance made for it in afterwards proportioning the ſpaces.

"Long tubes, with bores truly cylindrical, or of any uniform figure, are ſcarcely ever met with. Such however as were uſed in theſe experiments, generally tapered in a pretty regular manner from one end to the other. When the bulb was downwards, and the tube narrowed that way, the column of quickſilver confining the air lengthened in the lower-half of the ſcale, and augmented the preſſure above the mean. In the upper-half, the column being ſhortened, the preſſure was diminiſhed below the mean. In this caſe, the obſerved ſpaces both ways from the centre, were diminiſhed in the inverſe ratio of the heights of the barometer at each ſpace, compared with its mean height. If the bore widened towards the bulb when downwards, the obſerved ſpaces, each way from the centre, were augmented in the ſame inverſe ratio; but in the experiments on air leſs denſe than the atmoſphere, the bulb being upwards, the ſame equation was applied with contrary ſigns: and if any extraordinary irregularity took place in the tube, the correſponding ſpaces were proportioned both ways from that point, whether high or low, that anſwered to the mean.

"The obſerved and equated manometrical ſpaces being thus laid down on the paſteboard containing the meaſures of the tube; the 212° of the thermometer, in exact proportion to the ſections of the bore, were conſtructed along-ſide of them: hence the coincidences with each other were eaſily ſeen; and the number of thermometrical degrees anſwering to each manometrical ſpace readily transferred into a table prepared for the purpoſe."

MANOR, **Manerium**, (*à manendo*, becauſe the uſual reſidence of the owner,) ſeems to have been a

Manor.

Blackſt. Comment.

diſtrict of ground, held by lords or great perſonages; who kept in their own hands ſo much land as was neceſſary for the uſe of their families, which were called *terræ dominicales*, or *demeſne lands*; being occupied by the lord, or *dominus manerii*, and his ſervants. The other, or *tenemental* lands, they diſtributed among their tenants; which, from the different modes of tenure, were called and diſtinguiſhed by two different names.—Firſt, *book land*, or charter-land, which was held by deed under certain rents and free ſervices, and in effect differed nothing from free ſocage lands: and from hence have ariſen moſt of the freehold tenants who hold of particular manors, and owe ſuit and ſervice to the ſame. The other ſpecies was called *folk-land*, which was held by no aſſurance in writing, but diſtributed among the common folk or people at the pleaſure of the lord, and reſumed at his diſcretion; being indeed land held in villenage. See VILLENAGE.

The reſidue of the manor, being uncultivated, was termed the *lord's waſte*, and ſerved for public roads, and for common of paſture to the lord and his tenants. Manors were formerly called *baronies*, as they ſtill are *lordſhips*; and each lord or baron was empowered to hold a domeſtic court, called the *court-baron*, for redreſſing miſdemeſnors and nuſances within the manor, and for ſettling diſputes of property among the tenants. This court is an inſeparable ingredient of every manor; and if the number of ſuitors ſhould ſo fail, as not to leave ſufficient to make a jury or homage, that is, two tenants at the leaſt, the manor itſelf is loſt.

In the early times of our legal conſtitution, the king's greater barons, who had a large extent of territory held under the crown, granted out frequently ſmaller manors to inferior perſons to be held of themſelves; which do therefore now continue to be held under a ſuperior lord, who is called in ſuch caſes the *lord paramount* over all theſe manors: and his ſeignory is frequently termed an *honour*, not a *manor*; eſpecially if it hath belonged to an ancient feodal baron, or hath been at any time in the hands of the crown. In imitation whereof, theſe inferior lords began to carve out and grant to others ſtill more minute eſtates, to be held as of themſelves, and were ſo proceeding downwards *in infinitum*, till the ſuperior lords obſerved, that, by this method of ſubinfeudation, they loſt all their feodal profits of wardſhips, marriages, and eſcheats, which fell into the hands of theſe meſne or middle lords, who were the immediate ſuperiors of the *terre-tenant*, or him who occupied the land; and alſo that the meſne lords themſelves were ſo impoveriſhed thereby, that they were diſabled from performing their ſervices to their own ſuperiors. This occaſioned, firſt, that proviſion in the 32d chapter of *magna charta*, 9 Hen. III. (which is not to be found in the firſt charter granted by that prince, nor in the great charter of king John,) that no man ſhould either give or ſell his land, without reſerving ſufficient to anſwer the demands of his lord; and, afterwards, the ſtatute of Weſtm. 3. or *quia emptores*, 18 Edw. I. c. 1. which directs, that, upon all ſales, or feoffments of land, the feoffee ſhall hold the ſame, not of his immediate feoffor, but of the chief lord of the fee, of whom ſuch feoffor himſelf held it. But theſe proviſions not extending to the king's own tenants *in capite*, the like law concerning them is declared by the ſtatutes of *prærogativa regis*, 17 Edw. II. c. 6. and of 34 Edw. III. c. 15. by which laſt all ſubinfeudations, previous to the reign of king Edward I. were confirmed; but all ſubſequent to that period were left open to the king's prerogative. And from hence it is clear, that all manors exiſting at this day, muſt have exiſted as early as king Edward the Firſt: for it is eſſential to a manor, that there be tenants who hold of the lord; and, by the operation of theſe ſtatutes, no tenant *in capite* ſince the acceſſion of that prince, and no tenant of a common lord ſince the ſtatute of *quia emptores*, could create any new tenants to hold of himſelf. See VILLENAGE.

MANS, an ancient, rich, and populous town of France, capital of the county of Maine, with a biſhop's ſee. Its wax and ſtuffs are famous. It is ſeated on a high hill near the river Sarr, in E. Long. 0. 10. N. Lat. 47. 58.

MANSFELD, a city of Germany, and capital of a county of the ſame name, in the circle of Upper Saxony. E. Long. 12. 55. N. Lat. 51. 35.

MANSFIELD, a town of Nottinghamſhire in England, ſeated in the foreſt of Sherwood. It is a pretty large town, with good houſes; drives a great trade, and is famous for malt. W. Long. 1. 6. N. Lat. 53. 12.

MANSIO, a term often mentioned in itineraries, denoting *inns* on the public roads to lodge in, at the diſtance of eighteen miles from each other; (Lactantius). Alſo, in the lower ages, it came to denote "an encampment for one night," (Lampridius).

MANSIO, or *Manſus*, was ſometimes alſo uſed in the ſame ſenſe with *hide*; that is, for as much land as one plough could till in a year. See HIDE.

MANSE, MANSUS, *Manſa*, or *Manſum*; in ancient law-books, denotes an *houſe*, or habitation, either with or without land. See HOUSE, and MANSION. The word is formed *à manendo*, "abiding;" as being the place of dwelling or reſidence.

Capital MANSE, (*Manſum Capitale*,) denotes the *manor-houſe*, or lord's court. See MANOR, and COURT.

MANSUS *Preſbyteri*, is a parſonage or vicarage houſe for the incumbent to reſide in. This was originally, and ſtill remains, an eſſential part of the endowment of a pariſh-church, together with the glebe and tythes. It is ſometimes called *Preſbyterium*. See PRESBYTERY.

MANSION, MANSIO, a dwelling-houſe, or habitation, eſpecially in the country. See MANSE.

MANSION is more particularly uſed for the lord's chief dwelling-houſe within his fee; otherwiſe called the *capital meſſuage*, or chief manor-place. See MANOR.

MANSLAUGHTER, the unlawful killing of another, without malice either expreſs or implied: Which may be either voluntarily, upon a ſudden heat; or involuntarily, but in the commiſſion of ſome unlawful act. Theſe were called, in the Gothic conſtitutions, *homicidia vulgaria; quæ aut caſu, aut etiam ſponte committuntur, ſed in ſubitaneo quodam iracundiæ calore et impetu*. And hence it follows, that in manſlaughter there can be no acceſſories before the fact; becauſe it muſt be done without premeditation.

1. As to the firſt, or voluntary branch: If upon a ſudden quarrel two perſons fight, and one of them kills the other, this is manſlaughter: and ſo it is, if they upon ſuch an occaſion go out and fight in a field; for this is one continued act of paſſion: and the law pays that regard to human frailty, as not to put a haſty and deliberate act upon the ſame footing with regard to guilt. So alſo if a man be greatly provoked, as by pulling his noſe, or other great indignity, and immediately kills the aggreſſor, though this is not excuſable *ſe defendendo*, ſince there is no abſolute neceſſity for doing it to preſerve himſelf; yet neither is it murder, for there is no previous malice; but it is manſlaughter. But in this, and in every other caſe of homicide upon provocation, if there be a ſufficient cooling-time for paſſion to ſubſide and reaſon to interpoſe, and the perſon ſo provoked afterwards kills the other, this is deliberate revenge, and not heat of blood; and accordingly amounts to murder. So if a man takes another in the act of adultery with his wife, and kills him directly upon the ſpot; though this was allowed by the laws of Solon, as likewiſe by the Roman civil law, (if the adulterer was found in the huſband's own houſe), and alſo among the ancient Goths; yet in England it is not abſolutely ranked in the claſs of juſtifiable homicide, as in caſe of a forcible rape, but it is manſlaughter. It is, however, the loweſt degree of it; and therefore in ſuch a caſe the court directed the burning in the hand to be gently inflicted, becauſe there could not be a greater provocation. Manſlaughter therefore, on a ſudden provocation, differs from excuſable homicide *ſe defendendo* in this: That in one caſe there is an apparent neceſſity, for ſelf-preſervation, to kill the aggreſſor; in the other no neceſſity at all, being only a ſudden act of revenge.

2. The ſecond branch, or involuntary manſlaughter, differs alſo from homicide excuſable by miſadventure, in this; That miſadventure always happens in conſequence of a lawful act, but this ſpecies of manſlaughter in conſequence of an unlawful one. As if two perſons play at ſword and buckler, unleſs by the king's command, and one of them kills the other: this is manſlaughter, becauſe the original act was unlawful; but it is not murder, for the one had no intent to do the other any perſonal miſchief. So where a perſon does an act, lawful in itſelf, but in an unlawful manner, and without due caution and circumſpection; as when a workman flings down a ſtone or piece of timber into the ſtreet, and kills a man; this may be either miſadventure, manſlaughter, or murder, according to the circumſtances under which the original act was done. If it were in a country village, where few paſſengers are, and he calls out to all people to have a care, it is miſadventure only: but if it were in London, or other populous towns, where people are continually paſſing, it is manſlaughter, though he gives loud warning; and murder, if he knows of their paſſing and gives no warning at all, for then it is malice againſt all mankind. And, in general, when an involuntary killing happens in conſequence of an unlawful act, it will be either murder or manſlaughter, according to the nature of the act which occaſioned it. If it be in proſecution of a felonious intent, or in its conſequences naturally tended to bloodſhed, it will be murder; but if no more was intended than a mere civil treſpaſs, it will only amount to manſlaughter.

3. As to the puniſhment of this degree of homicide: The crime of manſlaughter amounts to felony, but within the benefit of clergy; and the offender ſhall be burnt in the hand, and forfeit all his goods and chattels.

But there is one ſpecies of manſlaughter, which is puniſhed as murder, the benefit of clergy being taken away from it by ſtatute; namely, the offence of mortally ſtabbing another, though done upon ſudden provocation. See STABBING.

MANTA, in ichthyology. See RAJA.

MANTE, a conſiderable town of France, capital of the Mantois; ſeated on the river Seine, in E. Long. 1. 45. N. Lat. 48. 58.

MANTELETS, in the art of war, a kind of moveable parapets, made of planks about three inches thick, nailed one over another, to the height of almoſt ſix feet, generally caſed with tin, and ſet upon little wheels, ſo that in a ſiege they may be driven before the pioneers, and ſerve as a blinds to ſhelter them from the enemy's ſmall ſhot.

MANTINEA, (anc. geog.) a town ſituate in the ſouth of Arcadia, on the confines of Laconia, (Ptolemy); called afterwards *Antigonea*, in honour of king Antigonus. It is memorable for a battle fought in its neighbourhood between the Thebans and Spartans, in which fell the celebrated commander Epaminondas. See THEBES.

MANTIS, in zoology, a genus of inſects belonging to the order of hemiptera, the characters of which are theſe: The head bending forward, maxillous, and furniſhed with palpi: four membranaceous convoluted wings, the two lowermoſt plicated: the fore-feet compreſſed, ſerrato denticulated underneath; armed with a ſingle claw, and a ſetaceous, lateral-jointed toe: the thorax linear, long, and narrow. There are 14 ſpecies, of which the moſt remarkable is the ficifolia, or walking-leaf, ſaid to be brought from the Spaniſh Weſt Indies: it is very flat-bodied; of the reddiſh colour of ſome dried leaves; the wings being a little more yellow, ſome of them inclining to green. Mr Edwards is of opinion, that they change from green to a reddiſh brown, according as the leaves of the trees change with the ſeaſon of the year, in order the better to deceive birds that may feed on them. The hinder legs are perfect; but our author believes the outer joints of the four other legs broke off, and he did not care to ſupply them by conjecture. See Plate CLXVI. fig. 1.

MANTLE, or MANTLE-*Tree*, in architecture, the lower part of the chimney, or that piece of timber which is laid acroſs the jaumbs, and ſuſtains the compartments of the chimney-piece.

MANTLE, or *Mantling*, in heraldry, that appearance of folding of cloth, flouriſhing, or drapery, which in any atchievement is drawn about a coat of arms. See HERALDRY, p. 3607.

MANTO, in poetic hiſtory, the daughter of Tireſias, and like her father ſtrongly inſpired with prophecy. She was in ſo great eſteem, that, when the Argives pillaged Thebes, they thought they could not acquit their vow to Apollo, of conſecrating to him the moſt precious thing in their plunder, without offering him this young woman. She was therefore ſent to the temple of Delphi. But this did not engage her in any vow of continency; or, if it did, ſhe obſerved it very ill. For ſhe bore a ſon, called *Amphilocus*, to Alcmeon, who had been generaliſſimo of the army which took Thebes; and a daughter to the ſame, named *Tiſiphone*. Theſe children were the fruits of an amour carried on during the madneſs which had ſeized Alcmeon, after he had put his mother to death. Virgil tranſports her into Italy, not for the ſake of ſecuring her virginity, but to produce a ſon of her who built Mantua.

MANTUA, anciently a town of the Tranſpadana, in Italy, ſituated on the Mincius, a river running from the Lacus Benacus, (Pliny); a very old town, ſuppoſed to be older than Rome. It is ſtill called *Mantua*, and is the capital of the duchy of that name. It is now a large place, having eight gates and about 16,000 inhabitants. The ſtreets are broad and ſtraight, and the houſes well built. It is very ſtrong by ſituation as well as by art; lying in the middle of a lake, or rather moraſs, formed by the river Minchio. There is no acceſs to the city but by two cauſeways which croſs this moraſs, and which are ſtrongly fortified; ſo that the city is looked upon to be one of the moſt conſiderable fortreſſes of Europe; and the allies in 1745, tho' their army was in the duchy, durſt not undertake the ſiege. It was greatly noted for its ſilk-manufactures, which are now much decayed. The air in the ſummer-time is very unwholeſome. The celebrated poet Virgil was born at a village near this city. E. Long. 10. 47. N. Lat. 45. 10.

MANTUA, the duchy of, a country of Italy, lying along the river Po, which divides it into two parts. It is bounded on the north by the Veroneſe; on the ſouth, by the duchies of Reggio, Modena, and Mirandola: on the eaſt, by the Ferrareſe; and on the weſt, by the Cremoneſe. It is about 50 miles in length, and 25 in breadth; is fruitful in corn, paſtures, flax, fruits, and excellent wine. Charles IV. the laſt duke of Mantua, being a vaſſal of the empire, took part with the French, in the diſpute relating to the ſucceſſion of Spain; for which reaſon he was put under the ban of the empire, and died at Venice in 1708. He having no heirs, the emperor kept the Mantuan in his own hands, and the duke of Savoy had Montferrat, which were confirmed to them by ſubſequent treaties. After the death of the emperor, in 1740, his eldeſt daughter, now empreſs-queen, kept poſſeſſion of the Mantuan; and the governor of the Milaneſe had the adminiſtration of affairs. The Mantuan comprehends the duchies of Mantua, Guaſtalla, and Sabioneta; the principalities of Caſtiglione, Solforino, and Boſolo; likewiſe the county of Novellara. The principal rivers are the Po, the Oglio, and the Minchio; and the principal town is Mantua.

MANTUAN (Baptiſt), a famous Italian poet, born at Mantua in 1448. He took his name from the town; not having a right to that of his father, as being a natural ſon. In his youth, he applied himſelf to Latin poetry, which he cultivated all his life; for it does not appear that he wrote any thing in Italian. He entered among the Carmelites, and became general of the order; tho' he quitted that dignity upon ſome diſguſt in 1515, and died the year following. The duke of Mantua, ſome years after, erected a marble ſtatue to his memory crowned with laurel, and placed it next to Virgil. His works were collected and publiſhed at Paris in three volumes folio in 1513, with the commentaries of St Murrhon, S. Brant, and I. Badius.

MANUAL, a word ſignifying any thing performed by the hand.

MANUAL, (*manualis*), in law, ſignifies what is employed or uſed by the hand, and whereof a preſent profit may be made: as ſuch a thing in the manual occupation of one is where it is actually uſed or employed by him.

MANUAL *Exerciſe*, in the army, conſiſts in the obſervance of certain words of command appointed for this purpoſe. When a regiment is drawn up, or paraded for exerciſe, the men are placed three deep, either by companies, or divided into platoons, with the grenadiers on the right. When ſoldiers are drawn up for exerciſe, the ranks and files ſhould be exactly even; and each ſoldier ſhould be inſtructed to carry his arms well, to keep his firelock ſteady and even upon his ſhoulder, with the right hand hanging down, and the whole body without conſtraint. The diſtances between the files muſt be equal, and the ranks eight feet diſtant from each other. Every motion ſhould be performed with life, and the greateſt exactneſs obſerved in all firings, wheelings, and marching; and therefore a regiment ſhould never be under arms longer than two hours.

The following is an abſtract of the words of command at the manual exerciſe, with their explanations. 1. *Poiſe your firelock:* i. e. Seize the firelock with your right hand, and turn the lock outwards, keeping the firelock perpendicular; then bring up the firelock with a quick motion from the ſhoulder, and ſeize it with the left hand, juſt above the lock, ſo that the fingers may lie upon the ſtock, with the elbows down, and the thumb upon the ſtock; the firelock muſt not be held too far from the body, and the left-hand muſt be of an equal height with the eyes. 2. *Cock your firelock:* i. e. Turn the barrel oppoſite to your face, and place your thumb upon the cock, raiſing your elbow ſquare at this motion; then cock your firelock, by drawing your elbow down, placing your right-thumb on the breech-pin, and the fingers under the guard. 3. *Preſent:* i. e. Step back about ſix inches to the rear with the right-foot, bringing the left-toe to the front; at the ſame time the butt-end of the firelock muſt be brought to an equal height with the ſhoulder, placing the left-hand on the ſwell, and the fore-finger of the right-hand before the trigger, ſinking the muzzle a little. 4. *Fire:* i. e. Pull the trigger briſkly, and immediately after, bringing up the right-foot to the inſide of the left, come to the priming poſition, with the lock oppoſite to the right-breaſt, the muzzle to the height of the hat, keeping it firm and ſteady; and at the ſame time ſeize the cock with the fore-finger and thumb of the right-hand, the back of the hand being turned up. 5. *Half cock your firelock:* i. e. Half-bend the cock briſkly with a draw-back of the right-elbow, bringing it cloſe to the butt of the fire-lock. 6. *Handle your cartridge:* i. e. Bring your right-hand with a ſhort round to your pouch, flapping it hard; ſeize the cartridge, and bring it with a quick motion to your mouth; bite the top well off, and bring the hand as low as the chin, with the elbow down. 7. *Prime:* i. e. Shake the powder into the pan, placing the three laſt fingers behind the rammer, with the elbow up. 8. *Shut your pans:* i. e. Shut your pans briſkly, drawing your right-arm at this motion towards your body, holding the cartridge faſt in your hand, as before; then turn the piece nimbly round to the loading poſition, with the lock to the front, and the muzzle to the height of the chin, bringing the right-hand behind the muzzle, with both feet kept faſt in this motion. 9. *Charge with cartridge:* i. e. Turn up your hand, and put the cartridge into the muzzle, ſhaking the powder into the barrel; place your hand, cloſed, with a quick and ſtrong motion, upon the rammer. 10. *Draw your rammer:* i. e. Draw the rammer with a quick motion half out, ſeizing it at the muzzle back-handed; draw it quite out, turn it, and enter it into the muzzle. 11. *Ram down your charge:* i. e. Ram the cartridge well down in the barrel, inſtantly recovering and ſeizing the rammer back-handed at the centre, turning it, and entering it as far as the lower pipe, placing at the ſame time the edge of the hand on the butt-end of the rammer, with fingers extended. 12. *Return your rammer:* i. e. Return the rammer, bringing up the piece with the left-hand to the ſhoulder, ſeizing it with the right-hand under the cock, keeping the left-hand faſt at the ſwell, turning the body ſquare to the front. 13. *Shoulder your firelock:* i. e. Quit the left-hand, and place it ſtrong upon the butt; quit the right-hand, and throw it down the right-ſide. 14. *Reſt your firelock:* i. e. Seize the firelock with the right-hand, turning the lock outwards; raiſe the firelock from the ſhoulder, and place your left-hand with a quick motion above the lock, holding the piece right up and down in both hands before you, and your left-hand even with your eyes; ſtep briſkly back with your right-foot, placing it a hand's breadth diſtance from your left-heel, and at the ſame time bring down your firelock as quick as poſſible to the reſt, ſinking it as far down before your left-hand as your right-hand will permit without conſtraint; your left-hand being at the feather-ſpring, and your right, with fingers extended, held under the guard, taking care to draw in the muzzle well towards your body, and to dreſs in a line with the butt-end. 15. *Order your firelock:* i. e. Place your firelock nimbly with your left-hand againſt your right-ſhoulder; quit the firelock with the right-hand, ſinking it at the ſame time with your left; ſeize it at the muzzle, which muſt be of an equal height with your chin, and hold it cloſe againſt your right-ſide; lift up your right-foot, and place it by your left; at the ſame time throw back your left-hand by your left-ſide, and with your right bring down the butt-end ſtrong upon the ground, placing it even with the toe of your right-foot; the thumb of your right-hand lying along the barrel, and the muzzle kept at a little diſtance from your body. 16. *Ground your firelock:* i. e. Half face to the right upon your heels, and at the ſame time turn the firelock, ſo that the lock may point to the rear, and the flat of the butt-end lie againſt the inſide of your foot; at the ſame time ſlipping the right-foot behind the butt of the firelock, the right-toe pointing to the right, and the left to the front: ſtep directly forward with your left-foot, about as far as the ſwell of the firelock, and lay it upon the ground, your left hand hanging down by your left-leg, and your right kept faſt, with the butt-end againſt it; raiſe yourſelf up again nimbly, bringing back your left-foot to its former poſition, keeping your body faced to the right; face again to the left upon your heels, and come to your proper front, letting your hands hang down without motion. 17. *Take up your firelock:* i. e. Face to the right upon both heels; ſink your body down, and come up to the poſition deſcribed in the ſecond motion of grounding; raiſe yourſelf and firelock, bringing it cloſe to your right-ſide; come to your proper front, ſeizing your firelock at the muzzle, as in explanation 15. 18. *Reſt your firelock:* i. e. Bring your right-hand as far as the ſwell; raiſe the firelock high up in a perpendicular line from the ground with your right-hand, and ſeize it with your left above the ſpring, the cock being at the height of the waiſt belt; ſtep back with your right-foot, placing it behind your left-heel, and come to the reſt. 19. *Shoulder your firelock:* i. e. Lift up your right foot, and place it by your left; bring the firelock at the ſame time to your left-ſhoulder, and ſeize the butt-end with the left-hand, keeping it in the ſame poſition as above deſcribed; throw your right-hand briſkly back. 28. *Secure your firelock:* i. e. Bring the right-hand briſkly up, and place it under the cock, keeping the firelock ſteady in the ſame poſition; quit the butt with the left-hand, and ſeize the firelock with it at the ſwell, bringing the elbow cloſe down upon the lock; the right-hand being kept faſt in this motion, and the piece ſtill upright; quit the right-hand, and bring it down your right-ſide, bringing the firelock nimbly down to the ſecure; the left-hand in a line with the waiſt-belt. 21. *Shoulder your firelock:* i. e. Bring the firelock up to a perpendicular line, ſeizing it with the right hand under the cock; quit the left-hand, and place it ſtrong upon the butt; quit the right-hand, and bring it ſmartly down the right-ſide. 22. *Fix your bayonet:* i. e. Firſt and ſecond motions, as in the two firſt of the ſecure; quit the right-hand, and bring the firelock ſmartly down to the left-ſide with the left-hand, as far as it will admit without conſtraint, ſeizing the bayonet at the ſame time with the right-hand, and fixing it, placing that hand juſt below the braſs, with the piece kept cloſe to the hollow of the ſhoulder. 23. *Shoulder your firelock:* i. e. Quit the right-hand, and bring up the firelock with the left; ſeize it again under the cock with your right, as in the ſecond motion of the ſecure; quit the left-hand, and place it ſtrong upon the butt; quit the right-hand, and bring it down the right-ſide. 24. *Preſent your arms:* i. e. as explained in three motions of the 14th word of command. 25. *To the right face:* i. e. Bring up the firelock with a quick motion high before you, till your left-hand comes even with your eyes, with the fingers of that hand extended along the ſtock, juſt above the feather ſpring, the right-foot to be brought cloſe up to the left-heel in this motion; face to the right, taking care in facing to hold the firelock right up and down, and ſteady in your hands; ſtep back with your right-foot, and come down to your *preſent*, as in the foregoing explanation. 26. *To the right* *face*; i. e. as in the foregoing explanation, facing to the right. 27. *To the right-about face;* i. e. as in the 25th explanation, only coming to the right-about inſtead of to the right. 28. *To the left face:* i. e. Bring the right-foot briſkly to the hollow of your left, with the firelock in the ſame poſition as in the firſt motion of *facing to the right;* face to the left; come down to the *preſent*, as before. 29. *To the left face;* i. e. as in the foregoing explanation. 30. *To the left-about face;* i. e. as before, coming to the left-about inſtead of to the left. 31. *Shoulder your firelock;* i. e. as in the two motions of the 19th explanation. 32. *Charge your bayonet;* i. e. as in the firſt explanation: bring the ſwell of the firelock down ſtrong upon the palm of the hand, graſping the piece at the ſmall, behind the lock, and as high as the waiſt-belt; the firelock upon a level with the barrel upwards. 33. *Shoulder your firelock:* i. e. Bring up the firelock to the ſhoulder, place the left-hand upon the butt, bringing the feet ſquare to the front; quit the right-hand, and throw it down the right ſide. 34. *Advance your arms;* i. e. firſt and ſecond motions, as in the firſt explanation: bring the firelock down the right-ſide, with the right-hand as low as it will admit without conſtraint, ſlipping up the left-hand at the ſame time to the ſwell, the guard between the thumb and fore finger of the right-hand, the three laſt fingers under the cock, with the barrel to the rear; quit the left-hand. 35. *Shoulder your firelock;* i. e. bring up the left-hand, and ſeize it at the ſwell; come ſmartly up to the poiſe; ſhoulder. 36. *Prime and load:* i. e. Come ſmartly to the *recover*, by ſpringing the firelock ſtraight up with the left-hand, turning the barrel inwards to the proper height of the recover: at the ſame time that the left-hand ſprings the firelock, the right-hand is raiſed briſkly from the right-ſide, and ſeizes the firelock acroſs the breaſt: as it riſes below the cock, the left-hand comes with a quick motion from the butt, and ſeizes the firelock ſtrong above the lock, the little finger of the left-hand at the ſpring of the lock, the left-hand at an equal height with the face, the butt cloſe to the body, but not preſſed, the firelock perpendicular oppoſite the left-ſide of the face: bring the firelock down with a briſk motion to the priming poſition, the left-hand holding the firelock, as in priming; the thumb of the right-hand placed againſt the face of the ſteel, the fingers clinched, and the elbow a little turned out, that the wriſt may be clear of the cock: open the pan, by throwing up the ſteel with a ſtrong motion of the right arm, turning the elbow in, and keeping the firelock ſteady in the left-hand: handle your cartridge; prime; ſhut your pan; caſt about; load; draw rammers; ram down the cartridge; return the rammers; ſhoulder. N. B. The motion of recover, and coming down to the priming poſition and opening pans, are to be done in the uſual time. The motions of handling cartridge to ſhutting the pans, are to be done as quick as poſſible: when the pans are ſhut, a ſmall pauſe is to be made, and then caſt about together; then the loading motions are to be done as quick as poſſible; but before the rammer is returned, another ſmall pauſe is to be made, counting 1, 2, between each motion, till the firelock is ſhouldered.—*Front rank, make ready:* i. e. Spring the firelock briſkly to the *recover*, keeping the left-foot faſt in this motion; as ſoon as the firelock is at the *recover*, without any ſtop, ſink the body briſkly without ſtooping forward, with a quick motion down upon the right knee; the butt-end of the firelock at the ſame time falls upon the ground, the front part of the butt being in a line with the heel of the left-foot. As ſoon as the butt comes to the ground, the firelock is to be cocked, immediately ſeizing the cock and ſteel in the right-hand; the firelock to be held firm in the left-hand, about the middle of that part of the firelock between the lock and the ſwell of the ſtock; the point of the left-thumb to be cloſe to the ſwell, pointing upwards. As the body is ſinking, the right-knee is to be thrown as far back as the left-leg may be right up and down; the right foot to be thrown a little to the right; the body to be kept ſtraight; the head up, looking to the right along the rank, the ſame as if ſhouldered; the firelock to be upright, and the butt about four inches to the right of the inſide of the left-foot. *Preſent:* i. e. Bring the firelock briſkly down to the *preſent*, by extending the left-arm to the full length with a ſtrong motion; at the ſame time ſpring up the butt by the cock with the right-hand, and raiſe up the butt ſo high upon the right-ſhoulder, that you may not be obliged to ſtoop too much with the head; the right-cheek to be cloſe to the butt, and the left-eye ſhut, and look along the barrel with the right-eye from the breech-pin to the muzzle; keep the left-elbow down in an eaſy poſition, and ſtand as ſteady as poſſible; the thumb of the right-hand to remain in the poſition as deſcribed in the third explanation of the manual. *Fire:* i. e. Pull the trigger as directed in the manual; and as ſoon as the piece is fired, give yourſelf a ſtrong ſpring upon your left-leg, raiſing your body briſkly, and ſtraight up, keeping your left-foot faſt, and bringing the right-heel to the inſide of the left; at the ſame time the firelock is to be brought up to the priming-poſition, and half-cocked immediately: a ſhort pauſe is to be made; then handle cartridge, and go on with the loading motions deſcribed in the explanation of *prime* and *load*.—*Centre rank, make ready:* i. e. Spring the firelock briſkly to the recover; ſo ſoon as the left-hand ſeizes the firelock above the lock, the right-elbow is to be nimbly raiſed a little, placing the thumb of that hand upon the cock; the fingers open by the plate of the lock, and as quick as poſſible force the piece to the cock, by dropping the elbow, and forcing down the cock with the thumb, ſtepping at the ſame time a moderate pace to the right, keeping the left foot faſt; as the firelock is cocked, the thumb is to fall below the cock, the right-hand ſeizing the firelock cloſe under the cock, firmly, the fore-finger not to be before the trigger; the piece to be held in this poſition perpendicular, oppoſite the left-ſide of the face, the butt cloſe to the left-breaſt, but not preſſed; the body to be ſtraight, and as full to the front as poſſible; the head kept up, looking to the right of the rank, that the body and the firelock may not ſtoop forward, nor lean much out of the rank. *Preſent:* i. e. Spring the firelock from the body to the arm's length with a quick motion, preſſing down the muzzle with the left-hand, and ſpring up the butt with the right-hand, as in the foregoing explanation of the *front-rank*. *Fire.* As in explanation 4, in the manual, with this difference, that the left-foot is to be brought up to the right, at the ſame time that the firelock is brought down to the priming poſition. The loading motions as in the explanations of priming and loading; and at the laſt motion of ſhouldering, to ſpring to the left again, and cover the file-leaders.—*Rear rank make ready:* i. e. Recover the firelock, and cock as before directed for the centre rank; as the firelock is recovered and cocked, ſtep briſkly ſtraight to the right, with the right-foot, a full pace; bring the left-heel about ſix inches before the right-foot; the body ſtraight, and as ſquare to the front as poſſible, as in the explanation of the *centre rank. Preſent:* As in explanation *preſent*, before. *Fire:* As in explanation of the *centre rank;* and as the firelock is coming down to the priming poſition, the left is to be brought back to the right; and at the laſt motion of ſhouldering, to ſpring to the left again, and cover the file-leader.

There are ſome peculiar words of command at the manual exerciſe of the grenadiers, when apart from the battalion; and alſo for the cavalry and artillery.

MANUFACTURE, a commodity produced by the work of the hand, as cloth, &c.

MANUFACTURER, one who works up a natural product into an artificial commodity.

MANURE, any thing uſed for fattening and improving land. See AGRICULTURE, Sect. I. II. and III.

MANUSCRIPT, in matters of literature, denotes a written book, in contradiſtinction to a printed book. See BOOK.

MANUTIUS (Aldus), the firſt of thoſe celebrated Venetian printers, who were as illuſtrious for their learning, as for uncommon ſkill in their profeſſion. He was born at Baſſano in Italy, about the middle of the 15th century; and hence is ſometimes called *Baſſianus*, though generally better known by the name of *Aldus*. He was the firſt who printed Greek neatly and correctly; and acquired ſo much reputation by it, that whatever was finely printed, was proverbially ſaid to have "come from the preſs of Aldus." We have a kind of Greek grammar of his, with notes upon Homer, Horace, &c.

MANUTIUS (Paulus), ſon of the former, was born at Venice in 1512. He was more learned than his father; and he acquired, by continual reading of Tully, ſuch a purity in writing Latin, that even Scaliger allows, a Roman could not exceed. Pope Pius IV. placed him at the head of the apoſtolical preſs, and gave him the charge of the Vatican library. His Epiſtles are infinitely laboured, and very correct; but, as may be ſaid of moſt of the Ciceronians, they contain ſcarcely any thing but mere words. This conſtant reading of Tully, however, together with his profound knowledge of antiquity, qualified him extremely well for an editor of Tully; whoſe works he accordingly publiſhed, with Commentaries on them, in 4 vols folio, at Venice in 1523. He died in 1574.

MANUTIUS (Aldus), the Younger, the ſon of Paulus, and the grandſon of Aldus Manutius, was eſteemed one of the greateſt geniuſes and moſt learned men of his time. Clement VIII. gave him the direction of the Vatican printing-houſe; but probably the profits of that place were very ſmall, ſince Manutius was obliged, for his ſubſiſtence, to accept of a profeſſor of rhetoric's chair, and to ſell the excellent library that was in his family, which his father, his uncle, and his great-uncle, had collected with extraordinary care, and which it is ſaid contained 80,000 volumes. He died at Rome in 1597, without any other recompenſe than the praiſes due to his merit. He wrote, 1. Commentaries on Cicero. 2. A treatiſe on orthography. 3. Three books of epiſtles; and other works in Latin and Italian, which are eſteemed.

MAON, (anc. geog.), a town of the tribe of Judah, to the ſouth-eaſt, towards the Dead Sea. It gave name to the *wilderneſs of Maon*, 1 Sam. xxii.

MAP, a plain figure, repreſenting the ſurface of the earth, or a part thereof, according the laws of perſpective. See GEOGRAPHY, n° 13—23.

MAPLE. See ACER.

MAPLETOFT (Dr John), deſcended from a good family in Huntingdonſhire, was born in 1631. He was educated in Trinity-college, Cambridge, and qualified himſelf for the profeſſion of phyſic; and in 1675 was choſen profeſſor of that art at Greſham college. He tranſlated Dr Sydenham's *Obſervationes Medicæ circa morborum acutorum hiſtoriam et curationem* into the Latin, and Sydenham dedicated them to Mapletoft. He married in 1679, and ſoon after transferred his ſtudies from phyſic to divinity; took orders; obtained the vicarage of St Lawrence Jewry, with the lectureſhip of St Chriſtopher's in London; and having been a benefactor to Sion college, was, in 1707, elected preſident. He continued to preach in his church of St Lawrence Jewry till he was above 80 years of age; and in his decline printed a book intitled *The principles and duties of the Chriſtian religion*, &c. 8vo. 1710. a copy of which he ſent to every houſe in his pariſh. He was a polite ſcholar; and beſide ſome other pieces on moral and theological ſubjects, there are in the Appendix to Ward's Lives of the profeſſors of Greſham-college, three Latin lectures read there by him, on the origin of the art of Medicine, and the hiſtory of its invention.

MAPPARIUS, in Roman antiquity, the officer who gave the ſignal to the gladiators to begin fighting; which he did by throwing an handkerchief that he had received from the emperor or other magiſtrate.

MARACANDA (anc. geog), capital of the Sogdiana. Now thought to be *Samarcand*, a city of Uſbec Tartary in Aſia, the country and royal reſidence of Tamerlane. See SAMARCAND.

MARACAYBO, a rich and conſiderable town of South America, and capital of the province of Venezuela, ſeated near a lake of the ſame name. It carries on a great trade in ſkins and chocolate, which is the beſt in America; and they have likewiſe very fine tobacco. It was taken by the French bucaneers in 1666 and 1678. W. Long. 70. 45. N. Lat. 10. 0.

MARACAYBO, a lake in South America, 200 miles long and 100 broad, which diſcharges itſelf by a river into the North Sea. It is well defended by ſtrong forts; which, however, did not hinder Sir Henry Morgan, a bucaneer, from entering it, and plundering ſeveral Spaniſh towns on the coaſt, after defeating a ſquadron ſent out againſt him.

MARAGNAN, a province of Brazil in South America, which comprehends a fertile populous iſland, 112 miles in circumference. The French ſettled here in 1612, and built a town; but they were ſoon driven from thence by the Portugueſe, who have poſſeſſed it ever ſince. The town is little, but ſtrong; and has a caſtle, a harbour, and a biſhop's ſee. The climate is very agreeable and wholeſome, and the ſoil produces plenty of all the neceſſaries of life. W. Long. 54. 35. S. Lat. 2. 0.

MARALDI (James Philip), a learned mathematician and aſtronomer, of the academy of ſciences at Paris, was born in 1665. He was the ſon of Francis Maraldi and Angela Catharine Caſini, the ſiſter of the famous aſtronomer of that name. His uncle made him go to France in 1687, where he acquired great reputation on account of his learning and obſervations. He made a catalogue of the fixed ſtars, which is more particular and exact than Bayer's; and has given a great number of curious and intereſting obſervations in the memoirs of the academy; in particular, thoſe on bees and petrifactions have been univerſally applauded. He died in 1729.

MARANA (John Paul), an ingenious writer of the 17th century, was of a diſtinguiſhed family, and born at Genoa; where he received an education ſuitable to his birth, and made a great progreſs in the ſtudy of polite literature and the ſciences. Having been engaged in the conſpiracy of Raphael della Terra, to deliver up Genoa to the duke of Savoy, he was in 1670, when 28 years of age, impriſoned in the tower of that city, and remained there four years. Being at length ſet at liberty, he was ordered to write the hiſtory of that conſpiracy; but, when finiſhed, it was ſeized, and prevented from being publiſhed. When the republic of Genoa was at variance with the court of France, Marana, who had always an inclination for that court, was afraid of being impriſoned a ſecond time; and retired to Monaco, where he again wrote the hiſtory of the conſpiracy in Italian; and, in 1682, went to Lyons to get it printed. From Lyons he went to Paris, where his merit ſoon acquired him powerful protectors. He ſpent the reſt of his life in a happy and tranquil mediocrity, devoted to ſtudy and the ſociety of men of learning; and died in 1693. His hiſtory of the conſpiracy contains many curious and intereſting anecdotes, which are nowhere elſe to be found. He alſo wrote ſeveral other works; the moſt known of which is the Turkiſh Spy, in 6 vols 12mo, which was in 1742 augmented to ſeven. Of this ingenious work we have an excellent Engliſh tranſlation.

MARANO, a town of Italy, in the territory of Venice and province of Friuli, with a ſtrong citadel; ſeated in a marſh at the bottom of the Gulph of Venice, which renders it difficult of acceſs.

MARANS, a rich town of France, in the territory of Aunis and dioceſe of Rochelle, ſeated among ſalt marſhes, near the river Sevre, three miles from the ſea. It carries on a very great trade in corn; and is ſeated in W. Long. 0. 55. N. Lat. 46. 20.

MARANTA, Indian Arrow-root; a genus of the monogynia order, belonging to the monandria claſs of plants. There are two ſpecies, the arundinacea and galanea, both of them herbaceous perennial exotics of the Indies, kept here in hot-houſes for curioſity: they have thick, knotty, creeping roots, crowned with long, broad, arundinaceous leaves, ending in points, and upright ſtalks, half a yard high, terminated by bunches of monopetalous, ringent, five-parted flowers. They are propagated by parting the roots in ſpring, and planting them in pots of light rich earth, and then plunging them in the bark-bed. The root of the galanga is uſed by the Indians to extract the *virus* communicated by their poiſoned arrows; from whence it has derived its name of *arrow-root*.

MARASMUS, among phyſicians, denotes an atrophy or conſumption in its laſt and moſt deplorable ſtage.

MARATHON, (anc. geog.), one of the demi or hamlets of Attica; about 10 miles to the north-eaſt of Athens, towards Bœotia, near the ſea; famous for the victory of the Athenians over the Perſians under Miltiades; and for the Marathonian bull ſlain by Theſeus, (Plutarch, Ovid). Near Marathon is a bog, into which the Perſians plunging in their flight ſtuck faſt, and were ſlain by the conquerors.

MARATTI (Carlo), a celebrated painter, was born at Camorano, near Ancona, in 1625. He came a poor boy to Rome, when only 11 years old; and at 12 recommended himſelf ſo effectually to Andrea Sacchi, by his drawings after Raphael in the Vatican, that he took him into his ſchool, where he continued 25 years till his maſter's death. His graceful and beautiful ideas occaſioned his being generally employed in painting madonas and female ſaints. No man ever performed in a better ſtyle, or with a greater elegance. From the fineſt ſtatues and pictures, he made himſelf maſter of the moſt perfect forms, and the moſt charming airs of heads, which he ſketched with equal eaſe and grace. He has produced a noble variety of draperies, more artfully managed, more richly ornamented, and with greater propriety than even the beſt of the moderns. He was inimitable in adorning the head, in the diſpoſal of the hair, and the elegance of his hands and feet, which are equal to thoſe of Raphael; and he particularly excelled in gracefulneſs. In his younger days he etched a few prints, as well of his own invention as after others, with equal ſpirit and correctneſs. It would be endleſs to recount the celebrated paintings done by this great man. Yet he executed nothing ſlightly, often changed his deſign, and almoſt always for the better, whence his pictures were long in hand. By the example of his maſter, he made ſeveral admirable portraits of popes, cardinals, and other people of diſtinction, from whom he received the higheſt teſtimonies of eſteem, as he likewiſe did from almoſt all the monarchs and princes of Europe. Innocent XI. appointed him keeper of the paintings in his chapel and the Vatican. Maratti erected two noble monuments for Raphael and Hannibal, at his own expence, in the Pantheon. How well he maintained the dignity of his profeſſion, appears by his anſwer to a Roman prince, who complaining of the exceſſive price of his pictures, he told him there was a vaſt debt due from the world to the famous artiſts his predeceſſors, and that he, as their rightful ſucceſſor, was come to claim thoſe arrears. His abilities in painting were accompanied with many virtues, and particularly with an extenſive charity. This great painter died at Rome in 1713, in the 88th year of his age.

MARAUDING, in a military ſenſe, means a party of ſoldiers, who, without any order, go into the neighbouring houſes and villages, when the army is either in camp or garriſon, to plunder and deſtroy, &c. Marauders are a diſgrace to the camp, to the military profeſſion,

feſſion, and deſerve no better quarter from their officers than they give to poor peaſants, &c.

MARBLE, in natural hiſtory, a genus of foſſils; being bright and beautiful ſtones compoſed of ſmall ſeparate concretions, moderately hard, not giving fire with ſteel, fermenting with and ſoluble in acid menſtrua, and calcining in a ſlight fire.—The word comes from the French *marbre*, and that from the Latin *marmor*, of the Greek μαρμαιρειν, to "ſhine or glitter."

The colours of marbles being a very obvious and ſtriking character, they are arranged according to them in the following diviſions. 1. Of the white plain marbles there are two ſorts; the Parian marble of the ancients, and ſtatuary marble of the moderns, an extremely bright and elegant marble; and the Carara marble, a very fine marble, more compact and cloſe than the former, but leſs bright. 2. Of the plain yellowiſh marbles there is only one ſort, which is a hard, pale yellow, and gloſſy marble, found in many parts of Italy. 3. Of the bluiſh and black marbles there are a great many ſpecies, as the China marble, baſaltes, &c. 4. Of the plain green marbles there is only one kind, the Lacedæmonian marble of the ancients. 5. The pale coloured or whitiſh brown, commonly called *Darby marble*. 6. The green marbles with ſhells. 7. The black caralloide marble, with and without ſhells. 8. Of the white variegated marbles there are a great many ſpecies, variegated with purple, brown, red, blue, &c. 9. Of the brown variegated marbles there are likewiſe ſeveral ſorts, ſome with red veins, others with white, black, or brown veins. 10. Of the yellow-veined and variegated marbles, ſome are veined with purple, and others with blue. 11. Of the black variegated marbles, ſome are veined with white, and others with blue, yellow, red, &c. 12. The green variegated marbles are likewiſe diſtinguiſhed by the colour of their veins. 13. The gray ſpotted marbles are variegated, ſome with black, and others with green ſpots. 14. The red variegated marble is the brocatello of the Italians, with white and gold veins.

Marble, when chemically examined, appears to conſiſt of calcareous earth united with much fixed air; and is, like limeſtone or chalk, capable of being converted into a ſtrong quicklime.—Dr Black derives the origin of marbles, as well as limeſtone and marle, from the ſame ſource, *viz.* from the calcareous matter of ſhells and lithophyta. In one kind of limeſtone known by the name of *Portland-ſtone*, and conſiſting of round grains united together, it was ſuppoſed to be compoſed of the ſpawn of fiſh; but compariſons of other phenomena have explained it. It is plain that it has been produced from a calcareous ſand, which is found on the ſhore of ſome of the iſlands in the ſouthern climates. By the conſtant agitation the ſofter parts are wore off, and the harder parts remain in the form of particles that are highly poliſhed, and which are afterwards gradually made to concrete together by cauſes of which we have yet no knowledge.—There are indeed ſome few of the limeſtones and marbles in which we cannot diſcover any of the relics of the ſhells; but there are many ſigns of their having been in a diſſolved or liquified ſtate; ſo we cannot expect to ſee the remains of the form of the ſhells: but even in many of the marbles that have the greateſt appearance of a complete mixture, we ſtill find often the confuſed remains of the ſhells of which they have been originally compoſed. We ſhould ſtill find it difficult to conceive how ſuch maſſes ſhould have derived their origin from ſhells; but, conſidering the many collections that we have an opportunity of ſeeing in their ſteps towards this proceſs, and a little concreted together, ſo that by their going a ſtep further they might form limeſtone and marbles, we ſhall ſoon ſee the poſſibility of their being all produced in the ſame manner. Thus vaſt quantities of ſhells have been found in the province of Turin in France; and indeed there is no place where they have not been found. The lithophyta likewiſe ſeem to be a very fruitful ſource of this kind of earth. In the cold climates, where the moderate degree of heat is not ſo productive of animal-life, we have not ſuch an opportunity of obſerving this: but in the hot climates, the ſea, as well as the ſand, ſwarms with innumerable animals; and, at the bottom, with thoſe that produce the corals and madripores. We learn from the hiſtory of a ſhip that was ſunk in a ſtorm in the Gulf of Mexico, the vaſt growth there is of theſe bodies. About 30 years after, they attempted to dive into it to get out a quantity of ſilver; but they found great difficulty in getting it, from the ſhip being overgrown with coral. Sir Hans Sloan, in the Philoſophical Tranſactions, and in his hiſtory of Jamaica, obſerves, that the ſhip's timber, the iron, and money, were all concreted by the growth of the calcareous matter. So in a tract of many thouſands of years the quantity of it ſhould be very great; and as this is going on through a very great extent of the bottom of the ſea, it will produce very extenſive as well as maſſy collections of calcareous matter.

Colouring MARBLE. This is a nice art; and, in order to ſucceed in it, the pieces of marble on which the experiments are tried, muſt be well poliſhed, and free from the leaſt ſpot or vein. The harder the marble is, the better will it bear the heat neceſſary in the operation; therefore alabaſter and the common ſoft white marble are very improper for performing theſe operations upon.

Heat is always neceſſary for opening the pores of marble, ſo as to render it fit to receive the colours: but the marble muſt never be made red-hot; for then the texture of it is injured, and the colours are burnt, and loſe their beauty. Too ſmall a degree of heat is as bad as one too great; for, in this caſe, though the marble receives the colour, it will not be fixed in it, nor ſtrike deep enough. Some colours will ſtrike even cold; but they are never ſo well ſunk in as when a juſt degree of heat is uſed. The proper degree is that which, without making the marble red, will make the liquor boil upon its ſurface. The menſtruums uſed to ſtrike in the colours muſt be varied according to the nature of the colour to be uſed. A lixivium made with horſe's or dog's urine, with four parts of quicklime, and one of pot-aſhes, is excellent for ſome colours; common ley of wood-aſhes is very good for others; for ſome, ſpirit of wine is beſt; and laſtly, for others, oily liquors, or common white-wine.

The colours which have been found to ſucceed beſt with the peculiar menſtruums, are theſe. Stone-blue diſſolved in ſix times the quantity of ſpirit of wine, or of the urinous lixivium, and that colour which the painters call *litmus*, diſſolved in common ley of wood-aſhes.

aſhes. An extract of ſaffron, and that colour made of backthorn berries, and called by painters *ſap green*, both ſucceed well when diſſolved in urine and quicklime; and tolerably well when diſſolved in ſpirit of wine. Vermilion, and a very fine powder of cochineal, alſo ſucceed very well in the ſame liquors. Dragon's-blood ſucceeds in ſpirit of wine, as does alſo a tincture of logwood in the ſame ſpirit. Alkanet-root gives a fine colour: but the only menſtruum to be uſed for it is oil of turpentine; for neither ſpirit of wine, nor any lixivium, will do with it. There is another kind of *ſanguis draconis*, commonly called *dragon's-blood in tears*, which, mixed with urine, gives a very elegant colour.

Beſides theſe mixtures of colours and menſtruums, there are other colours which muſt be laid on dry and unmixed. Theſe are, Dragons-blood of the pureſt kind, for a red; gamboge, for a yellow; green wax, for a green; common brimſtone, pitch, and turpentine, for a brown colour. The marble for theſe experiments muſt be made conſiderably hot, and then the colours are to be rubbed on dry in the lump. Some of theſe colours, when once given, remain immutable, others are eaſily changed or deſtroyed. Thus, the red colour given by dragon's-blood, or by a decoction of logwood, will be wholly taken away by oil of tartar, and the poliſh of the marble not hurt by it.

A fine gold colour is given in the following manner: Take crude ſal ammoniac, vitriol, and verdigriſe, of each equal quantities. White vitriol ſucceeds beſt; and all muſt be thoroughly mixed in fine powder.

The ſtaining of marble to all the degrees of red or yellow, by ſolutions of dragon's-blood or gamboge, may be done by reducing theſe gums to powder, and grinding them with the ſpirit of wine in a glaſs mortar. But, for ſmaller attempts, no method is ſo good as the mixing a little of either of thoſe powders with ſpirit of wine in a ſilver ſpoon, and holding it over burning charcoal. By this means a fine tincture will be extracted: and, with a pencil dipt in this, the fineſt traces may be made on the marble while cold; which, on the heating of it afterwards, either on ſand, or in a baker's oven, will all ſink very deep, and remain perfectly diſtinct on the ſtone. It is very eaſy to make the ground-colour of the marble red or yellow by this means, and leave white veins in it. This is to be done by covering the places where the whiteneſs is to remain with ſome white paint, or even with two or three doubles only of paper; either of which will prevent the colour from penetrating. All the degrees of red are to be given to marble by this gum alone; a ſlight tincture of it, without the aſſiſtance of heat to the marble, gives only a pale fleſh-colour: but the ſtronger tinctures give it yet deeper; to this the aſſiſtance of heat adds greatly; and finally, the addition of a little pitch to the tincture, gives it a tendency to blackneſs, or any degree of deep red that may be deſired.

A blue colour may be given alſo to marble by diſſolving turnſole in lixivium, in lime and urine, or in the volatile ſpirit of urine; but this has alway a tendency to purple, whether made by the one or the other of theſe ways. A better blue, and uſed in an eaſier manner, is furniſhed by the Canary turnſol, a ſubſtance well known among the dyers. This needs only to be diſſolved in water, and drawn on the place with a pencil: it penetrates very deeply into the marble; and the colour may be increaſed, by drawing the pencil wetted afreſh ſeveral times over the ſame lines. This colour is ſubject to ſpread and diffuſe itſelf irregularly: but it may be kept in regular bounds, by circumſcribing its lines with beds of wax, or any ſuch ſubſtance. It is alſo to be obſerved, that this colour ſhould always be laid on cold, and no heat given even afterwards to the marble: and one great advantage of this colour is, that it is therefore eaſily added to marbles already ſtained with other colours, is a very beautiful tinge, and laſts a long time.—For other methods of ſtaining marble, ſee CHEMISTRY, n° 197.

Arundel MARBLES, ancient marbles with a chronicle of the city of Athens inſcribed on them many years before our Saviour's birth; preſented to the univerſity of Oxford by Thomas earl of Arundel, whence the name.

MARBLING, the method of preparing and colouring the marbled paper.

There are ſeveral kinds of marbled paper; but the principal difference of them lies in the forms in which the colours are laid on the ground: ſome being diſpoſed in whirls or circumvolutions; ſome in jagged lengths; and others only in ſpots of a roundiſh or oval figure. The general manner of managing each kind is, nevertheleſs, the ſame; being the dipping the paper in a ſolution of gum-tragacanth, or, as it is commonly called, *gum-dragon*; over which the colours, previouſly prepared with ox-gall and ſpirit of wine, are firſt ſpread.

The peculiar apparatus neceſſary for this purpoſe, is a trough for containing the gum-tragacanth and the colours; a comb for diſpoſing them in the figure uſually choſen; and a burniſhing ſtone for poliſhing the paper. The trough may be of any kind of wood; and muſt be ſomewhat larger than the ſheets of paper, for marbling which it is to be employed: but the ſides of it need only riſe about two inches above the bottom; for by making it thus ſhallow, the leſs quantity of the ſolution of the gum will ſerve to fill it. The comb may be alſo of wood, and five inches in length; but ſhould have braſs teeth, which may be about two inches long, and placed at about a quarter of an inch diſtance from each other. The burniſhing ſtone may be of jaſper, or agate; but as thoſe ſtones are very dear when of ſufficient largeneſs, marble or glaſs may be uſed, provided their ſurface be poliſhed to a great degree of ſmoothneſs.

Theſe implements being prepared, the ſolution of gum-tragacanth muſt be made, by putting a ſufficient proportion of the gum, which ſhould be white and clear from all foulneſſes, into clean water; and letting it remain there a day or two, frequently breaking the lumps and ſtirring it, till the whole ſhall appear diſſolved, and equally mixed with the water. The conſiſtence of the ſolution ſhould be nearly that of ſtrong gum-water, uſed in miniature-painting; and if it appear thicker, water muſt be added; or if thinner, more of the gum. When the ſolution is thus brought to a due ſtate, it muſt be paſſed through a linen cloth; and being then put into the trough, it will be ready to receive the colours.

The colours employed for red are carmine, lake, roſe-pink, and vermilion; but the two laſt are too hard and glaring, unleſs they be mixed with roſe-pink, or lake, to bring them to a ſofter caſt; and with reſpect to the carmine and lake, they are too dear for common purpoſes:—for yellow, Dutch pink and yellow oker may be employed:—for blue, Pruſſian blue and verditer may be uſed:—for green, verdigriſe, a mixture of Dutch pink and Pruſſian blue, or verditer, in different proportions:—for orange, the orange-lake, or a mixture of vermilion, or red lead, with Dutch pink:—for purple, roſe-pink and Pruſſian blue.

Theſe ſeveral colours ſhould be ground with ſpirit of wine till they be of a proper fineneſs; and then, at the time of uſing them, a little fiſh-gall, or in default of it the gall of a beaſt, ſhould be added, by grinding them over again with it. The proper proportion of the gall muſt be found by trying them; for there muſt be juſt ſo much as will ſuffer the ſpots of colour, when ſprinkled on the ſolution of the gum-tragacanth, to join together, without intermixing or running into each other.

When every thing is thus prepared, the ſolution of the gum-tragacanth muſt be poured into the trough; and the colours, being in a ſeparate pot, with a pencil appropriated to each, muſt be ſprinkled on the ſurface of the ſolution, by ſhaking the pencil, charged with its proper colour, over it; and this muſt be done with the ſeveral kinds of colour deſired, till the ſurface be wholly covered.

When the marbling is propoſed to be in ſpots of a ſimple form, nothing more is neceſſary: but where the whirls or ſnail-ſhell figures are wanted, they muſt be made by means of a quill; which muſt be put among the ſpots to turn them about, till the effect be produced. The jagged lengths muſt be made by means of the comb above deſcribed, which muſt be paſſed through the colours from one end of the trough to the other, and will give them that appearance: but if they deſired to be pointed both ways, the comb muſt be again paſſed through the trough in a contrary direction; or if ſome of the whirles or ſnail-ſhell figures be required to be added, they may be yet made by the means before directed.

The paper ſhould be previouſly perpared for receiving the colours, by dipping it over-night in water; and laying the ſheets on each other with a weight over them. The whole being thus ready, the paper muſt be held by two corners, and laid in the moſt gentle and even manner on the ſolution covered with the colours; and there ſoftly preſſed with the hand, that it may bear every-where on the ſolution. After which it muſt be raiſed and taken off with the ſame care, and then hung to dry acroſs a proper cord, ſubtended near at hand for that purpoſe: and in that ſtate it muſt continue, till it be perfectly dry. It then remains only to give the paper a proper poliſh: in order to which, it is firſt rubbed with a little ſoap; and then muſt be thoroughly ſmoothed by the glaſs poliſhers, ſuch as are uſed for linen, and called the *calender glaſſes*. After which it ſhould be again rubbed by a burniſher of jaſper or agate; or, in default of them, of glaſs ground to the higheſt poliſh: for on the perfect poliſh of the paper depends in a great meaſure its beauty and value.

Gold or ſilver powders may be uſed, where deſired, along with the colours; and require only the ſame treatment as them, except that they muſt be firſt tempered with gum-water.

Marbling of books or paper is performed thus: Diſſolve four ounces of gum-arabic into two quarts of fair water; then provide ſeveral colours mixed with water in pots or ſhells; and, with pencils peculiar to each colour, ſprinkle them by way of intermixture upon the gum-water, which muſt be put into a trough or ſome broad-veſſel; then with a ſtick curl them, or draw them out in ſtreaks, to as much variety as may be done. Having done this, hold your book or books cloſe together, and only dip the edges in, on the top of the water and colours, very lightly; which done, take them off, and the plain impreſſion of the colours in mixture will be upon the leaves; doing as well the ends as the front of the book in the like manner.

Marbling a book on the covers is performed by forming clouds with aqua fortis or ſpirit of vitriol mixed with ink, and afterwards glazing the covers. See the article Book-binding.

MARCA (Peter de), one of the greateſt ornaments of the Gallican church, was born in Bearn, of an ancient family, in 1594. He firſt ſtudied the law, was made preſident of the parliament of Bearn, and, going to Paris in 1639, was made a counſellor of ſtate: the good opinion entertained of his knowledge was confirmed by his *Hiſtory of Bearn*. By the king's order he publiſhed a work, *De concordia ſacerdotii et imperii, ſive de libertatibus eccleſiæ Gallicæ*, in refutation of a book that appeared under the title of *Optatus Gallus*; and on this account, when on the death of his wife he was nominated biſhop of Conſerans, the court of Rome refuſed the bulls in his favour, until by another book he explained away all he had ſaid on behalf of the ſtate, to the limitation of the papal power. He obtained his confirmation, after ſeven years ſuſpenſe, in 1648; was tranſlated to the archbiſhopric of Toulouſe in 1652; and was made miniſter of ſtate in 1658. He died at Paris in 1662, a ſhort time after he had received the bulls as the archbiſhop of that metropolis. After his death appeared his *Poſthumous works*, with prefaces, notes, &c. by M. Baluze. In all he wrote, he ſhewed great abilites and learning, but is reproached for accommodating them to his views of intereſt and ambition.

MARCASITE, in mineralogy. This name has long been given indifferently to all ſorts of minerals; to ores, pyrites, and to ſemimetals. Lately, it ſeems to be confined to pyrites, and Wallerius propoſes to confine it to ſuch pyrites as are regularly formed. This ſeems to be better than to leave it a vague and indeterminate ſignification, on account of the ambiguity and obſcurity which might thereby be introduced. See Pyrites.

MARCELLINUS (Ammianus.) See Ammianus.

MARCELLUS (Marcus Claudius), a Roman commander, famous for his valour, was five times conſul. He was called *The ſword of the Romans*, and killed king Britomarus with his own hand. He ſubdued the Inſubrians, and took Milan their capital; as alſo Syracuſe, where he endeavoured to preſerve Archimedes. He fought two days with Hannibal with equal ſucceſs; but was killed on the third, and his corpſe treated with all imaginable reſpect by the conqueror. See CARTHAGE, ROME, and SICILY.

MARCGRAVE, or MARGRAVE, a kind of dignity in Germany, anſwering to our marquis. See MARQUIS. The word is derived from the German *Marche*, or *Marcke*, which ſignifies a frontier; and *Graffe*, count, governor; *Marcgraves* being originally governors of cities lying on the frontiers of a country or ſtate.

MARCH, MARTIUS, the third month of the year, according to the common way of computing. See MONTH, and YEAR.

Among the Romans, March was the firſt month: and in ſome eccleſiaſtical computations, that order is ſtill preſerved; as particularly reckoning the number of years from the incarnation of our Saviour; that is, from the 25th of March.

Till the year 1564, the French reckoned the beginning of their year from Eaſter: ſo that there were two months of March in one year, one of which they called *March before Eaſter*, and the other *March after Eaſter*. When Eaſter fell within the month of March, the beginning of the month was in one year, and the end in another.

It was Romulus who divided the year into months; to the firſt of which he gave the name of his ſuppoſed father *Mars*. Ovid, however, obſerves, that the people of Italy had the month of March before Romulus's time; but that they placed it very differently, ſome making it the third, ſome the fourth, ſome the fifth, and others the tenth month of the year.

In this month it was that the Romans ſacrificed to Anna Perenna; that they begun their comitia; that they adjudged their public farms and leaſes; that the miſtreſſes ſerved the ſlaves and ſervants at table, as the maſters did in the Saturnalia; and that the veſtals renewed the ſacred fire.

The month of March was always under the protection of Minerva, and always conſiſted of 31 days.—The ancients held it an unhappy month for marriage, as well as the month of May.

MARCH, in the military art, is the moving of a body of men from one place to another. Care muſt be taken, in marching of troops, that they are not liable to be flanked or intercepted; for of all operations none is more difficult, becauſe they muſt not only be directed in the objects they have in view, but according to the movements the enemy may have made.

Of all the mechanical parts of war, none is more eſſential than that of marching. It may be juſtly called the *key* which leads to all ſublime motions and manœuvres of an army; for they depend entirely on this point. A man can be attacked in four different ways; in the front, on both flanks, and in the rear: but he can defend himſelf, and annoy the enemy, only when placed with his face towards him. Hence it follows, that the general object of marching is reduced to three points only; to march forwards, and on both ſides, becauſe it is impoſſible to do it for any time backwards, and by that means face the enemy wherever he preſents himſelf. The different ſteps to be made uſe of are three; ſlow, faſt, and oblique. The firſt is proper in advancing, when at a conſiderable diſtance from the enemy, and when the ground is unequal, that the line may not be broke, and a regular fire kept up without intermiſſion. The ſecond is chiefly neceſſary, when you want to anticipate the enemy in occupying ſome poſt, in paſſing a defile, and, above all, in attacking an intrenchment, to avoid being a long while expoſed to the fire of the artillery and ſmall arms, &c. The third ſtep is of infinite conſequence, both in the infantry and cavalry: columns may be opened and formed into lines, and, *vice verſa*, lines into columns, by this kind of ſtep, in a leſſer ſpace, and conſequently in leſs time, than by any other method whatſoever. In coming out of a defile, you may inſtantly form the line without preſenting the flank to the enemy. The line may be formed, though ever ſo near to the enemy, with ſafety, becauſe you face him, and can with eaſe and ſafety protect and cover the motion of the troops, while they are coming out of the defiles, and forming. The ſame thing may be equally executed, when a column is to be formed in order to advance or retreat; which is a point of infinite conſequence, and ſhould be eſtabliſhed as an axiom.

The order of march of the troops muſt be ſo diſpoſed, that each ſhould arrive at their rendezvous, if poſſible, on the ſame day. The quarter-maſter-general, or his deputy, with an able engineer, ſhould ſufficiently reconnoitre the country, to obtain a perfect knowledge of it and the enemy, before he forms his routes.

Before a march, the army generally receives ſeveral days bread. The quarter-maſters, camp colour-men, and pioneers, parade according to orders, and march immediately after, commanded by the quarter-maſter-general, or his deputy. They are to clear the roads, level the ways, make preparations for the march of the army, &c. The *general*, for inſtance, beats at 2, the *aſſembly* at 3, and the army to march in 20 minutes after. Upon beating the *general*, the village, and general officer's guards, quarter and rear-guards, join their reſpective corps; and the army pack up their baggage. Upon beating the *aſſembly*, the tents are to be ſtruck, and ſent with the baggage to the place appointed, &c.

The companies draw up in their ſeveral ſtreets, and the rolls are called. At the time appointed, the drummers are to beat a march, and fifers play at the head of the line; upon which the companies march out from their ſeveral ſtreets, form battalions as they advance to the head of the line, and then halt.

The ſeveral battalions will be formed into columns by the adjutant-general, and the order of march, &c. be given to the general officers who lead the columns.

The cavalry generally march by regiments or ſquadrons. The heavy artillery always keeps the great roads, in the centre of the columns, eſcorted by a ſtrong party of infantry and cavalry. The field-pieces march with the columns.

Each ſoldier generally marches with 36 rounds of powder and ball, and 2 good flints; one of which is to be fixed in the cock of his firelock. The routes muſt be formed ſo that no columns croſs one another on the march.

MARCHANTIA, in botany, a genus of the order of algæ, belonging to the cryptogamia claſs of plants. There are eight ſpecies, of which the moſt remarkable are, 1. The polymorpha, or great ſtar-handed marchantia, is a native of Britain, growing on the banks of rivulets, on ſhady moiſt rocks, the ſides of wells, and ſometimes bogs. The leaves are about three inches long; from half an inch to an inch broad, lying flat on the ground, and adhering cloſely to it by numerous downy radilces, which grow out of the middle and baſe of the leaf on the under ſide. Theſe leaves are ſituated on their edges, their upper ſurface of a dark, ſhining, green colour, reticulated with numerous, minute, rhomboidal, or lozenge-like ſcales; variouſly divided into obtuſe lobes, and in the middle by a blackiſh purple vein; their under ſide is of a paler green, and their ſubſtance coriaceous, and nearly opaque. There are three varieties, from one of which is produced a yellow powder, ſhowing a moſt curious and wonderful mechaniſm when examined by the microſcope. The leaves have a ſtrong aromatic ſmell, and acrid taſte; and are recommended, in a decoction of ſkimmed milk, as good in the jaundice and other diſorders of the liver. 2. The conica, or conic-muſhroom marchantia, with warted leaves, grows on moiſt ſhady banks by the ſides of rivulets. The leaves are broad, flat, about two inches long, dichotomous, obtuſely lobed, and lie upon one another. Their ſurface is of a pale-green gloſſy colour, curiouſly teſſelated with rhomboidal and hexagonal tubercles, each having a white veſicle or wart in the centre, with a puncture on its head. The leaves have a peculiar ſtrong fragrant ſmell, and acrid aromatic taſte. They are ſuppoſed to poſſeſs the ſame attenuating quality as the firſt, but in a higher degree. They are alſo recommended as an antiſcorbutic, and for thinning the blood.

MARCHE, a province of France, bounded on the north by Berry, on the eaſt by Avergne, on the weſt by Angoumois, and on the ſouth by Limoſin. It is about 55 miles in length, and 25 in breadth, and is pretty fertile in corn and wine.

MARCHENA, an handſome, ancient, and conſiderable town of Spain, in Andaluſia, with the title of a duchy, and a ſuburb as large as the town, ſeated in the middle of a plain, particularly fertile in olives, tho' very deſtitute of water. W. Long. 5. 20. N. Lat. 37. 20.

MARCHERS, or LORDS-MARCHERS, were thoſe noblemen that lived on the marches of Wales or Scotland; who, in times paſt, according to Camden, had their laws, and *poteſtatem vitæ*, &c. like petty kings, which are aboliſhed by the ſtat. 27 H. 8. *c*. 26. and 1 Edw. 6. *c*. 10. In old records the lords marches of Wales were ſtyled *Marchianes de Marchia Walliæ*. See 1 & 2 *P. & M. c*. 15.

MARCHES, (*marchia*,) from the German *march*, i. e. *limes*, or from the French *marque*, viz. *ſignum*, (being the notorious diſtinction between two countries or territories), are the limits between England and Wales, or between England and Scotland, which laſt are divided into weſt and middle marches, 4 Hen. 5. *c*. 7. 22 Ed. 4. *c*. 8. 24 Hen. 8. *c*. 9. And there was formerly a court called the *court of the marches of Wales*, where pleas of debt or damages, not above the value of 50 pounds, were tried and determined; and if the council of the marches held plea for debts above that ſum, &c. a prohibition might be awarded. *Hill*. 14. *Car*. 1. *Cro. Car*. 384.

MARCION, an hereſiarch, born at Sinope in Paphlagonia, or Pontus, in the ſecond century. In his younger years he followed the ſtoic philoſophy, and loved ſolitude and poverty; but being convicted of uncleanneſs with a virgin, he was expelled the church by his father, who was biſhop. Afterwards he came to Rome, where he invented his hereſies. His doctrines were, many of them, the ſame that were afterwards adopted by the Manichæans; as, for inſtance, that there two coeternal independent principles, one the author of all good, the other the author of all evil. Marcion meeting St Polycarpus in the ſtreets of Rome, aſked him, whether he knew him? "Very well, (anſwered the biſhop), I know you to be the devil's eldeſt ſon." Tertullian relates, that Marcion, repenting of his errors, would have abjured them publicly, provided he might have been again admitted into the church; which was agreed to, on condition he would bring back all thoſe he had ſeduced from it: but before he could effect this taſk, he died.

MARCIONITES. See MARCION.

MARCOMANNI, an ancient people of Germany, who ſeem to have taken their name from their ſituation on the limits or marches, to the eaſt of the Higher Rhine, and the north of the Danube. Cluverius allots to them the duchy of Wurtemburg, a part of the palatinate between the Rhine and the Necker, the Briſgau, and a part of Suabia, lying between the ſprings of the Danube and the river Bregentz: they afterwards removed to the country of the Boii, whom they expelled and forced to withdraw more to the eaſt, occupying what is now called *Bohemia*. (Strabo, Velleius.)

MARCOSIANS, a ſet of Chriſtian heretics of the ſecond century, ſo called from their leader Marcus, who repreſented the ſupreme God as conſiſting not of a Trinity, but a Quaternity; *viz*. the Ineffable, Silence, the Father, and Truth.

MARCUS (Aurelius Antoninus). See ANTONINUS.

MARDIKERS, or TOPASSES, a mixed breed of Dutch, Portugueſe, Indians, and other nations, incorporated with the Dutch at Batavia, in the Eaſt Indies.

MARE, the female of the horſe kind. See the article EQUUS.

Before a mare is covered, ſhe ſhould be in the houſe about ſix weeks, during which time ſhe ſhould be well fed with good hay and oats well ſifted; and in order to render her conception the more certain, near a quart of blood may be taken from each ſide of her neck, about five or ſix days before covering. Another method to bring a mare in ſeaſon and make her retain, is to give her, for the ſpace of eight days before you bring her to the horſe, about two quarts of hemp-ſeed in the morning, and as much at night; and if ſhe refuſes to eat it, to mingle it with a little bran or oats, or elſe to let her faſt for a while: and if the ſtallion alſo eat of it, it will greatly contribute to generation.

Mares go with foal 11 months, and as many days

Marets.

as they are years old; and therefore the propereſt time for covering them is in the beginning of June, that they may foal the May following, when there will be plenty of graſs, which will afford the mares a great abundance of milk for nouriſhing their foals. After covering, let her, for three weeks or a month, have the ſame diet as before, and be kept clean in the ſtable till the middle of May, with her feet well pared and thin ſhod: take her in again about the latter end of September, if not before, and keep her to the end of her foaling. If ſhe cannot readily bring forth, hold her noſtrils ſo as to ſtop her taking wind; and if that will not do, diſſolve madder, to the quantity of a walnut, in a pint of ale, and give it her warm. In caſe ſhe cannot void her ſecundine, or after-burden, boil two or three handfuls of fennel in running water; then put half a pint of that liquor into as much ſack, or, for want thereof, into a pint of ale, with a fourth part of ſalad-oil, mixed together, and pour it lukewarm into her noſtrils, holding them cloſe for ſome time. Otherwiſe, give her green wheat, or rye, the laſt of which is beſt.

If the mare has but little milk, boil as much as you can get from her, with the leaves of lavender and ſpike, and bathe the udder with it warm, till the knobs and knots are diſſolved. She ſhould now drink only white water, whith is bran put into water; give her alſo ſweet maſhes: and a month after foaling, let her have a maſh with ſome brimeſtone or ſavin in it.

MARETS (Jean de), a Pariſian, one of the fineſt geniuſes of the 17th century, became at laſt a viſionary and a fanatic. He was a great favourite of cardinal Richlieu, and poſſeſſed an employment of genius under him; for he was called upon to relax and divert him, after the fatigue of buſineſs, by facetious converſation. He uſed, in order to triumph over the virtue of women, when they objected to him the intereſt of their ſalvation, to lead them into atheiſtical principles. He was a member of the French academy from its firſt erection. He wrote ſeveral dramatic pieces, which were well received. He attempted an epic poem; but after ſpending ſeveral years about it, dropped the deſign, to write books of devotion. He likewiſe wrote romances; but not ſuch virtuous ones as uſed to be wrote at that time. He was a declared enemy of the Janſeniſts. His viſions are well deſcribed by the Meſſieurs de Port Royal. He promiſed the king of France, by the explication of prophecies, the honour of overthrowing the Mahometan empire. In his laſt years he wrote ſomething againſt Boileau's Satires.

Marets (Samuel de), one of the moſt celebrated divines of the reformed church, was born in Picardy, in 1599. In 1620, he was ſettled in the church of Laon; but, in 1624, accepted a call to that of Sedan: in 1642, he obtained a profeſſorſhip at Groningen; and, from that time to his death, exerted himſelf ſo much in the ſervice of that univerſity, that it was reckoned one of the moſt flouriſhing in the Netherlands. His Syſtem of Divinity was found to be ſo methodical, that it was made uſe of at other academies; and at the end of it may be found a chronological table of all his works. Their number is prodigious; and their variety ſhows the extent of his genius. He was moreover engaged in many diſputes and controverſies, and died in 1673.

MARGARET (counteſs of Richmond and Derby), the learned and pious mother of Henry VII. was born at Betſhoe in Bedfordſhire, in 1441; and was the ſole heireſs of John Beaufort, duke of Somerſet, grandſon to John of Gaunt. Her mother was the heireſs of lord Beauchamp of Powick. Whilſt yet very young, the great duke of Suffolk, miniſter to Henry VI. or rather to queen Margaret, ſought her in marriage to his ſon; and ſhe was at the ſame time ſolicited by the king for his half-brother Edmund, earl of Richmond. To the latter ſhe gave her hand. Henry VII. was the ſole fruit of this marriage, his father dying when he was but 15 weeks old. Her ſecond huſband was Sir Henry Stafford, knight, ſecond ſon to the duke of Buckingham; by whom ſhe had no iſſue. Soon after his death, which happened in the year 1482, ſhe ſought conſolation in a third huſband, Thomas lord Stanley, who, in the firſt year of her ſon's reign, was created earl of Derby. He died in the year 1504, without iſſue, being then high conſtable of England. She ſurvived her lord not quite five years, dying at Weſtminſter in June 1509, in the 69th year of her age. She was buried in Henry VII.'s chapel, on the ſouth-ſide of which was erected to her memory an altar-tomb of black marble, with her ſtatue of braſs.

From her funeral ſermon preached by her confeſſor biſhop Fiſher, who, ſays Ballard, knew the very ſecrets of her ſoul, we learn, "that ſhe poſſeſſed almoſt all things that were commendable in a woman, either in mind or body." She underſtood the French language perfectly, and had ſome knowledge of the Latin. She was devout even to auſterity, in humility romantic, profuſe in the encouragement of learning, and ſingularly chaſte; but this laſt virtue became conſpicuous only towards the latter end of a third marriage. "In her laſt huſband's days (ſays Baker), ſhe obtained a licence of him to live chaſte, whereupon ſhe took upon her the vow of celibacy." 'A boon, (ſays Mr Walpole), as ſeldom requeſted, I believe, of a third huſband, as it probably would be eaſily granted.' Her life, from the turbulence of the times, and viciſſitude of her ſon's fortune, muſt neceſſarily have been ſubject to infinite diſquiet, which however ſhe is ſaid to have ſupported with ſingular fortitude.—She wrote, 1. The mirroure of golde for the ſinful ſoule, tranſlated from a French tranſlation of a book called *Speculum aureum peccatorum*. Emprynted at London, in Flete-ſtrete, at the ſigne of St George, by Richard Pynſon, quarto, with cuts on vellum. 2. Tranſlation of the fourth book of Dr Gerſen's treatiſe of the imitation and following the bleſſed life of our moſt merciful Saviour Chriſt. Printed at the end of Dr Wm. Atkinſon's Engliſh tranſlation of the three firſt books, 1504. 3. A letter to the king; in Howard's collection. 4. By her ſon's order and authority, ſhe alſo made the Orders for great eſtates of ladies and noble women, for their precedence, and wearing of barbes at funerals, over the chin and under the ſame.

Margaret, the daughter of Woldemar III. king of Denmark, ſtyled the *Semiramis of the North*: ſhe ſucceeded her father in the throne of Denmark, her huſband in that of Norway, and the crown of Sweden was given her as a recompence for delivering the Swedes from the tyranny of Albert their king. Thus poſſeſſed of the three kingdoms, ſhe formed the grand political deſign of a perpetual union, which ſhe accompliſhed, *pro tempore* only, by the famous treaty ſtyled the *union of Colmar*. She died in 1412, aged 59.

MARGARET *of Anjou*, daughter of René D'Anjou, king of Naples, and wife of Henry VI. king of England; an ambitious, enterpriſing, courageous woman. Intrepid in the field, ſhe ſignalized herſelf by heading her troops in ſeveral battles againſt the houſe of York; and if ſhe had not been the authoreſs of her huſband's misfortunes, by putting to death the duke of Glouceſter his uncle, her name would have been immortalized for the fortitude, activity, and policy with which ſhe ſupported the rights of her huſband and ſon, till the fatal defeat at Tewkſbury; which put an end to all her enterpriſes, the king being taken priſoner, and prince Edward their only ſon baſely murdered by Richard duke of York. Margaret was ranſomed by her father, and died in Anjou in 1482. See ENGLAND, n° 190,—198.

MARGARITA, or PEARL-ISLAND, an iſland of South America, the middle of which is ſeated in W. Long. 64. 2. N. Lat. 11. 30. It was diſcovered by Columbus, and is about 35 leagues in compaſs. The ſoil is very fertile in maize and fruits, and abounds in paſture and verdant groves; yet is totally deſtitute of freſh water, which the inhabitants are obliged to bring from the continent. When the Spaniards firſt landed here, they found the natives buſy in fiſhing for oyſters. Columbus ordered ſome of the ſavages aboard his ſhip, who were ſo far from being terrified, that they very ſoon became familiar with the Spaniards. The latter at firſt imagined that the oyſters ſerved them for food; but on opening the ſhells, they found they contained valuable pearls. Upon this diſcovery they immediately landed, and found the natives ready to part with their pearls for the mereſt trifles. In proceſs of time the Spaniards built a caſtle, called *Monpadre*, and employed prodigious numbers of Guinea and Angola Negroes in the pearl-fiſhery; cruelly forcing them to tear up the oyſters from the rocks to which they ſtuck, during which time many of them were deſtroyed by the ſharks and other voracious fiſhes. In 1620, this iſland was invaded by the Dutch, who demoliſhed the caſtle upon it: ſince which time it has been in a manner abandoned by the Spaniards; and is now principally inhabited by the natives, to whom ſome particular indulgences were granted by the court of Spain, on account of their ready ſubmiſſion to Columbus.

MARGARITA, the PEARL, in natural hiſtory. See PEARL, and MYA.

MARGATE, a ſea-port town of Kent, in the iſle of Thanet, much frequented in the ſummer-time for bathing in the ſalt-water. E. Long. 1. 30. N. Lat. 51. 24.

MARIA, or SANCTA MARIA, an iſland of the Indian Ocean, lying about five miles eaſt from Madagaſcar. It is about 27 miles long, and five broad; well watered, and ſurrounded by rocks. The air is extremely moiſt, for it rains almoſt every day. It is inhabited by 500 or 600 negroes, but ſeldom viſited by ſhips.

MARIA (St.), a conſiderable town of South America, in the audience of Panama, built by the Spaniards after they had diſcovered the gold mines near it, and ſoon after taken by the Engliſh. It is ſeated at the bottom of the Gulf of St Michael, at the mouth of a river of the ſame name; which is navigable, and the largeſt that falls into the gulf. The Spaniards come here every year in the dry ſeaſon, which continues three months, to gather the gold-duſt out of the ſands of the neighbouring ſtreams; and carry away great quantities. W. Long. 148. 30. N. Lat. 7. 0.

MARIA (St.), a handſome and conſiderable town of Spain, in Andaluſia, with a ſmall caſtle. It was taken by the Engliſh and Dutch in 1702, for the archduke of Auſtria. It is ſeated on the Guadaleta, at the mouth of which is a tower and a cloſe battery. W. Long. 5. 33. N. Lat. 36. 35.

MARIAN ISLANDS. See LADRONE *Iſlands*.

MARIANA (John), a learned Spaniſh hiſtorian, born at Talavera in the dioceſe of Toledo. He entered among the Jeſuits in 1554, at 17 years of age; and became one of the moſt learned men of his time. He was a great divine, a good humaniſt, and profoundly verſed in eccleſiaſtical as well as profane hiſtory. He taught at Rome, in Sicily, at Paris, and in Spain; and died at Toledo in 1624. His principal works are, 1. An excellent hiſtory of Spain in 30 books; which he himſelf tranſlated from the Latin into Spaniſh, without ſervilely following his own Latin edition. 2. *Scholia*, or ſhort notes on the bible. 3. A treatiſe on the changes the ſpecie has undergone in Spain; for which he was thrown into priſon by the duke of Lerma, the Spaniſh miniſter. 4. A famous treatiſe *De rege et regis inſtitutione*, which made much noiſe, and was condemned by the parliament of Paris to be burnt by the hands of the common hangman, for his aſſerting in that work, that it is lawful to murder tyrants. 5. A work on the faults of the government of the ſociety of Jeſuits, which has been tranſlated into Spaniſh, Latin, Italian, and French, &c.

MARIANUS SCOTUS, an Iriſh monk, was related to the Venerable Bede, and wrote a chronicle which is eſteemed. He died in the abbey of Fuld, in 1086, aged 58.

MARIGALANTE, an iſland of North America, and one of the leaſt of the Caribbees. It was diſcovered by Chriſtopher Columbus in 1493; the French ſettled here in 1648; and it was taken by the Engliſh in 1691, but the French ſoon got poſſeſſion of it again. The land is proper for ſugar-canes, indigo, tobacco, and cotton; but ſometimes they are in great want of water. W. Long. 60. 51. N. Lat. 16. 32.

MARINE, a general name for the navy of a kingdom or ſtate; as alſo the whole œconomy of naval affairs; or whatever reſpects the building, rigging, arming, equiping, navigating, and fighting ſhips. It comprehends alſo the government of naval armaments, and the ſtate of all the perſons employed therein, whether civil or military.

The hiſtory of the marine affairs of any one ſtate is a very comprehenſive ſubject, much more that of all nations. Thoſe who would be informed of the maritime affairs of Great Britain, and the figure it has made at ſea in all ages, may find abundance of curious matter in Selden's *Mare Clauſum*; and from his time to ours, we may trace a ſeries of facts in Lediard's and Burchet's Naval Hiſtory, but above all in the Lives of the Admirals, by the accurate and judicious Dr Campbell.

MARINES, or Marine *Forces*, a body of ſoldiers raiſed for the ſea-ſervice, and trained to fight either in a naval engagement, or in an action aſhore.

The great ſervice of this uſeful corps was manifeſted frequently in the courſe of the late war, particularly at the ſiege of Belleiſle, where they acquired a great character, although lately raiſed and hardly exerciſed in military diſcipline. At ſea they are incorporated with the ſhip's crew, of which they make a part; and many of them learn in a ſhort time to be excellent ſeamen, to which their officers are ordered by the admiralty to encourage them, although no ſea-officer is to order them to go aloft againſt their inclination. In a ſea-fight their ſmall-arms are of very great advantage in ſcouring the decks of the enemy; and when they have been long enough at ſea to ſtand firm when the ſhip rocks, they muſt be infinitely preferable to ſeamen if the enemy attempts to board, by fraiſing a battalion with their fixed bayonets to oppoſe him.

The marine forces of Great Britain in the time of peace are ſtationed in three diviſions; one of which is quartered at Chatham, one at Portſmouth, and another at Plymouth. By a late regulation, they are ordered to do duty at the ſeveral dock-yards of thoſe ports, to prevent embezzlement of the king's ſtores, for which a captain's guard mounts every day; which certainly requires great vigilance, as ſo many abuſes of this kind have been committed, that many of the inhabitants, who have been long uſed to an infamous traffic of this kind, expect theſe conveyances at certain periods as their due, and of courſe reſent this regulation in the higheſt degree as an infringement of their liberties as Britiſh ſubjects.

Marine *Diſcipline*, is the training up ſoldiers for ſea-ſervice, in ſuch exerciſes as the various poſitions of the firelock and body, and teaching them every manœuvre that can be performed on board ſhips of war at ſea. See Exercise.

Marine *Chair*, a machine invented by Mr Irwin, for viewing the ſatellites of Jupiter at ſea, and of courſe determining the longitude by their eclipſes. An account of it is given in the *Journal Eſtranger* for March 1760. An account of its accuracy was publiſhed the year following, by M. de L'Iſle aſtronomer in the imperial academy of Peterſburg: but notwithſtanding the encomiums beſtowed upon it by this gentleman, it hath never come into general uſe; and therefore we may conclude, that it is much inferior to the inventions of Mr Harriſon for the ſame purpoſe. See Harrison and Navigation.

MARINER, the ſame with a ſailor or ſeaman. See theſe articles.

Method of Preſerving the Health of Mariners. See Seamen.

Mariner's *Compaſs*. See Compass.

The invention of the compaſs is uſually aſcribed to Flavio da Melfi, or Flavio Gioia, a Neapolitan, about the year 1302; and hence it is, that the territory of Principato, which makes part of the kingdom of Naples, where he was born, has a compaſs for its arms. Others ſay that Marcus Paulus, a Venetian, making a journey to China, brought back the invention with him in 1260. What confirms this conjecture is, that at firſt they uſed the compaſs in the ſame manner as the Chineſe ſtill do; *i. e.* they let it float on a little piece of cork, inſtead of ſuſpending it on a pivot. It is added, that their emperor Chiningus, a celebrated aſtrologer, had a knowledge of it 1120 years before Chriſt. The Chineſe only divide their compaſs into 24 points. Fauchette relates ſome verſes of Guyot de Provence, who lived in France about the year 1200, which ſeem to make mention of the compaſs under the name of *marinette*, or *mariner's ſtone*; which ſhew it to have been uſed in France near 100 years before either the Melfite or Venetian. The French even lay claim to the invention, from the *fleur de lys* wherewith all nations ſtill diſtinguiſh the north point of the card. With as much reaſon Dr Wallis aſcribes it to the Engliſh, from its name *compaſs*, by which name moſt nations call it, and which he obſerves is uſed in many parts of England to ſignify a circle.

The compaſs hath ſometimes been obſerved to be diſturbed by the electricity of its glaſs-cover; and this from ſo ſlight an application of the finger as was barely neceſſary to wipe off a little duſt. The ſame glaſs, rubbed a little more with the finger, a bit of muſlin, or paper, would attract either end of the needle, ſo as to hold it to the glaſs for ſeveral minutes, far out of the due direction, according to that part of the glaſs which was moſt excited. And when the needle, after adhering to the glaſs, has dropped looſe, and made vibrations, thoſe would not be biſected as uſual by that point where the needle ſhould reſt, but would either be made all on one ſide, or be very unequally divided, by means of ſome remains of electrical virtue in that part of the glaſs which had attracted the needle, until at length, after 15 minutes or more, all the electricity being diſcharged, the magnetical power took place. The remedy for this inconvenience is to moiſten the ſurface of the glaſs: a wet finger will do it immediately and effectually. The mariner's compaſs with a chart is much leſs dangerouſly moved than the common compaſs with a bare needle: and the deeper, or farther diſtant, the needle hangs below the glaſs, the leſs diſturbance it is likely to receive.

St MARINO, a ſmall town and republic of Italy, ſituated in E. Long. 13. 44. N. Lat. 44. 21. This ſmall republic conſiſts only of a mountain, and a few hillocks, that lie ſcattered about the bottom of it. The number of the inhabitants is about 5000. The mountain yields good wine, but they have no other than rain or ſnow water. The founder of the republic was a Dalmatian, and a maſon, who upwards of 1300 years ago turned hermit, and retired to this mountain. Here his devotion and auſterity, and, in conſequence of that, his reputation for ſanctity, were ſuch, that the princeſs of the country made him a preſent of the mountain, on which many, out of veneration for the ſaint, ſoon after took up their abode. Thus was the foundation laid of the town and republic, which ſtill bears the name of the ſaint. The town ſtands on the top of the mountain, and there is only one way by which it can be come at. In the whole territory are only three caſtles, three convents, and five churches. The largeſt of the churches is dedicated to the ſaint, and contains his aſhes and his ſtatue. He is looked upon as the greateſt ſaint, next to the bleſſed Virgin; and to ſpeak diſreſpectfully of him is accounted blaſphemy, and puniſhed as ſuch. The republic is under the protection of the pope. All that are capable of bearing arms are exerciſed, and ready at a minute's call. In the ordinary courſe of government, the adminiſtration is in the hands of the council of 60, which, notwithſtanding its name, conſiſts only of 40; one half of the members of which are of the noble families, and the other of the plebeian: on extraordinary occaſions, however, the arengo, in which every houſe has it repreſentative, is called together. The two principal officers are the capitaneos, who are choſen every half year; and next to them is the commiſſary, who judges in civil and criminal matters, and is joined in commiſſion with the capitaneos; both he and the phyſician muſt be foreigners, and both have their ſalaries out of the public ſtock. When any perſon, after due ſummons, neglects to aſſiſt at the council according to their ſtatute-book, he is to be fined in about a penny Engliſh; and when an ambaſſador is to be ſent to any foreign ſtate, he is to be allowed about 1 s. a-day.

MARINO (John Baptiſt), a celebrated Italian poet, born at Naples in 1569. His father, who was an able civilian, obliged him to ſtudy the law; at which being diſguſted, he left his parents, and retired to the houſe of the Sieur Manzi, who was a friend to all perſons of wit. He at length became ſecretary to Matthew of Capua, great admiral of the kingdom of Naples, and contracted a friendſhip with Taſſo. A ſhort time after, he went to Rome, and entered into the ſervice of cardinal Aldobrandini, nephew to pope Clement VIII. who took him with him to Savoy. Marino was in great favour with the court of Turin; but afterwards created himſelf many enemies there, the moſt furious of whom was the poet Gaſpard Murtola, who, attempting to ſhoot him with a piſtol, wounded one of the duke of Savoy's favourites. Marino being obliged to leave Turin, went to Paris at the deſire of queen Mary de Medicis, and publiſhed there his poem on Adonis. He afterwards went to Rome, where he was made prince of the academy of the humoriſti; from thence to Naples, where he died while he was preparing to return home. He had a very lively imagination, but little judgment; and, giving way to the points and conceits then in vogue, his authority, far from correcting the falſe taſte of the Italians, ſerved rather to keep it farther from reformation. His works, which are numerous, have been often printed.

MARIOTTE (Edme), an eminent phyſician and mathematician, was born in Burgundy, and was made a member of the academy of ſciences. He died in 1684. His works, which are much eſteemed, were printed at Leyden in 1717, 2 vols 4to.

MARJORAM, in botany. See ORIGANUM.

MARITAGIUM, that portion which is given with a daughter in marriage.

MARITAGIUM, or *Marriage*, ſtrictly taken, is that right which the lord of the fee had, to marry the daughters of his vaſſals after their death: Others tell us, it was that profit which might accrue to the lord, by the marriage of one under age, who held his lands of him by knight's ſervice.

MARITIME, ſomething relating to, or bounded by the ſea. Thus a maritime province, or country, is one bounded by the ſea; and a maritime kingdom is one that makes a conſiderable figure, or that is very powerful at ſea. Hence, by *maritime* powers among the European ſtates, are underſtood Great Britain and Holland.

MARITIME *State*, in Britiſh polity, one of the three general diviſions of the laity: (See LAITY.) This ſtate is nearly connected with the military; though much more agreeable to the principles of our free conſtitution. The royal navy of England hath ever been its greateſt defence and ornament; it is its ancient and natural ſtrength; the floating bulwark of the iſland; an army, from which, however ſtrong and powerful, no danger can ever be apprehended to liberty: and accordingly it has been aſſiduouſly cultivated from the earlieſt ages. To ſo much perfection was our naval reputation arrived in the 12th century, that the code of maritime laws, which are called the *laws of Oleron*, and are received by all nations in Europe as the ground and ſubſtruction of all their marine conſtitutions, was confeſſedly compiled by our king Richard I. at the iſle of Oleron on the coaſt of France, then part of the poſſeſſions of the crown of England. And yet, ſo vaſtly inferior were our anceſtors in this point to the preſent age, that even in the maritime reign of queen Elizabeth, Sir Edward Coke thinks it matter of boaſt, that the royal navy of England then conſiſted of *three and thirty* ſhips. The preſent condition of our marine is in great meaſure owing to the ſalutary proviſions of the ſtatutes called the *navigation acts*; whereby the conſtant increaſe of Engliſh ſhipping and ſeamen was not only encouraged, but rendered unavoidably neceſſary. By the ſtatute 5 Ric. II. c. 3. in order to augment the navy of England, then greatly diminiſhed, it was ordained, that none of the king's liege people ſhould ſhip any merchandize out of or into the realm, but only in ſhips of the king's ligeance, on pain of forfeiture. In the next year, by ſtatute 6 Ric. II. c. 8. this wiſe proviſion was enervated, by only obliging the merchants to give Engliſh ſhips (if able and ſufficient) the preference. But the moſt beneficial ſtatute for the trade and commerce of theſe kingdoms is that navigation-act, the rudiments of which were firſt framed in 1650, with a narrow partial view; being intended to mortify our own ſugar-iſlands, which were diſaffected to the parliament, and ſtill held out for Charles II. by ſtopping the gainful trade which they then carried on with the Dutch, and at the ſame time to clip the wings of thoſe our opulent and aſpiring neighbours. This prohibited all ſhips of foreign nations from trading with any Engliſh plantations, without licenſe from the council of ſtate. In 1651, the prohibition was extended alſo to the mother-country: and no goods were ſuffered to be imported into England, or any of its dependencies, in any other than Engliſh bottoms; or in the ſhips of that European nation, of which the merchandize imported was the genuine growth or manufacture. At the Reſtoration, the former proviſions were continued, by ſtat. 12 Car. II. c. 18. with this very material improvement, that the maſter and three-fourths of the mariners ſhall alſo be Engliſh ſubjects.

Many laws have been made for the ſupply of the royal navy with ſeamen; for their regulation when on board; and to confer privileges and rewards on them during and after their ſervice.

1. For their ſupply. The principal, but the moſt odious, though often neceſſary method for this purpoſe, is by impreſſing; ſee Impreſſing. But there are other ways that tend to the increaſe of ſeamen, and manning the royal navy. Pariſhes may bind out poor boys apprentices to the maſters of merchantmen, who ſhall be protected from impreſſing for the firſt three years; and if they are impreſſed afterwards, the maſters ſhall be allowed their wages: great advantages in point of wages are given to volunteer ſeamen, in order to induce them to enter into his majeſty's ſervice: and every foreign ſeaman, who, during a war, ſhall ſerve two years in any man of war, merchantman, or privateer, is naturalized *ipſo facto*. About the middle of king Willliam's reign, a ſcheme was ſet on foot for a regiſter of ſeamen to the number of 30,000, for a conſtant and regular ſupply of the king's fleet; with great privileges to the regiſtered men, and, on the other hand, heavy penalties in caſe of their non-appearance when called for: but this regiſtry, being judged to be rather a badge of ſlavery, was aboliſhed by ſtat. 9 Ann. c. 21.

2. The method of ordering ſeamen in the royal fleet, and keeping up a regular diſcipline there, is directed by certain expreſs rules, articles, and orders, firſt enacted by the authority of parliament ſoon after the Reſtoration; but ſince new-modelled and altered, after the peace of Aix-la-Chapelle, to remedy ſome defects which were of fatal conſequence in conducting the preceding war. In theſe articles of the navy almoſt every poſſible offence is ſet down, and the puniſhment thereof annexed: in which reſpect the ſeamen have much the advantage over their brethren in the land-ſervice; whoſe articles of war are not enacted by parliament, but framed from time to time at the pleaſure of the crown. Yet from whence this diſtinction aroſe, and why the executive power, which is limited ſo properly with regard to the navy, ſhould be ſo extenſive with regard to the army, it is hard to aſſign a reaſon; unleſs it proceeded from the perpetual eſtabliſhment of the navy, which rendered a permanent law for their regulation expedient, and the temporary duration of the army, which ſubſiſted only from year to year, and might therefore with leſs danger be ſubjected to diſcretionary government. But, whatever was apprehended at the firſt formation of the mutiny-act, the regular renewal of our ſtanding force at the entrance of every year has made this diſtinction idle. For, if from experience paſt, we may judge of future events, the army is now laſtingly ingrafted into the Britiſh conſtitution; with this ſingularly fortunate circumſtance, that any branch of the legiſlature may annually put an end to its legal exiſtence, by refuſing to concur in its continuance.

3. With regard to the privileges conferred on ſailors, they are pretty much the ſame with thoſe conferred on ſoldiers; with regard to relief, when maimed, or wounded, or ſuperannuated, either by county-rates, or the royal hoſpital at Greenwich; with regard alſo to the exerciſe of trades, and the power of making nuncupative teſtaments: and, farther, no ſeaman aboard his majeſty's ſhips can be arreſted for any debt, unleſs the ſame be ſworn to amount to at leaſt twenty pounds; though, by the annual mutiny-acts, a ſoldier may be arreſted for a debt which extends to half that value, but not to a leſs amount.

MARIUS, the Roman general, and ſeven times conſul, who ſullied his great military reputation by ſavage barbarities, died about 86 B. C.

St **MARK** *the Evangeliſt's Day*, a feſtival of the Chriſtian church, obſerved April 25.

St Mark was by birth a Jew, and deſcended of the tribe of Levi. He was converted by ſome of the apoſtles, probably by St Peter; to whom he was a conſtant companion in all his travels, ſupplying the place of an amanuenſis and interpreter. He was by St Peter ſent into Egypt, fixing his chief reſidence at Alexandria, and the places thereabout: where he was ſo ſucceſsful in his miniſtry, that he converted multitudes both of men and women. He afterwards removed weſtward, towards the parts of Libya, going through the countries of Marmorica, Pentapolis, and others thereabouts; where, notwithſtanding the barbarity and idolatry of the inhabitants, he planted the goſpel. Upon his return to Alexandria, he ordered the affairs of that church, and there ſuffered martyrdom in the following manner. About Eaſter, at the time the ſolemnities of Serapis were celebrated, the idolatrous people, being excited to vindicate the honour of their deity, broke in upon St Mark, while he was performing divine ſervice, and, binding him with cords, dragged him through the ſtreets, and thruſt him into priſon, where in the night he had the comfort of a divine viſion. Next day, the enraged multitude uſed him in the ſame manner, till, his ſpirits failing, he expired under their hands. Some add, that they burnt his body, and that the Chriſtians decently interred his bones and aſhes near the place where he uſed to preached. This happened in the year of Chriſt 68.

Some writers aſſert, that the remains of St Mark were afterwards, with great pomp, tranſlated from Alexandria to Venice. However, he is the tutelar ſaint and patron of that republic, and has a very rich and ſtately church erected to his memory.

Some have confounded this evangeliſt with John Mark ſo often ſpoken of in the Acts of the Apoſtles: but this opinion is now generally given up. This apoſtle is author of one of the four goſpels inſcribed with his name. See the following article.

St **Mark's** *Goſpel*, a canonical book of the New Teſtament, being one of the four goſpels.

St Mark wrote his goſpel at Rome, where he accompanied St Peter in the year of Chriſt 44. Tertullian and others pretend, that St Mark was no more than an amanuenſis to St Peter, who dictated this goſpel to him; others affirm, that he wrote it after St Peter's death. Nor are the learned leſs divided as to the language it was wrote in; ſome affirming it was compoſed in Greek, others in Latin. Several of the ancient heretics received only the goſpel of St Mark: others, among the Catholics, rejected the 12 laſt verſes of this goſpel. The goſpel of St Mark is properly an abridgement of that of St Matthew.

Canons of St **Mark**, a congregation of regular canons, founded at Mantua, by Albert Spinola a prieſt, towards the end of the 12th century. Spinola made a rule for them, which was approved, corrected, and confirmed by ſeveral ſucceeding popes. About the year 1450, they were reformed, and followed only the rule of St Auguſtine. This congregation having flouriſhed by the ſpace of 400 years, declined by little and little, and is now become extinct.

Knights of St Mark, an order of knighthood in the republic of Venice, under the protection of St Mark the evangeliſt. The arms of the order are, gules, a lion winged or; with this device, Pax tibi Marce Evangeliſta. This order is never conferred but on thoſe who have done ſignal ſervice to the commonwealth.

Mark, or *Marc*, alſo denotes a weight uſed in ſeveral ſtates of Europe, and for ſeveral commodities, eſpecially gold and ſilver. In France, the mark is divided into eight ounces, 64 drachms, 192 derniers or penny-weights, 160 eſterlines, 300 maills, 640 felins, or 4608 grains. In Holland, the mark weight is alſo called *Troy-weight*, and is equal to that of France. When gold and ſilver are ſold by the mark, it is divided into 25 carats.

Mark, is alſo uſed among us for a money of account, and in ſome other countries for a coin. See Money-*Table*.

The Engliſh mark is two thirds of a pound Sterling, or 12 s. 4 d. and the Scotch mark is of equal value in Scots money of account, viz. 13½ d.

MARKET, a public place in a city or town, in which live-cattle, proviſions, or other goods, are ſet to ſale; and alſo a privilege, either by grant or preſcription, by which a town is enabled to keep a market.

MARKHAM (Gervaſe), an Engliſh author, was the ſon of Robert Markham of Gotham, eſq; in Nottinghamſhire, and bore a captain's commiſſion under Charles I. in the civil wars. He was eſteemed both a good ſoldier and a good ſcholar. He was particularly maſter of the French, Italian, and Spaniſh. He wrote, 1. The tragedy of Herod and Antipater, which was printed in 1622. 2. Many volumes upon huſbandry and horſemanſhip. 3. A piece on the art of fowling. 4. The ſoldiers accidence and grammar.

MARKLAND (Jeremiah,) one of the moſt learned ſcholars and penetrating critics of the age, was born in 1692, and received his education in Chriſt's-hoſpital. He became firſt publicly known by his "*Epiſtola Critica*, addreſſed to biſhop Hare. In this he gave many proofs of extenſive erudition and critical ſagacity. He afterwards publiſhed an edition of Statius, and ſome plays of Euripides; and aſſiſted Dr Taylor in his editions of Lyſias and Demoſthenes, by the notes which he communicated to him. He has alſo very happily elucidated ſome paſſages in the New Teſtament, which may be found in Mr Bowyer's edition of it; and was author of a very valuable volume of remarks on the epiſtles of Cicero to Brutus, and of an excellent little treatiſe under the title of *Quæſtio Grammatica*. He died in 1775, at Milton, near Dorking in Surry; and was a man not more valued for his univerſal reading, than beloved for the excellency of his heart and primitive ſimplicity of manners.

MARLBOROUGH, a town of Wiltſhire in England, ſo called, as ſome think, from its chalky ſoil. It is an ancient borough by preſcription, and ſends two members to parliament. It has ſuffered greatly by fire; particularly, in 1728, there was ſuch a conflagration, that, if the ſtreet had not been very broad, the whole town would probably have been burnt down.

Marlborough (duke of). See Churchill.

Marlborough-*Fort*, an Engliſh factory on the weſt coaſt of the iſland of Sumatra in Aſia; ſeated three miles weſt of the town of Bencoolen. E. Long. 101. 12. S. Lat. 4. 21.

MARLE, a kind of calcareous earth, very much uſed in agriculture as a manure. See Agriculture, n° 169, 170.

Marle is dug in many places of Great Britain and Ireland. In digging for it in Ireland, they meet with horns and other curious foſſils. The marle always lies in the bottoms of low bogs, and is found by boring with augres made for that purpoſe. It uſually lies at five, ſeven, or nine feet depth. The obtaining it in many places is attended with very conſiderable expences in draining off the water. The manner of digging it is this: They employ ſix able labourers and a ſupernumerary; and theſe cut up a hole of 12 feet ſquare, which is ſuppoſed a pit that this number of men can manage in one day. Two men dig, two throw it up, and two throw it by, and the ſupernumerary man ſupplies defects on all occaſions. For the firſt three feet they dig through a fuzzy earth, fit for making of turf or fuel. Under this lies a ſtratum of gravel, of about half a foot: under this often, for three feet more, there is a more kindly moſs, which would make better fuel. This lower ſtratum is always full of foſſile wood, which is uſually ſo ſoft, that the ſpade cuts as eaſily through it as through the earth it lies in. Under this, for the thickneſs of about three inches, is found a ſeries of leaves, principally of the oak. Theſe appear very fair to the eye, but fall to pieces on being touched; and this ſtratum is ſometimes interrupted by vaſt heaps of ſeed, which ſeem to be broom or furze ſeed. In ſome places there appear berries of different kinds, and in others ſeveral ſpecies of ſea-plants; all lying in the ſame confuſed manner as the oak-leaves. Under this vegetable ſtratum there lies one of blue clay, half a foot thick, and uſually full of ſea-ſhells. This blue clay is not ſo tough as common clay; but is thrown carefully up, and uſed as marle in ſome places. Under this always appears the true marle; the ſtratum of which is uſually from two to four feet thick, and ſometimes much more.—This marle looks like buried lime, and is full of ſhells; which are uſually of a ſmall ſize, and of the periwinkle kind; but there are ſeveral other ſorts at times found among them. Among this marle, and often at the very bottom of it, are found great numbers of very large horns of the deer kind, which are vulgarly called *elk's horns*. Theſe, where they join to the head, are thick and round; and at that joining there grows out a branch, which is about a foot long, and ſeems to have hung juſt over the creature's eyes: it grows ſtill round for about a foot above this; and then ſpreads out broad, and terminates in branches long and round, terminating with a ſmall bend. The labourers are obliged to work in a hurry in all theſe pits, ſo that they ſeldom bring out the horns whole. There are alſo, at times, found the leg-bones and other parts of the ſkeletons of the ſame beaſts; but this more rarely, only a few together, and but in few places.

Dr Black is of opinion, that all kinds of marle derive their origin from the calcareous matter of ſhells and lithophyta.

Shell-marle, ſays he, is compoſed of the ſhells of acquatic animals, which are ſometimes very entire, and often decayed or mixed down with other earthy ſubſtances. Examining this matter as occurring in different places, it may be diſtinguiſhed into freſh-water marle, and the marle of ſea-ſhells. Of the firſt we have an example in the Meadow at Edinburgh. Wherever the ſoil is turned up to the depth of ſix inches, a quantity appears. It is compoſed of the ſhells of a ſmall freſh-water ſnail or welk. This animal, when alive, is not eaſily diſcernible, the ſhell being much of the ſame obſcure colour as the ſtones covered with the water. But we can obſerve a great number of them in all running brooks and other collections of freſh water; and as the animal dies the ſhells are depoſited where the water ſtagnates in very great quantity. That compoſed of ſea-ſhells, conſtitutes greater collections that are found in innumerable places now far removed from the ſea. That moſt particularly deſcribed by Reaumur is a collection of this kind in a province of France, and at Turin. That part of the country where it is found is computed to contain 80 ſquare miles of ſurface; and wherever they dig to a certain depth, they find this collection of ſhells: the country at preſent is 108 miles from the ſea. They find the marle eight or nine feet below the ſurface, and they dig it to the depth of 20 feet. It is ſtill deeper, but they find it too expenſive to ſearch for it. He ſuppoſes it to be only 18 feet deep; and even at this depth the quantity will appear enormous. It will amount to 140 millions of cubic fathoms of ſhells that are moſtly decayed and broken into fragments, and mixed with other marine productions, as millipores, madripores, and other coralline bodies, which are all productions of the ſea.

MARLIN, in ſea-affairs, are tarred white ſkains, or long wreaths or lines of untwiſted hemp, dipped in pitch or tar, with which cables and other ropes are wrapped round, to prevent their fretting or rubbing in the blocks or pullies through which they paſs. The ſame ſerves in artillery upon ropes uſed for rigging gins, uſually put up in ſmall parcels called *ſkains*.

MARLOE (Chriſtopher), an Engliſh dramatic author, was a ſtudent in the univerſity of Cambridge; but afterwards turning player, he trode the ſame ſtage with the inimitable Shakeſpeare. He was accounted an excellent poet even by Ben Johnſon himſelf. He wrote ſix tragedies, one of which called *Luſt's Dominion*, or the *Laſcivious Queen*, has been altered by Mrs Behn, and acted under the title of *Abdelazar, or the Moor's Revenge*. Some time before his death, he had made a conſiderable progreſs in an excellent poem entitled *Hero* and *Leander;* which was afterwards finiſhed by George Chapman, who is ſaid to have fallen ſhort of the ſpirit and invention diſcovered by Marloe. Mr Anthony Wood repreſents him as a free-thinker, in the worſt ſenſe of the word; and gives the following account of his death. Falling deeply in love with a low girl, and having for his rival a fellow in livery, Marloe, imagining that his miſtreſs granted him favours, was fired with jealouſy, and ruſhed upon him in order to ſtab him with his dagger: but the footman avoided the ſtroke, and, ſeizing his wriſt, ſtabbed him with his own weapon; of which wound he died, in the year 1593.

MARLOW, a town of Buckinhamſhire, in England, ſeated on the river Thames, over which there is a bridge into Berkſhire. It ſends two members to parliament. W. Long. 0. 45. N. Lat. 51. 34.

MARLY, a palace belonging to the king of France, between Verſailles and St Germain; ſeated in a valley, near a village and foreſt of the ſame name. It is noted for its fine gardens and water-works, there being a curious machine on the river Seine, which not only ſupolies them with water, but alſo thoſe of Verſailles. It is 10 miles N. W. of Paris. E. Long. 2. 11. N. Lat. 48. 52.

MARMANDE, a town of France, in Guienne, and in Agennois. It carries on a great trade in corn and wine, and is ſeated on the river Garonne, in E. Long. 0. 15. N. Lat. 38. 35.

MARMALADE, a confection of plums, apricots, quinces, &c. boiled up to a conſiſtence with ſugar.

MARMOR. See MARBLE.

MARMORA, the name of four iſlands of Aſia, in the ſea of the ſame name. The largeſt is about 30 miles in circumference; and the ſoil of them all produces corn, wine, and fruits. The ſea of Marmora is a large gulph, which communicates both with the Archipelago and the Black Sea by that of Conſtantinople, being 120 miles in length, and 50 in breadth, and all ſhips muſt paſs through it that ſail to Conſtantinople from the Mediterranean. It was anciently the *Propontis*.

MARMORICA, a country of Africa anciently inhabited by the Libyans. It was bounded on the eaſt by Egypt, on the weſt by Cyrenaica, on the ſouth by Sahara, or the deſert of Libya Interior, and on the north by the Mediterranean; and was reckoned a part of Egypt. There is no diſtinct hiſtory of the country.

MARONITES, certain eaſtern Chriſtians ſo called, who inhabit near mount Libanus in Syria. The name is derived either from a town in the country, called *Maronia;* or from *St Maron*, who built a monaſtery there in the fifth century.

The Maronites hold communion with the Romiſh church. Pope Gregory XIII. founded a college at Rome, where their youth are educated, and then ſent to their own country. They formerly followed the errors of the Jacobites, Neſtorians, and Monothelites; but they were re-united to the Roman church in the time Gregory XIII. and Clement VIII. The patriarch of the Maronites was preſent in the fourth Lateran Council, under Innocent III. in 1215.

The Maronites have their patriarch, archbiſhops, biſhops, and about 150 inferior clergy, who are ſo oppreſſed by the Turks, that they are reduced to work for their living. They keep Lent according to the ancient rigour, eating but one meal a-day, and that after maſs, which is ſaid at 4 o'clock in the afternoon. Their prieſts are diſtinguiſhed by a blue ſcarf, which they wear about their caps. Married men may become prieſts, but none may marry after he is in orders. They wear no ſurplices, obſerve particular faſts and feaſts, and differ im many other things from the church of Rome.

The patriarch of the Maronites is a monk of St Anthony, claims the title of patriarch of Antioch, and is always called *Peter*. He has about nine biſhops under him; and reſides at Edem Canobin, a monaſtery built on a rock. They read their ſervice both in the vulgar language and in Latin; and, while they perform it, turn their heads ſometimes on one ſide, and ſometimes on the other, pronouncing the word *Num* or *Eynam* ſoftly, which ſignifies *yes*, or *yes verily*, by which they expreſs their aſſent to what they read. They have ſo great a veneration for their biſhops, that they often proſtrate themſelves before them.

In 1180, the Maronites were above 40,000 in number, and very valiant. They did the kings of Jeruſalem great ſervice againſt the Saracens.

Beſides ſeveral convents of Maronite monks, there is one of nuns, who are highly eſteemed for their ſanctity. This edifice is no more than a church, in which the nuns are ſhut up cloſe, like pigeons in their holes, in little corners or cells, which are ſo low, that few of them can ſtand upright or turn themſelves round in them.

To MAROON, to put one or more ſailors aſhore upon a deſolate iſland, under pretence of their having committed ſome great crime. This deteſtable expedient has been repeatedly practiſed by ſome inhuman commanders of merchant-ſhips, particularly in the Weſt Indies.

MAROT (Clement), the beſt French poet of his time, was born at Cahors in 1495; and was the ſon of John Marot, valet de chambre to Francis I. and poet to queen Anne of Brittany. He enjoyed his father's place of valet de chambre to Francis I. and was page to Margaret of France wife to the duke of Alençon. In 1521 he followed that prince into Italy, and was wounded and taken priſoner at the battle of Pavia; but at his return to Paris was accuſed of hereſy, and thrown into priſon, from whence he was delivered by the protection of king Francis I. He at length retired to the queen of Navarre, then to the ducheſs of Ferrara, and in 1536 returned to Paris; but declaring openly for the Calviniſts, he was obliged to fly to Geneva, which he at length left, and retired to Piedmont, and died at Turin in 1544, aged 50. His verſes are agreeably filled with natural beauties. La Fontaine acknowledged himſelf his diſciple, and contributed greatly to reſtore to vogue the works of this ancient poet. Marot, beſides his other works, has tranſlated part of the Pſalms into verſe, which was continued by Beza, and are ſtill ſung in the Proteſtant churches abroad.—Michael Marot, his ſon, was alſo the author of ſome verſes; but they are not comparable to thoſe of John, and much leſs to thoſe of Clement Marot.—The works of the three Marots were collected and printed together at the Hague, in 1731, in 3 vols 4to. and in 6 vols 12mo.

MARPURG, a ſtrong and conſiderable town of Germany, in the Upper Rhine, and in the landgravate of Heſſe-Caſſel, with an univerſity, a caſtle, a palace, a handſome ſquare, and a magnificent town-houſe. It is ſeated on the river Lohn, in a pleaſant country, 15 miles ſouth of Waldeck, and 47 ſouth-weſt of Caſſel. E. Long. 8. 53. N. Lat. 50. 42.

Marpurg, a handſome town of Germany, in Lower Styria, ſeated on the river Drave, 25 miles ſouth-weſt of Gratz, and 60 north-eaſt of Laubach. E. Long. 16. 10. N. Lat. 46. 42.

MARQUARD (Freher), an eminent German civilian, born at Augſburg in 1565. He ſtudied at Bourges, under the learned Cujas; and acquired great ſkill in polite literature, and in the laws. At his return to Germany, he became counſellor to the elector Palatine, and profeſſor of law at Heidelberg; and was afterwards ſent by the elector Frederic IV. as his miniſter, into Poland, to Mentz, and ſeveral other courts. He died at Heidelberg in 1614. He wrote many works which are eſteemed; the principal of which are, 1. *De re monetaria veterum Romanorum, & hodierni apud Germanos imperii.* 2. *Rerum Bohemicarum ſcriptores.* 3. *Rerum Germanicarum ſcriptores.* 4. *Corpus hiſtoriæ Franciæ*, &c.

MARQUE, or *Letters of* Marque, in military affairs, are letters of repriſal, granting the ſubjects of one prince or ſtate liberty to make repriſals on thoſe of another.—They are ſo called from the German *marcke*, "limit, frontier;" as being *jus conceſſum in alterius principis marckas ſeu limites tranſeundi, ſibique ejus faciendi*; as being a right of paſſing the limits or frontiers of another prince, and doing one's ſelf juſtice.

Letters of marque among us are extraordinary commiſſions granted by authority for reparation to merchants taken and deſpoiled by ſtrangers at ſea; and repriſals is only the retaking, or taking of one thing for another *. The form in theſe caſes is, the ſufferer muſt firſt apply to the lord privy-ſeal, and he ſhall make out letters of requeſt under the privy-ſeal; and if, after ſuch requeſt of ſatisfaction made, the party required do not, within convenient time, make due ſatisfaction or reſtitution to the party grieved, the lord chancellor ſhall make him out letters of marque under the great ſeal; and by virtue of theſe he may attack and ſeize the property of the aggreſſor nation, without hazard of being condemned as a robber or pirate.

MARQUESAS islands, the name of certain iſlands in the South Sea, lying between eight and ten degrees of ſouth latitude, and between 139 and 140 degrees of weſt longitude. They are five in number, viz. La Magdalena, St Pedro, La Dominica, Santa Chriſtina, and Hood Iſland. All the natives of their iſlands may be ſuppoſed to be of the ſame tribe. Thoſe ſpots that are fit for culture are very populous; but as every iſland is very mountainous, and has many inacceſſible and barren rocks, it is to be doubted whether the whole population of this group amounts to 50,000 perſons. The Spaniards, who firſt viſited here, found the manners of this people gentle and inoffenſive; but theſe qualities did not prevent thoſe who landed from wantonly butchering ſeveral of the natives at Magdalena.

The inhabitants of theſe iſlands collectively, ſays captain Cook, are, without exception, the fineſt race of people in the South-Sea. For ſymmetry of ſhape, and regular features, they perhaps ſurpaſs all other nations. Not a ſingle deformed or ill-proportioned perſon was ſeen on the iſland; all were ſtrong, tall, well-limbed, and remarkably active. The men are about five

* See Prerogative.

five feet ten or ſix inches high; their teeth are not ſo good, nor are their eyes ſo full and lively, as thoſe of many other nations: their hair is of many colours, but none red; ſome have it long, but the moſt general cuſtom is to wear it ſhort, except a bunch on each ſide the crown, which they tie in a knot: their countenances are pleaſing, open, and full of vivacity: they are of a tawny complexion, which is rendered almoſt black by punctures over the whole body. They were entirely naked, except a ſmall piece of cloth round their waiſt and loins. The punctures were diſpoſed with the utmoſt regularity, ſo that the marks on each leg, arm, and cheek, were exactly ſimilar. The women, in two days time, began to appear in conſiderable numbers, and the ſailors found them not leſs kind than thoſe of the other iſlands which they had viſited: they were inferior to the men in ſtature, but well proportioned; their general colour was brown; no punctures were obſerved upon them; they wore a ſingle piece of cloth made of the mulberry bark, which covered them from the ſhoulders to the knees.

The principal head-dreſs uſed in the iſlands, and what appear to be their chief ornament, is a ſort of broad fillet, curiouſly made of the fibres of the huſks of cocoa-nuts; in the front is fixed a mother-of pearl ſhell, wrought round to the ſize of a tea-ſaucer; before that another ſmaller, of very fine tortoiſe-ſhell, perforated into curious figures; alſo before, and in the centre of that, is another round piece of mother-of-pearl, about the ſize of half a crown; and before this another piece of perforated tortoiſe-ſhell, the ſize of a ſhilling. Beſides this decoration in front, ſome have it alſo on each ſide, but in ſmall pieces; and all have fixed to them the tail-feathers of cocks, or tropic-birds, which when the fillet is tied on ſtand upright, ſo that the whole together makes a very ſprightly ornament. They wear round the neck a kind of ruff, or necklace, made of light wood, the outward and upper ſides covered with ſmall peas, which are fixed on with gum; they alſo wear ſome bunches of human hair faſtened to a ſtring, and tied round the legs and arms. But all the above ornaments are ſeldom ſeen on the ſame perſon. All theſe ornaments, except the laſt, they freely parted with for a trifling conſideration; but the human hair they valued very highly, though theſe bunches were the uſual reſidence of many vermin. It is probable, that theſe were worn in remembrance of their deceaſed relations, and therefore were looked upon with ſome veneration; or they may be the ſpoils of their enemies, worn as the honourable teſtimonies of victory. However, a large nail, or ſomething which ſtruck their eyes, commonly got the better of their ſcruples. The king, or chief of the iſland, came to viſit captain Cook; he was the only one ſeen completely dreſſed in this manner. Their ordinary ornaments are necklaces, and amulets made of ſhells, &c. All of them had their ears pierced, though none were ſeen with ear-rings. The king had not much reſpect paid him by his attendants: he preſented captain Cook with ſome fruit and hogs; and acquainted him that his name was *Honoo*, and that he was *he-ka ai*, which title ſeems to correſpond with the *aree* of O-Taheitee, and *arekee* of the Friendly Iſles. Their dwellings are in the valleys, and on the ſides of the hills near their plantations, They are built in the ſame manner as thoſe at O-Taheitee, which will be particularly deſcribed when we ſpeak of that iſland; but they are much meaner, and are only covered with the leaves of the bread-fruit tree: in general, they are built on a ſquare or oblong pavement of ſtone, raiſed ſome height above the level of the ground; they likewiſe have ſuch pavement near their houſes, on which they ſit to eat and amuſe themſelvs. Along the uppermoſt edge of the mountain a row of ſtakes, or palliſadoes cloſely connected together, were ſeen like a fortification, in which, by the help of glaſſes, appeared ſomething like huts, which ſeemed to bear a great reſemblance to the hippas of New-Zealand, which will be deſcribed in ſpeaking of that country. Their canoes reſemble thoſe of O-Taheitee, but not ſo large; their heads had commonly ſome flat upright piece, on which the human face was coarſely carved; and their ſails were made of mats, triangular in ſhape, and very broad at the top: the paddles which they uſed were of heavy, hard wood, ſhort, but ſharp-pointed, and with a knob at the upper end; they were from 10 to 20 feet long, and about 15 inches broad.

Their weapons were all made of the club-wood, or caſuarina; and were either plain ſpears about 8 or 10 feet long, or clubs which commonly had a knob at one end. They have alſo ſlings with which they throw ſtones with great velocity, and to a great diſtance, but not with a good aim.

The language of theſe people is much nearer to that of O-Taheitee, than any other dialect in the South-Sea, except that they could not pronounce the letter *r*.

The only quadrupeds ſeen here were hogs, except rats; here were fowls, and ſeveral ſmall birds in the woods, whoſe notes were very melodious. The chief difference between the inhabitants of the Marqueſas and thoſe of the Society-Iſlands, ſeems to conſiſt in their different degrees of cleanlineſs: the former do not bathe two or three times a-day, nor waſh their hands and face before and after every meal, as the latter do; and they are beſides very ſlovenly in the manner of preparing their meals. Their diet is chiefly vegetable; though they have hogs and fowls, and catch abundance of fiſh at certain times. Their drink is pure water, cocoa-nuts being ſcarce here.

It was not long before the propenſity of the natives was diſcovered to be, rather to receive than give; for when they had taken a nail as the price of a bread-fruit, the article ſo purchaſed could not be obtained from them. To remove this diſhoneſt diſpoſition, captain Cooke ordered a muſket to be fired over their heads, which terrified them into fair-dealing.

Soon after the natives had gathered courage enough to venture on board the ſhip, one of them unfortunately ſtole an iron ſtanchion from the gang-way, with which he ſprang into the ſea, and, notwithſtanding its weight, ſwam with it to his canoe, and was making to the ſhore with all ſpeed. A muſket was fired over his head to frighten him back, but to no effect, he ſtill continued to make off with his booty; the whiſtling of another ball over his head was as ineffectual: an officer, leſs patient of ſuch an injury than reaſon and humanity ſhould have taught him to be, levelled a muſket at the poor fellow, and ſhot him thro' the head. Captain Cook had given orders to fire *over* the queſas, quetry.

the canoe, but not to kill any one; he was in a boat, and came up with the canoe ſoon after. There were two men in her: one ſat bailing out the blood and water in a kind of hyſteric laugh; the other, a youth of about 14 or 15 years of age, who afterwards proved to be the ſon of the deceaſed, fixed his eyes on the dead body with a ſerious and dejected countenance. This act of ſeverity, however, did not eſtrange the iſlanders to the ſhip, and a traffic was carried on to the ſatisfaction of both parties; bread-fruit, bananas, plantains, and ſome hogs, were given in exchange for ſmall nails, knives, and pieces of Amſterdam cloth; red feathers of the Amſterdam-Iſland were greatly eſteemed here. Captain Cook, accompanied with the gentlemen of the ſhip, in their walks about the country lit on the houſe which had been the habitation of the man who had been ſhot; there they found his ſon, who fled at their approach: they inquired for his female relations, and were told that they remained at the top of the mountain, to weep and mourn for the dead. Notwithſtanding they were then among the relations of a man who had been killed by them, not the leaſt tokens of animoſity, or revenge, were diſcernible among the natives.

The weather being extremely hot, the inhabitants made uſe of large fans to cool themſelves, of which great numbers were purchaſed; theſe fans were formed of a kind of tough bark, or graſs, very firmly and curiouſly plaited, and frequently whitened with ſhell-lime. Some had large feathered leaves of a kind of palm, which anſwered the purpoſe of an umbrella.

The natives at length became ſo familiar as to mount the ſides of the ſhip in great numbers. They frequently danced upon deck for the diverſion of the ſailors: their dances very much reſembled thoſe of O-Taheitee; their muſic too was very much the ſame.

A ſailor having been inattentive to his duty, received ſeveral blows from captain Cook; on ſeeing which, the natives exclaimed, *tape-a hei-te tina*, "he beats his brother." From other inſtances that had occurred, it was clear that they knew the difference between the commander and his people, but at the ſame time they conceived them all brethren; and, ſays Mr Forſter, "to me the moſt natural inference is, that they only applied an idea to us in this caſe, which really exiſted with regard to themſelves; they probably look on themſelves as one family, of which the eldeſt born is the chief or king."

MARQUETRY, in-laid work; a curious kind of work, compoſed of pieces of hard fine wood of different colours, faſtened, in thin ſlices, on a ground, and ſometimes enriched with other matters, as tortoiſe-ſhell, ivory, tin, and braſs.

There is another kind of marquetry made, inſtead of wood, of glaſſes of various colours; and a third, where nothing but precious ſtones, and the richeſt marbles, are uſed: but theſe are more properly called *moſaic-work*. See Mosaic.

The art of inlaying is very ancient; and is ſuppoſed to have paſſed from the eaſt to the weſt, as one of the ſpoils brought by the Romans from Aſia. Indeed it was then but a ſimple thing; nor did it arrive at any tolerable perfection, till the 15th century, among the Italians: it ſeems, however, to have arrived at its height in the 17th century, among the French.

Marquetry.

Till John of Verona, a cotemporary with Raphael, the fineſt works of this kind were only black and white, which are what we now call *Moreſco's*; but that religious, who had a genius for painting, ſtained his woods with dyes or boiled oils, which penetrated them. But he went no further than the repreſenting buildings and perſpectives, which require no great variety of colours. Thoſe who ſucceeded him, not only improved on the invention of dyeing the woods, by a ſecret which they found of burning them without conſuming, which ſerved exceedingly well for the ſhadows; but had alſo the advantage of a number of fine new woods of naturally bright colours, by the diſcovery of America. With theſe aſſiſtances the art is now capable of imitating any thing; whence ſome call it the *art of painting in wood*.

The ground whereon the pieces are to be ranged and glued, is ordinarily of oak or fir well dried; and to prevent warping, is compoſed of ſeveral pieces glued together. The wood to be uſed, being reduced into leaves, of the thickneſs of a line, is either ſtained with ſome colour, or made black for ſhadow; which ſome effect by putting it in ſand extremely heated over the fire, others by ſteeping it in lime-water and ſublimate, and others in oil of ſulphur.—Thus coloured, the contours of the piece are formed, according to the parts of the deſign they are to repreſent.

The laſt is the moſt difficult part of marquetry, and that wherein moſt patience and attention are required. The two chief inſtruments uſed herein are the ſaw and the vice; the one, to hold the matters to be formed; the other, to take off from the extremes, according to occaſion. The vice is of wood, having one of its chaps fixed, the other moveable, and is opened and ſhut by the foot, by means of a cord faſtened to a treadle. Its ſtructure is very ingenious, yet ſimple enough.

The leaves to be formed (for there are frequently three or four of the ſame kind formed together) are put within the chaps of the vice, after being glued on the outermoſt part of the deſign whoſe profile they are to follow; then the workmen preſſing the treadle, and thus holding faſt the piece, with his ſaw runs over all the out-lines of the deſign.—By thus joining and forming three or four pieces together, they not only gain time, but the matter is likewiſe the better enabled to ſuſtain the efforts of the ſaw; which, how delicate ſoever it may be, and how lightly ſoever the workman may conduct it, without ſuch a precaution, would be apt to raiſe ſplinters, to the ruin of the beauty of the work.

When the work is to conſiſt of one ſingle kind of wood, or of tortoiſe-ſhell, on a copper or tin ground, or *vice verſa*; they only form two leaves on one another, i. e. a leaf of metal, and a leaf of wood or ſhell: this they call *ſawing in counter-parts*; for by filling the vacuities of one of the leaves by the pieces coming out of the other, the metal may ſerve as a ground to the wood, and the wood to the metal.

All the pieces thus formed with the ſaw, and marked to know them again, and the ſhadow given in the manner already mentioned; they vaneer or faſten each in its place on the common ground; uſing for that purpoſe

poſe the beſt Engliſh glue.

The whole is put in a preſs to dry, planed over, and poliſhed with the ſkin of the ſea-dog, wax, and ſhave-graſs, as in ſimple vaneering; with this difference, however, that in marquetry the fine branches, and ſeveral of the more delicate parts of the figures, are touched up and finiſhed with a graver.

It is the cabinet-makers, joiners, and toy-men among us, who work in marquetry; it is the enamellers and ſtone-cutters, who deal in moſaic work: the inſtruments uſed in the former are moſtly the ſame with thoſe uſed by the eboniſts.

MARQUIS, a title of honour, next in dignity to that of duke. His office is to guard the frontiers and limits of the kingdom, which were called the *marches*, from the Teutonic word *marche*, a limit: as, in particular, were the marches of Wales and Scotland, while they continued hoſtile to England. The perſons who had command there, were called *lords marchers*, or *marqueſſes;* whoſe authority was aboliſhed by ſtatute 27 Hen. VIII. c. 27. though the title had long before been made a mere deſign of honour, Robert Vere earl of Oxford being created marquis of Dublin by Richard II. in the eighth year of his reign. A marquis is created by patent; his mantle is double ermine, three doublings and a half; his title is *moſt noble;* and his coronet has pearls and ſtrawberry-leaves intermixed round, of equal height.

MARR, that part of Aberdeenſhire ſituated between the rivers Dee and Don.

MARRIAGE, a contract, both civil and religious, between a man and a woman, by which they engage to live together in mutual love and friendſhip for the ends of procreation, &c. See MORAL PHILOSOPHY, n° 125, &c.

The firſt inhabitants of Greece lived together without marriage. Cecrops, king of Athens, was the firſt author of this honourable inſtitution among that people. After the commonwealths of Greece were ſettled, marriage was very much encouraged by their laws; and the abſtaining from it was diſcountenanced, and in many places puniſhed. The Lacedæmonians were particularly remarkable for their ſeverity towards thoſe who deferred marrying, as well as to thoſe who wholly abſtained from it. The Athenians had an expreſs law, that all commanders, orators, and perſons entruſted with any public affair, ſhould be married men. Polygamy, or the having more than one wife at a time, was not commonly tolerated in Greece. See POLYGAMY.

The time of marriage was not the ſame in all places; the particular number of years to which they were limited, depended upon the humour of each lawgiver, nothing being generally agreed on this matter.

The Greeks thought it ſcandalous to contract marriage within certain degrees of conſanguinity; while moſt of the barbarous nations allowed inceſtuous mixtures. Moſt of the Grecian ſtates required that citizens ſhould match with none but citizens; and the children were not allowed to marry without the conſent of their parents: when there were orphan-virgins without any inheritance, the next of kin was obliged to marry them, or to ſettle a portion on them according to his quality.

The Romans, as well as the Greeks, diſallowed of polygamy. A Roman might not marry any woman who was not a Roman. It was thought diſhonourable for a woman to marry twice. Among the Romans, the kalends, nones, and ides, of each month were thought unlucky to be married in, as was alſo the feaſt of the parentalia, or feralia, and the whole month of May was reckoned the moſt unhappy ſeaſon.

We find but few laws in the books of Moſes concerning the inſtitution of marriage: he reſtrained the Iſraelites from marrying within certain degrees of conſanguinity; but we find that polygamy, though not expreſsly allowed, is however tacitly implied in the laws of Moſes: there is a particular law that obliged a man, whoſe brother died without iſſue, to marry his widow, and raiſe up children to his brother. The Hebrews purchaſed their wives, by paying down a competent dowry for them; and a man was at liberty to marry, not only in any of the 12 tribes, but even out of them, provided it was with ſuch nations as uſed circumciſion.

The ancient Chriſtian church laid ſeveral reſtraints upon her members in relation to marriage; ſuch was the rule forbidding Chriſtians to marry with infidels and heathens: another reſtraint related to the conſanguinity and affinity prohibited in Scripture: a third was, that children under age ſhould not marry without the conſent of their parents, guardians, or next relations: and another was, that there ſhould be ſome parity of condition between the contracting parties. They not only condemned polygamy, but even reckoned it unlawful to marry after a divorce. As to the ſeaſon in which marriage might or might not be celebrated in the Chriſtian church, all we find is, that it was forbidden in Lent. The Romiſh church requires of the clergy perpetual abſtinence from marriage; and has advanced this inſtitution to the dignity of a ſacrament. The church of England, though ſhe does not conſider marriage as a ſacrament, yet looks upon it as an inſtitution ſo ſacred, as that it ought always to be celebrated by an eccleſiaſtical perſon; but marriages, without this ſanction, are not therefore null and void. There is no canon of this church, which forbids marriages to be ſolemnized at any time. The canonical hours for celebrating of matrimony, are from eight to twelve in the forenoon. The impediments to marriage are ſpecified in canon 102 of the Engliſh church, and are theſe: 1. A preceding marriage or contract, or any controverſy or ſuit depending on the ſame. 2. Conſanguinity or affinity. 3. Want of conſent of parents, or guardians, &c.

Marriage, according to our law, cannot be diſſolved but by death, breach of faith, or other notorious miſbehaviour. It is requiſite to complete a marriage, that there be a free and mutual conſent between the parties. The marriages performed by Romiſh prieſts, whoſe orders are acknowledged by the church of England, are deemed good in ſome inſtances; but they ought to be ſolemniſed agreeable to the rites of our own church, to be intitled to the benefits attending on marriage here, ſuch as dower, thirds, &c. A marriage in reputation, as among the quakers, is allowed to be ſufficient to give title to a perſonal eſtate; though in the caſe of a perſon married by a diſſenting miniſter, who was not in orders, it has been held, that where a huſband demands a right due to him as ſuch by the eccleſiaſtical law, he ought to prove himſelf a huſband, thereby to be intitled to it; and yet this marriage is not altogether a nullity, becauſe, by the laws of nature, the contract is binding. On a promiſe of marriage, if it be mutual on both ſides, damages may be recovered in caſe either party refuſes to marry: and though no time for the marriage be agreed on, if the plaintiff aver that he offered to marry the defendant, who refuſed it, an action is maintainable for the damages; but no action ſhall be brought upon any agreement, except it is in writing, and ſigned by the party to be charged.

For the better preventing clandeſtine marriages, and the inconveniences ariſing therefrom, an act of parliament was paſſed, wherein the following regulations were made, viz. That from and after March 25, 1754, banns of matrimony ſhall be publiſhed in the pariſh-church, or ſome public chapel belonging to the pariſh wherein the parties dwell, upon three Sundays before the marriage, during the time of ſervice, immediately after the ſecond leſſon: and where the parties dwell in different pariſhes, the banns ſhall be publiſhed in both; and the marriage ſhall be ſolemniſed in the church or chapel wherein the banns were publiſhed, and no-where elſe: and it is alſo required, that both or either of the parties to be married, do reſide four weeks at leaſt in the pariſh where the banns are publiſhed. Nothing in this act deprives the archbiſhop of Canterbury of his uſual right of granting ſpecial licenſes to marry at any convenient time or place. All marriages ſolemnized contrary to the foreſaid regulations, ſhall be void; and the perſon ſolemnizing the ſame, ſhall be adjudged guilty of felony, and be tranſported for 14 years to his majeſty's colonies. Marriages ſolemnized by licenſe, where either of the parties (not being a widow or widower,) ſhall be under age, without the conſent of the father firſt had (if living), or of the guardians or one of them, and, where there ſhall be no guardians, of the mother (if living and unmarried), or of the guardian appointed by chancery, ſhall be void to all intents and purpoſes. Where any ſuch guardian ſhall be *non compos mentis*, or in parts beyond the ſea, or ſhall refuſe their conſent to a proper match, the party may apply by petition to the lord-chancellor, lord-keeper, or lords commiſſioners of the great ſeal, who ſhall proceed on ſuch a petition in a ſummary way; and where the marriage propoſed ſhall appear to be proper, they ſhall judicially declare the ſame to be ſo by an order of court, which ſhall be deemed effectual. All marriages ſhall be ſolemnized in the preſence of two or more creditable witneſſes beſides the miniſter; and an entry thereof ſhall be immediately made in a regiſter kept for that purpoſe. This act ſhall not extend to the marriages of any of the royal family, nor to Scotland, nor to thoſe perſons called *quakers*, nor thoſe profeſſing the Jewiſh religion. See Law, n° clx.

Policy of encouraging Marriage. Dr Halley obſerves, that the growth and increaſe of mankind is not ſo much ſtinted by any thing in the nature of the ſpecies, as it is from the cautious difficulty moſt people make to adventure on the ſtate of marriage, from the proſpect of the trouble and charge of providing for a family: nor are the poorer ſort of people herein to be blamed, who, beſides themſelves and families, are obliged to work for the proprietors of the lands that feed them; and of ſuch does the greater part of mankind conſiſt. Were it not for the backwardneſs to marriage, there might be four times as many births as we find; for by computation from the table given under the article Mortality, there are 15,000 perſons above 16 and under 45, of which at leaſt 7000 are women capable of bearing children; yet there are only 1238, or little more than a ſixth part of theſe, that breed yearly: whereas, were they all married, it is highly probable that four of ſix ſhould bring forth a child every year, the political conſequences of which are evident. Therefore, as the ſtrength and glory of a kingdom or ſtate conſiſts in the multitude of ſubjects, celibacy above all things ought to be diſcouraged, as by extraordinary taxing or military ſervice: and, on the contrary, thoſe who have numerous families ſhould be allowed certain privileges and immunities, like the *jus trium liberorum* among the Romans; and eſpecially, by effectually providing for the ſubſiſtence of the poor.

MARROW, in anatomy, a ſoft oleaginous ſubſtance contained in the cavity of the bones. See Anatomy, n° 5.

MARRUBIUM, white horehound; a genus of the gymnoſpermia order, belonging to the didynamia claſs of plants. There are nine ſpecies, the moſt remarkable of which is the vulgare, a native of Britain, growing naturally in waſte places, and by way-ſides near towns and villages, but not common. It has a ſtrong and ſomewhat muſky ſmell, and bitter taſte. It is reputed attenuant and reſolvent; an infuſion of the leaves in water, ſweetened with honey, is recommended in aſthmatical and phthiſical complaints, and moſt other diſeaſes of the breaſt and lungs.

MARS, in aſtronomy. See there, n° 4. 22. 44. 151.

Mars, in Pagan worſhip, the god of war. He was, according to ſome, the ſon of Jupiter and Juno; while others ſay that he was the ſon of Juno alone, who, being diſpleaſed at Jupiter's having produced Minerva from his brain, in revenge conceived by touching a flower, and became the mother of this formidable deity. The amours of Mars and Venus, and the manner in which Vulcan caught and expoſed them to the laughter of the other gods, have been deſcribed by ſeveral of the ancient poets. He is repreſented as having ſeveral wives and miſtreſſes, and a conſiderable number of children. He was held in the higheſt veneration by the Romans, both from his being the father of Romulus their founder, and from their inclination to conqueſt; and had magnificent temples erected to him at Rome.

Mars is uſually repreſented in a chariot, drawn by furious horſes. He is completely armed; and extends his ſpear with the one hand, and graſps a ſword, imbrued in blood, with the other. He has a fierce and ſavage aſpect. Diſcord is repreſented preceding his car; and Clamour, Fear, and Terror, appear in his train. The victims ſacrificed to him were the wolf, the horſe, the wood-pecker, the vulture, and the cock.

Mars, among chemiſts, denotes *iron;* that metal being ſuppoſed to be under the influence of the planet Mars.

MARSAL, a town of France, in Lorrain, remarkable for its ſalt-works; ſeated in a marſh on the river Selle, of difficult acceſs, which, together with the fortifications, render it an important place. E. Long. 6. 43. N. Lat. 48. 46.

MARSALA, an ancient and ſtrong town of Sicily, in the valley of Mazara. It is well peopled, and built on the ruins of the ancient Lilybœum. E. Long. 12. 37. N. Lat. 37. 52.

MARSAN, or MOUNT-MARSAN, a town of France, in Gaſcony, and capital of a ſmall territory of the ſame name, fertile in wine; ſeated on the river Miduſe, in W. Long. 0. 39. N. Lat. 44. 0.

MARSAQUIVER, or MARSALQUIVER, a ſtrong and ancient town of Africa, on the coaſt of Barbary, and in the province of Beni-Arax, in the kingdom of Tremeſen, with one of the beſt harbours in Africa. It was taken by the Spaniards in 1732. It is ſeated on a rock near a bay of the ſea, in W. Long. 0. 10. N. Lat. 35. 40.

MARSEILLES, a ſtrong ſea-port town, and the moſt rich and trading place of Provence, in France. Here is a good harbour, where the French galleys are ſtationed; for it will not admit large men of war. It is divided into the Old Town and the New: in the Old, the houſes are not ſo well built as in the other. They are ſeparated by a ſtreet, bordered by trees on each ſide. It is ſaid to contain 100,000 inhabitants. It is one of the moſt trading towns in France, to which its harbour contributes, which has a chain acroſs its mouth. Without the walls is the caſtle of Notre Dame, which is very well fortified. It is a biſhop's ſee, and there is a French academy, it having been noted at all times for men of learning. In 1660, Lewis XIV. built the citadel and fort St John to keep the inhabitants in awe, becauſe they pretended to be free. The Jeſuits had a very fine obſervatory here; and in the arſenal, built not long ago, there are arms for 40,000 men. In the Houſe of Diſcipline they weave gold, ſilver, and ſilk brocades. They reckon 2000 country-houſes round Marſeilles, where the inhabitants go in ſummer to take the air. The public buildings are very handſome; and the fineſt drugs are brought thither from all parts of the world. It is ſeated on the north ſhore of the Mediterranean, in E. Long. 4. 27. N. Lat. 43. 18.

MARSH (Narciſſus), an exemplary Iriſh prelate, born at Hannington in Wiltſhire in 1638. He was made principal of St Alban's hall, Oxford, in 1673, but removed to the provoſtſhip of Dublin college in 1678. He was promoted to the biſhopric of Leighlin and Ferns in 1682, tranſlated to the archbiſhopric of Caſhel in 1690, to Dublin in 1694, and to Armagh in 1703. While he held the ſee of Dublin, he built a noble library for the uſe of the public, filled it with choice books, and ſettled a proviſion for two librarians. He repaired, at his own expence, ſeveral decayed churches, beſides buying in and reſtoring many impropriations, and preſenting a great number of oriental MSS. to the Bodleian library. He was a very learned and accompliſhed man; was well verſed in ſacred and prophane literature, in mathematics, natural philoſophy, the learned languages, eſpecially the oriental, and in both the theory and practice of muſic. He publiſhed, 1. *Inſtitutiones logicæ.* 2. *Manuductio ad logicam*, written by Philip de Trieu; to which he added the Greek text of Ariſtotle, and ſome ſome tables and ſchemes. 3. An introductory eſſay on the doctrine of ſounds, &c. He died in 1713.

MARSH, ſignifies a piece of ground flowed with water, yet ſo that the graſs and other vegetables riſe above the ſurface of the water, and, by their decaying, give riſe to putrid effluvia, which are very pernicious to the human body.

MARSHAL, in its primary ſignification, means an officer who has the command or care of horſes; but it is now applied to officers who have very different employments, as *earl-marſhal*, *knight-marſhal*, *marſhal of the king's houſe*, &c.

MARSHAL *of the King's-bench*, an officer who has the cuſtody of the King's-bench priſon in Southwark. This officer is obliged to give his attendance, and to take into his cuſtody all perſons committed by that court.

MARSHAL *of the Exchequer*, an officer to whom that court commits the king's debtors.

MARSHAL *of the King's Hall*, an officer who has the care of placing the houſehold ſervants and ſtrangers at table, according to their quality.

MARSHAL or *Mareſchal of France*, an officer of the greateſt dignity in the French armies. When two or more marſhals are in the army, the eldeſt commands.

MARSHAL (Thomas), a very learned Engliſh divine in the 17th century, was educated at Oxford. This city being garriſoned upon the breaking out of the civil wars, he bore arms for the king. Afterward he had ſeveral ſucceſſive preferments in the church; and died at Lincoln-college, of which he was rector. By his will he left all his books and MSS. to the univerſity of Oxford, and money to Lincoln-college for the maintenance of three ſcholars. He was a noted critic, eſpecially in the Gothic and Engliſh-Saxon tongues; and eminent for his piety and other valuable qualities. He wrote, 1. *Obſervationes in Evangeliorum verſiones per antiquos duos, Goth. ſcilicet & Anglo-Sax.* &c. 2. Notes on the church-catechiſm, &c.

MARSHALLING *a* COAT, in heraldry, is the diſpoſal of ſeveral coats of arms belonging to diſtinct families in one and the ſame eſcutcheon or ſhield, together with their ornaments, parts, and appurtenances. See HERALDRY, chap. vi. p. 3610.

MARSHALSEA *(the Court of)*, and the *Palace-court* at Weſtminſter, though two diſtinct courts, are frequently confounded together. The former was originally holden before the ſteward and marſhal of the king's houſe, and was inſtituted to adminiſter juſtice between the king's domeſtic ſervants, that they might not be drawn into other courts, and thereby the king loſe their ſervice. It was formerly held in, though not a part of, the *aula regis*; and, when that was ſubdivided, remained a diſtinct juriſdiction: holding plea of all treſpaſſes committed within the verge of the court, where only one of the parties is in the king's domeſtic ſervice, (in which caſe the inqueſt ſhall be taken by a jury of the country); and of all debts, contracts and covenants, where both of the contracting parties belong to the royal houſehold; and then the inqueſt ſhall be compoſed of men of the houſehold only. By the ſtatute of 13 Ric. II. ſt. 1. c. 3.

c. 3. (in affirmance of the common law,) the verge of the court in this reſpect extends for 12 miles round the king's place of reſidence. And, as this tribunal was never ſubject to the juriſdiction of the chief juſticiary, no writ of error lay from it (though a court of record) to the king's-bench, but only to parliament, till the ſtatutes of 5 Edw. III. c. 2. and 10 Edw. III. ſt. 2. c. 3. which allowed ſuch writ of error before the king in his place. But this court being ambulatory, and obliged to follow the king in all his progreſſes, ſo that by the removal of the houſehold, actions were frequently diſcontinued, and doubts having ariſen as to the extent of its juriſdiction, king Charles I. in the ſixth year of his reign, by his letters-patent erected a new court of record, called the *curia palatii*, or *palace-court*, to be held before the ſteward of the houſehold and knight-marſhal, and the ſteward of the court, or his deputy; with juriſdiction to hold plea of all manner of perſonal actions whatſoever, which ſhall ariſe between any parties within 12 miles of his majeſty's palace at Whitehall. The court is now held once a week, together with the ancient court of marſhalſea, in the borough of Southwark: and a writ of error lies from thence to the court of king's-bench. But if the cauſe is of any conſiderable conſequence, it is uſually removed on its firſt commencement, together with the cuſtody of the defendant, either into the king's-bench or common-pleas by a writ of *habeas corpus cum cauſa:* and the inferior buſineſs of the court hath of late years been much reduced, by the new courts of conſcience erected in the environs of London; in conſideration of which the four counſel belonging to theſe courts had ſalaries granted them for their lives by the ſtat. 23 Geo. II. c. 27.

MARSHAM (Sir John), a very learned Engliſh writer in the 17th century. He ſtudied the law in the Middle Temple, and was ſworn one of the ſix clerks in the court of chancery in 1638. In the beginning of the civil wars he followed the king to Oxford; for which he was ſequeſtered of his place by the parliament at Weſtminſter, and plundered. After the declining of the king's affairs, he returned to London; compounded, among other royaliſts, for his real eſtate; and betook himſelf wholly to his ſtudies and a retired life, the fruits of which were ſome excellent works. He wrote *Diatriba Chronologica; Chronicus Canon, Ægyptiacus, Ebraicus, Græcus,* &c. He died in 1685.

MARSHMALLOW, in botany. See Althæa.

MARSICO nuovo, a ſmall, rich, and handſome town of Italy, in the kingdom of Naples, and in the Hither Principato, with a biſhop's ſee. It is ſeated at the foot of the Appenines, near the river Agri, in E. Long. 15. 49. N. Lat. 20. 42.

MARSIGLI (Lewis Ferdinand, count), an Italian famous for letters as well as arms, was deſcended from an ancient and noble family, and born at Bologna in 1658. He acquired a great knowledge in the art of war and fortification; ſerved under the emperor Leopold II. againſt the Turks, by whom he was taken priſoner in 1683, but redeemed after a year's captivity. In the Spaniſh ſucceſſion war, Marſigli, then advanced to the rank of marſhal, being in the fortreſs of Briſac, which ſurrendered to the duke of Burgundy in 1703, when the place was deemed capable of holding out much longer; the count d'Arco who commanded was beheaded, and Marſigli, ſtripped of all his commiſſions, had his ſword broke over him. He now ſought for conſolation in the ſciences; as, amidſt all the hurry and fatigue of war, he had made all the advantages the moſt philoſophic man could do, who had travelled purely in queſt of knowledge. He had a rich collection of every thing proper to the advancement of natural knowledge, inſtruments aſtronomical and chemical, plans of fortification, models of machines, &c. all which he preſented to the ſenate of Bologna by an authentic act in 1712, forming at the ſame time out of them what he called *the inſtitute of the arts and ſciences at Bologna*. He alſo founded a printing-houſe, and furniſhed it with the beſt types for Latin, Greek, Hebrew, and Arabic, which he preſented in 1728 to the Dominicans at Bologna, on condition of their printing all the writings of the *inſtitute* at prime coſt: this was called *the printing-houſe of St Thomas Aquinas*. His writings on philoſophical ſubjects are numerous and valuable, in Latin, Italian, and French: he died in 1730.

MARSTON (John), an Engliſh dramatic writer, who lived in the time of James I. Wood ſays he was a ſtudent in Corpus Chriſti college, Oxford; but we neither know his family, nor the time of his birth. He contributed eight plays to the ſtage, which were all acted at Black-friars with applauſe; and one of them, called *the Dutch Courtezan*, was once revived ſince the Reſtoration, under the title of *the Revenge*, or *a Match in Newgate*. There is no account when he died; but we find his works were publiſhed after his death by Shakeſpeare, and may thence reaſonably conclude that it happened about the year 1614. He was a chaſte and pure writer; avoiding all that obſcenity, ribaldry, and ſcurrility, which too many of the play-wrights of that time, and indeed much more ſo in ſome periods ſince, have made the baſis of their wit, to the great diſgrace and ſcandal of the ſtage.

MARSYAS, in fabulous hiſtory, a Phrygian who excelled in playing on the flute. Arriving at Nyſa, he preſumed to diſpute with Apollo the prize of muſic: but that god, ſinging to his lyre, was decreed the conqueror; when, being enraged at Marſyas's preſumption, he had him tied to an oak, and flead alive. Apollo afterwards changed him into a river of Phrygia, which was therefore called by his name. See Apollo.

MART, a great fair held every year for buying and ſelling goods. Public marts, or places of buying and ſelling, ſuch as markets and fairs, with the tolls thereunto belonging, can only be ſet up by virtue of the king's grant, or by long and immemorial uſage and preſcription, which preſuppoſes ſuch a grant. The limitation of theſe public reſorts, to ſuch time and place as may be moſt convenient for the neighbourhood, forms a part of œconomics, or domeſtic polity; which, conſidering the kingdom as a large family, and the king as the maſter of it, he has clearly a right to diſpoſe and order as he pleaſes.

MARTABAN, a province of Aſia in the kingdom of Pegu, lying in the gulph of Bengal. It is a country that produces rice and all kinds of fruits proper to the climate. It has mines of ſeveral ſorts of metals,

tals, and carries on a great trade. The chief town, which is of the ſame name, is rich, handſome, and very populous, with a good harbour. E. Long. 97. 50. N. Lat. 15. 35.

MARTHA (St.), a province of South America, on the coaſt of Terra Firma, bounded on the north by the North Sea, on the eaſt by Rio de la Hache, on the ſouth by New-Granada, and on the weſt by Carthagena. It is 300 miles in length and 200 in breadth, is a mountainous country, and the land very high. Here begins the famous ridge of mountains called the *Cordilleras des los Andes*, which run from north to ſouth the whole length of the continent of South America. It is extremely hot on the ſea-coaſt; but cold in the internal parts, on account of the mountains. It abounds with the fruits proper to the climate; and there are mines of gold and precious ſtones, as alſo ſalt-works. The Spaniards poſſeſs but one part of this province, in which they have built Martha the capital. The air about the town is wholeſome; and is ſeated near the ſea, having a harbour ſurrounded with high mountains. It was formerly very conſiderable when the galleons were ſent thither, but is now come almoſt to nothing. W. Long. 74. 11. N. Lat. 11. 20.

MARTHA (St.) or *Sierra Nevada*, a very high mountain in New Spain. Some ſay it is 100 miles in circumference at the bottom, and five miles in height. The top is always covered with ſnow in the hotteſt weather; and the French affirm, that they can perceive it from the iſland of St Domingo, which is 370 miles diſtant. W. Long. 74. 35. N. Lat. 8. 0.

MARTHA's *Vineyard*, an iſland of North America near the coaſt of New-England, 80 miles ſouth of Boſton. The inhabitants apply themſelves chiefly to their fiſheries, in which they have great ſucceſs. W. Long. 70. 35. N. Lat. 41. 0.

MARTIAL LAW, is the law of war that depends upon the juſt but arbitrary will and pleaſure of the king, or his lieutenant: for though the king doth not make any laws but by common conſent in parliament, yet, in time of war, by reaſon of the neceſſity of it to guard againſt dangers that often ariſe, he uſeth abſolute power, ſo that his word is a law. *Smith de Repub. Angl. lib. 2. c. 4.*

But the martial law, (according to Chief Juſtice Hale), is in reality not a law, but ſomething indulged rather than allowed as a law; and it relates only to members of the army, being never intended to be executed on others, who ought to be ordered and governed by the laws to which they are ſubject, tho' it be a time of war. And the exerciſe of martial law, whereby any perſon might loſe his life, or member, or liberty, may not be permitted in time of peace, when the king's courts are open for all perſons to receive juſtice.

MARTIALIS (Marcus Valerius), a famous Latin poet, born at Bilbilis, now called *Bubiera*, in the kingdom of Arragon in Spain, was of the order of knights. He went to Rome at the age of 21, and ſtaid there 35 years, under the reign of Galba and the ſucceeding emperors, till that of Trajan; and having acquired the eſteem of Titus and Domitian, he was created tribune. At length, finding that he was neglected by Trajan, he returned to his own country Bilbilis, where he married a wife, and had the happineſs to live with her ſeveral years. He admires and commends her much, telling her that ſhe alone was ſufficient to ſupply the want of every thing he enjoyed at Rome. "*Romam tu mihi ſola facis*," ſays he, in the 21ſt epigram of the 12th book. She appears likewiſe to have been a lady of a very large fortune; for, in the 31ſt epigram of the ſame book, he extols the magnificence of the houſe and gardens he had received from her, and ſays that ſhe had made him a little kind of monarch."

Munera ſunt domino: poſt ſeptima luſtra reverſo,
Has Marcella domos, parvaque regna dedit.

There are ſtill extant 14 books of his epigrams, filled with points, a play upon words, and obſcenities. The ſtyle is affected. However, ſome of his epigrams are excellent; many of them are of the middling kind; but the greateſt part of them are bad: ſo that Martial never ſpoke a greater truth, than when he ſaid of his own works,

Sunt bona, ſunt quædam mediocra, ſunt mala plura.

There is alſo attributed to him a book on the ſpectacles of the amphitheatre; but the moſt learned critics think that this laſt work was not written by Martial. The beſt editions of Martial are, that *in Uſum Delphini*, 4to, Paris, 1617, and that *cum Notis Variorum*.

MARTIGUES, a ſea-port town of France, in Provence, with the title of a principality; ſeated near a lake 12 miles long and five broad, which is navigable throughout, and from whence they get excellent ſalt. E. Long. 4. 20. N. Lat. 43. 28.

MARTIN (St.), a ſmall but ſtrong town of France, in the iſle of Rhée, with a harbour and a ſtrong citadel, fortified after the manner of Vauban. The iſland lies near the coaſt of Poitou. W. Long. 1. 0. N. Lat. 45. 40.

Cape MARTIN, a promontory of Valencia in Spain, near a town called *Denia*, and ſeparates the gulph of Valencia from that of Alicant.

MARTIN (St.), an iſland of America, and one of the Caribbees, lying on the gulph of Mexico, to the north-weſt of St Bartholomew, and to the ſouth-weſt of Anguilla. It is 42 miles in circumference; has neither harbour nor river, but ſeveral ſalt-pits. After various revolutions, it is at length in poſſeſſion of the French and Dutch, who poſſeſs it conjointly. W. Long. 62. 35. N. Lat. 18. 15.

MARTIN, in zoology. See HIRUNDO and MUSTELA.

Free MARTIN. See HERMAPHRODITE.

MARTINGALE, in the manege, a thong of leather, faſtened to one end of the girths under a horſe's belly, and at the other end to the muſs-roll, to keep him from rearing.

MARTINICO, the chief of the French Caribbee-iſlands, the middle of which is ſituated in W. Long. 61. 0. N. Lat. 14. 30.

This iſland was firſt ſettled by M. Deſnambuc a Frenchman, in the year 1635, with only 100 men from St Chriſtophers. He choſe rather to have it peopled from thence than from Europe; as he foreſaw, that men, tired with the fatigue of ſuch a long voyage, would moſtly periſh ſoon after their arrival, either from the artinico.

Martinico.

the climate, or from the hardſhips incident to moſt emigrations. They completed their firſt ſettlement without any difficulty. The natives, intimidated by their fire-arms, or ſeduced by promiſes, gave up the weſtern and ſouthern parts of the iſland to the new comers. In a ſhort time, however, perceiving the number of theſe enterpriſing ſtrangers daily increaſing, they reſolved to extirpate them, and therefore called in the ſavages of the neighbouring iſlands to aſſiſt them. They fell jointly upon a little fort that had been haſtily erected; but were repulſed, with the loſs of 700 or 800 of their beſt warriors, who were left dead upon the ſpot.

After this check, the ſavages for a long time diſappeared entirely; but at laſt they returned, bringing with them preſents to the French, and making excuſes for what had happened. They were received in a friendly mnnner, and the reconciliation ſealed with pots of brandy. This peaceable ſtate of affairs, however, was of no long continuance; the French took ſuch undue advantages of their ſuperiority over the ſavages, that they ſoon rekindled in the others that hatred which had never been entirely ſubdued. The ſavages, whoſe manner of life requires a vaſt extent of land, finding themſelves daily more and more ſtraightened, had recourſe to ſtratagem, in order to deſtroy their enemies. They ſeparated into ſmall bands, and way-laid the French as they came ſingly out into the woods to hunt, and, waiting till the ſportſman had diſcharged his piece, ruſhed upon and killed him before he could diſcharge it again. Twenty men had been thus aſſaſſinated before any reaſon could be given for their ſudden diſappearance: but as ſoon as the matter was known, the French took a ſevere and fatal revenge; the ſavages were purſued and maſſacred, with their wives and children, and the few that eſcaped were driven out of Martinico, to which they never returned.

The French being thus left ſole maſters of the iſland, lived quietly on thoſe ſpots which beſt ſuited their inclinations. At this time, they were divided into two claſſes. The firſt conſiſted of thoſe who had paid their paſſage to the iſland, and theſe were called *inhabitants*; and to theſe the government diſtributed lands, which became their own, upon paying a yearly tribute. Theſe inhabitants had under their command a multitude of diſorderly people brought over from Europe at their expence, whom they called *engagés*, or bondſmen. This engagement was a kind of ſlavery for the term of three years; on the expiration of which they were at liberty, and became the equals of thoſe whom they had ſerved. They all confined themſelves at firſt to the culture of tobacco and cotton; to which was ſoon added that of arnotto and indigo. The culture of ſugar alſo was begun about the year 1650. Ten years after, one Benjamin D'Acoſta, a Jew, planted ſome cocoa trees; but his example was not followed till 1684, when chocolate was more commonly uſed in France. Cocoa then became the principal ſupport of the coloniſts, who had not a ſufficient fund to undertake ſugar-plantations; but by the inclemency of the ſeaſon in 1718, all the cocoa-trees were deſtroyed at once.—Coffee was then propoſed as a proper object of culture. The French miniſtry had received as a preſent from the Dutch, two of theſe trees, which were carefully preſerved in the king's botanical garden. Two young ſhoots were taken from theſe, put on board a ſhip for Martinico, and entruſted to the care of one Mr Deſclieux. The ſhip happened to be ſtraitened for want of freſh water; and the trees would have periſhed, had not the gentleman ſhared with them that quantity of water which was allowed for his own drinking. The culture of coffee was then begun, and attended with the greateſt and moſt rapid ſucceſs. About the end of laſt century, however, the colony had made but ſmall advances. In 1700, it had only 6597 white inhabitants. The ſavages, mulattoes, and free negroes, men, women, and children, amounted to no more than 507. The number of ſlaves was but 14,566. All theſe together made a population of 21,645 perſons. The whole of the cattle amounted to 3668 horſes or mules, and 9217 head of horned cattle. The iſland produced a great quantity of cocoa, tobacco, and cotton; had nine indigo-houſes, and 183 ſmall ſugar-plantations.

After the peace of Utrecht, Martinico began to emerge from that feeble ſtate in which it had ſo long continued. The iſland then became the mart for all the windward French ſettlements. In the ports of it the neighbouring iſlands ſold their produce, and bought the commodities of the mother-country; and, in ſhort, Martinico became famous all over Europe. In 1736, there were on the iſland 447 ſugar-works; 11,953,232 coffee-trees, 193,870 of cocoa; 2,068,480 plants of cotton, 39,400 of tobacco, 6,750 of arnotto. The ſupplies for proviſion conſiſted of 4,806,142 banana trees; 34,483,000 trenches of caſſava; and 247 plots of potatoes and yams. The number of blacks amounted to 72,000; men, women, and children. Their labour had improved the plantations as far as was conſiſtent with the conſumption then made in Europe of American productions; and the annual exports from the iſland amounted to about 700,000 l.

The connections of Martinico with the other iſlands entitled her to the profits of commiſſion, and the charges of tranſport; as ſhe alone was in the poſſeſſion of carriages. This profit might be rated at the tenth of the produce; and the ſum total muſt have amounted to near 765,000 l. This ſtanding debt was ſeldom called in, and left for the improvement of their plantations. It was increaſed by advances in money, ſlaves, and other neceſſary articles; ſo that Martinico became daily more and more a creditor to the other iſlands, and thus kept them in conſtant dependence; while they all enriched themſelves by her aſſiſtance.

The connections of this iſland with Cape Breton, Canada, and Louiſiana, procured a market for the ordinary ſugars, the inferior coffee, the molaſſes, and rum, which would not ſell in France. In exchange the inhabitants received ſalt-fiſh, dried vegetables, deals, and ſome flour. In the clandeſtine trade on the coaſts of Spaniſh America, conſiſting wholly of goods manufactured by the nation, ſhe commonly made a profit of 90 per cent, on the value of about 175,000 l. ſent yearly to the caraccas, or neighbouring colonies.

So many proſperous engagements brought immenſe ſums into Martinico. Upwards of 787,000 l. were conſtantly circulated in that iſland with great rapidity; and this is perhaps the only country in the world, Martinico.

where the ſpecie has been ſo conſiderable as to make it a matter of indifference to them whether they dealt in gold, ſilver, or commodities. This extenſive trade brought into the ports of Martinico annually 200 ſhips from France; 14 or 15 fitted out by the mother-country for the coaſt of Guinea, 60 from Canada, 10 or 12 from the iſlands of Margaretta and Trinidad; beſides the Engliſh and Dutch ſhips that came to carry on a ſmuggling trade. The private navigation from the iſland to the northern colonies, to the Spaniſh continent, and to the windward iſlands, employed 130 veſſels from 20 to 30 tons burden.

The war of 1744 put a ſtop to this proſperity. Not that the fault was in Martinico itſelf; its navy, conſtantly exerciſed, and accuſtomed to frequent engagements, which the carrying on a contraband-trade required, was prepared for action. In leſs than ſix months, 40 privateers, fitted out at St Peter's, ſpread themſelves about the latitude of the Caribbee iſlands. They ſignaliſed themſelves in a manner worthy of the ancient freebooters; returning conſtantly in triumph, and laden with an immenſe booty. Yet, in the midſt of theſe ſucceſſes, an entire ſtop was put to the navigation of the colony, both to the Spaniſh coaſt, and to Canada, and they were conſtantly diſturbed even on their own coaſts. The few ſhips that came from France, in order to compenſate the hazards they were expoſed to by the loſs of their commodities, ſold them at a very advanced price, and bought them at a very low one. By this means the produce decreaſed in value, the lands were ill cultivated, the works neglected, and the ſlaves periſhing for want.

When every thing thus ſeemed tending to decay, the peace at laſt reſtored the freedom of trade, and with it the hopes of recovering the ancient proſperity of the iſland. The event, however, did not anſwer the pains that were taken to attain it. Two years had not elapſed after the ceſſation of hoſtilities, when the colony loſt the contraband-trade ſhe carried on with the American Spaniards. This was owing to the ſubſtitution of regiſter-ſhips to the fleets; and thus were the attempts of the ſmugglers confined within very narrow bounds. In the new ſyſtem, the number of ſhips was undetermined, and the time of their arrival uncertain: which occaſioned a variation in the price of commodities unknown before; and from that time the ſmuggler, who only engaged in this trade from the certainty of a fixed and conſtant profit, would no longer purſue it, when it did not ſecure him an equivalent to the riſks he ran. But this loſs was not ſo ſenſibly felt by the colony, as the hardſhips brought upon them by the mother-country. An unſkilful adminiſtration clogged the reciprocal and neceſſary connection between the Iſlands and North-America with ſo many formalities, that in 1755 Martinico ſent but four veſſels to Canada. The direction of the colonies, now committed to the care of ignorant and avaricious clerks, ſoon loſt its importance, ſunk into contempt, and was proſtituted to venality. The debts which had been contracted, during a ſeries of calamities, had not yet been paid off, when the war broke out afreſh. After a ſeries of misfortunes and defeats, the iſland fell into the hands of the Britiſh. It was reſtored, however, in July 1763, 16 months after it had been conquered; but deprived of all the neceſſary means of proſperity, that had made it of ſo much importance. For ſome years paſt, the contraband-trade carried on to the Spaniſh coaſts was almoſt entirely loſt. The ceſſion of Canada had precluded all hopes of opening again a communication, which had only been interrupted by temporary miſtakes. The productions of the Grenades, St Vincent, and Dominica, which were now become Britiſh dominions, could no longer be brought into their harbours; and a new regulation of the mother-country, which forbad her having any intercourſe with Guadalupe, left her no hopes from that quarter.

The colony, thus deprived of every thing, as it were, and deſtitute, neverthele\ſs contained, at the laſt ſurvey, which was taken on the firſt of January 1770, in the compaſs of 28 pariſhes, 12,450 white people of all ages and of both ſexes; 1814 free blacks or mulatoes; 70,553 ſlaves, and 443 fugitive negroes. The number of births in 1766, was in the proportion of one in 30 among the white people, and of one in 25 among the blacks. From this obſervation, if it were conſtant, it ſhould ſeem that the climate of America is much more favourable to the propagation of the Africans than of the Europeans; ſince the former multiply ſtill more in the labours and hardſhips of ſlavery, than the latter in the midſt of plenty and freedom. The conſequence muſt be, that in proceſs of time the increaſe of blacks in America will ſurpaſs that of the white men; and, perhaps, at laſt avenge this race of victims on the deſcendents of the oppreſſors.

The cattle of the colony conſiſts of 8283 horſes or mules; 12,376 head of horned cattle; 975 hogs; and 13,544 ſheep or goats.

Their proviſions are, 17,930,596 trenches of caſſava; 3,509,048 banana-trees; and 406 ſquares and a half of yams and potatoes.

Their plantations contain 11,444 ſquares of land, planted with ſugar; 6,638,957 coffee-trees; 871,043 cocoa-trees; 1,764,807 cotton plants; 59,966 trees of caſſia, and 61 of arnotto.

The meadows or ſavannahs take up 10,072 ſquares of land; there are 11,966 in wood, and 8448 uncultivated or forſaken.

The plantations which produce coffee, cotton, cocoa, and other things of leſs importance, are 1515 in number. There are but 286 for ſugar. They employ 116 water-mills, 12 wind-mills, and 184 turned by oxen. Before the hurricane of the 13th of Auguſt 1766, there were 302 ſmall habitations and 15 ſugar-works more.

In 1769, France imported from Martinico, upon 202 trading veſſels, 177,116 quintals of fine ſugar, and 12,579 quintals of raw ſugar; 68,518 quintals of coffee; 11,731 quintals of cocoa; 6048 quintals of cotton; 2518 quintals of caſſia; 783 caſks of rum; 307 hogſheads of molaſſes; 150 pounds of indigo; 2147 pounds of preſerved fruits; 47 pounds of chocolate; 282 pounds of raſped tobacco; 494 pounds of rope-yarn; 234 cheſts of liqueurs; 234 hogſheads of molaſſes, &c. 451 quintals of wood for dyeing; and 12,108 hides in the hair. All theſe productions together have been bought in the colony itſelf, for 536,631 l. 9 s. 10 d. It is true, that the colony has received from the mother-country to the amount of 588,412 l. 16 s. 6 d. of merchandiſe; but part of this rtinico.

this has been ſent away to the Spaniſh coaſts, and another part has been conveyed to the Engliſh ſettlements.

The iſland is 16 leagues in length and 45 in circumference, leaving out the capes, ſome of which extend two or three leagues into the ſea. It is very uneven, and interſected in all parts by a number of hillocks; which are moſtly of a conical form. Three mountains riſe above theſe ſmaller eminences. The higheſt bears the indelible marks of a volcano. The woods with which it is covered, continually attract the clouds, which occaſions noxious damps, and contributes to make it horrid and inacceſſible; while the two others are in moſt parts cultivated. From theſe mountains iſſue the many ſprings that water the iſland. Theſe waters which flow in gentle ſtreams, are changed into torrents on the ſlighteſt ſtorm. Their qualities are derived from the ſoil over which they flow. In ſome places they are excellent, in others ſo bad, that the inhabitants are obliged to drink the water they have collected during the rainy ſea.

Of all the French ſettlements in the Weſt Indies, Martinico is the moſt happily ſituated with regard to the winds which prevail in thoſe ſeas. Its harbours poſſeſs the ineſtimable advantage of affording a certain ſhelter from the hurricanes which annoy theſe latitudes. The harbour of Fort Royal, is one of the beſt in all the windward iſlands; and ſo celebrated for its ſafety, that, when it was open to the Dutch, their ſhipmaſters had orders from the republic to take ſhelter there in June, July, and Auguſt, the three months in which the hurricanes are moſt frequent. The lands of the Lamentin, which are but a league diſtant, are the richeſt and moſt fertile in the whole iſland. The numerous ſtreams which water this fruitful country, convey loaded canoes to conſiderable diſtance from the ſea. The protection of the fortifications ſecured the peaceable enjoyment of ſo many advantages; which, however, were balanced by a ſwampy and unwholeſome ſoil. This capital of Martinico was alſo the rendezvous of the men of war; which branch of the navy has always oppreſſed the merchantmen. On this account, Fort-Royal was an improper place to become the centre of trade, and was therefore removed to St Peter's. This little town, notwithſtanding the fires that have four times reduced it to aſhes, ſtill contains 1700 houſes. It is ſituated on the weſtern coaſt of the iſland, on a bay, or inlet, which is almoſt circular. One part of it is built on the ſtrand along the ſea-ſide, which is called the *anchorage;* and is the place deſtined for ſhips and ware-houſes. The other part of the town ſtands upon a low hill: it is called the *Fort,* from a ſmall fortification that was built there in 1665, to check the ſeditions of the inhabitants againſt the tyranny of monopoly; but it now ſerves to protect the road from foreign enemies. Theſe two parts of the town are ſeparated by a rivulet.

The anchorage is at the back of a pretty high and ſteep hill. Shut up as it were by this hill, which intercepts the eaſterly winds, the moſt conſtant and moſt ſalubrious in theſe parts; expoſed, without any refreſhing breezes, to the ſcorching beams of the ſun, reflected from the hill, from the ſea, and the black ſand on the beach; this place is extremely hot, and always unwholeſome. Beſides, there is no harbour; and the ſhips which cannot winter ſafely upon this coaſt are obliged to take ſhelter at Fort-Royal. But theſe diſadvantages are compenſated by the conveniency of the road of St Peter's, for loading and unloading of goods; and by its ſituation, which is ſuch that ſhips can freely go in and out at all times and with all winds.

Martlets
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Martyr.

MARTLETS, in heraldry, little birds repreſented without feet; and uſed as a difference or mark of diſtinction for younger brothers, to put them in mind that they are to truſt to the wings of virtue and merit, in order to raiſe themſelves, and not to their feet, they having little land to ſet their foot on. See HERALDRY, Art. 2. p. 3585.

MARTYNIA, in botany, a genus of the angioſpermia order, belonging to the didynamia claſs of plants. There are two ſpecies; both of them tender, herbaceous, flowery plants of South America; one of them an annual, the other a perennial, riſing with erect ſtalks, from a foot, to two feet high, garniſhed with oblong ſimple leaves, and terminated by ſhort ſpikes of large monopetalous, bell-ſhaped flowers, of blue and purple colours. They flower in July and Auguſt, and are very ornamental, but require always to be kept in the hotteſt part of the ſtove.

MARTYR, is one who lays down his life, or ſuffers death, for the ſake of his religion. The word is Greek, μαρτυρ, and properly ſignifies a "witneſs." It is applied, by way of eminence, to thoſe who ſuffer in witneſs of the truth of the goſpel.

The Chriſtian church has abounded in martyrs, and hiſtory is filled with ſurpriſing accounts of their ſingular conſtancy and fortitude under the crueleſt torments human nature was capable of ſuffering. The primitive Chriſtians were accuſed by their enemies of paying a ſort of divine worſhip to the martyrs. Of this we have an inſtance in the anſwer of the church of Smyrna to the ſuggeſtion of the Jews, who, at the martyrdom of Polycarp, deſired the heathen judge not to ſuffer the Chriſtians to carry off his body, leſt they ſhould leave their crucified maſter, and worſhip him in his ſtead. To which they anſwered, "We can neither forſake Chriſt, nor worſhip any other: for we worſhip him as the Son of God; but love the martyrs as the diſciples and followers of the Lord, for the great affection they have ſhewn to their King and Maſter." A like anſwer was given at the martyrdom of Fructuoſus in Spain. For when the judge aſked Eulogius, his deacon, Whether he would not worſhip Fructuoſus? as thinking, that, tho' he refuſed to worſhip the heathen idols, he might yet be inclined to worſhip a Chriſtian martyr; Eulogius replied, "I do not worſhip Fructuoſus, but him whom Fructuoſus worſhips." The primitive Chriſtians believed, that the martyrs enjoyed very ſingular privileges; that upon their death they were immediately admitted to the beatific viſion, while other ſouls waited for the completion of their happineſs till the day of judgment; and that God would grant chiefly to their prayers the haſtening of his kingdom, and ſhortening the times of perſecution.

The churches built over the graves of the martyrs, and called by their names, in order to preſerve the memory of their ſufferings, were diſtinguiſhed by the title *martyrium confeſſio,* or *memoria.*

The feſtivals of the martyrs are of very ancient date in the Chriſtian church, and may be carried back at leaſt till the time of Polycarp, who ſuffered martyrdom about the year of Chriſt 168. On theſe days the Chriſtians met at the graves of the martyrs, and offered prayers and thankſgivings to God for the examples they had afforded them: they celebrated the euchariſt, and gave alms to the poor; which, together with a panegyrical oration or ſermon, and reading the acts of the martyrs, were the ſpiritual exerciſes of theſe anniverſaries.

MARTYR (Peter), a famous divine, born at Florence in 1500. He ſtudied philoſophy and the tongues at Padua and Bononia, was a regular Auguſtine in the monaſtery of Fiſcoli, and was counted one of the beſt preachers in Italy. Zuinglius and Bucer's writings gave him a good opinion of the Proteſtants, and his converſation with Valdes confirmed it. He preached that doctrine at Rome in private; but, being impeached, fled to Naples, and thence to Lucca, where he brought over to the Proteſtant intereſt Emanuel Tremellius, Celſus Martinengus, Paul Laſicius, and Jeremiah Zanchy. He was ſent for to England by king Edward VI. and made profeſſor of divinity at Oxford in 1549. In queen Mary's reign he returned to Straſburg, and was preſent at the conference of Poiſſy. His ſentiments were not the ſame with Calvin's about Chriſt's preſence in the euchariſt. He wrote a great number of works, and died in 1562.

MARTYROLOGY, in the church of Rome, is a catalogue or liſt of martyrs, including the hiſtory of their lives and ſufferings for the ſake of religion. The term comes from μαρτυρ, "witneſs," and λεγω, "dico," or λεγω, "colligo."

The martyrologies draw their materials from the kalendars of particular churches, in which the ſeveral feſtivals dedicated to them are marked; and which ſeem to be derived from the practice of the ancient Romans, who inſerted the names of heroes and great men in their faſti, or public regiſters.

The martyrologies are very numerous, and contain many ridiculous and even contradictory narratives; which is eaſily accounted for, if we conſider how many forged and ſpurious accounts of the lives of ſaints and martyrs appeared in the firſt ages of the church, which the legendary writers afterwards adopted without examining into the truth of them. However, ſome good critics, of late years, have gone a great way towards clearing the lives of the ſaints and martyrs from the monſtrous heap of fiction they laboured under. See the article LEGEND.

MARVELL (Andrew), an ingenious writer in the 17th century, was bred at Cambridge. He travelled thro' the moſt polite parts of Europe, and was ſecretary to the embaſſy at Conſtantinople. His firſt appearance in public buſineſs at home was as aſſiſtant to Mr John Milton Latin ſecretary to the protector. A little before the reſtoration, he was choſen by his native town, Kingſton upon Hull, to ſit in that parliament, which began at Weſtminſter April 25th 1660; and is recorded as the laſt member of parliament who received the wages or allowance anciently paid to repreſentatives by their conſtituents. He ſeldom ſpoke in parliament, but he had great influence without doors upon the members of both houſes; and prince Rupert had always the greateſt regard for his advice. He made himſelf very obnoxious to the government by his actions and writings; notwithſtanding which, king Charles II. took great delight in his converſation, and tried all means to win him over to his ſide, but in vain; nothing being ever able to ſhake his reſolution. There were many inſtances of his firmneſs in reſiſting the offers of the court; but he was proof againſt all temptations. The king having one night entertained him, ſent the Lord treaſurer Danby the next morning to find out his lodgings; which were then up two pair of ſtairs in one of the little courts in the Strand. He was buſy writing, when the treaſurer opened the door abruptly upon him. Surpriſed at the ſight of ſo unexpected a viſitor, Mr Marvell told his Lordſhip, "That he believed he had miſtaken his way." Lord Danby replied, "Not, now I have found Mr Marvell:" telling him he came from his Majeſty, to know what he could do to ſerve him. Coming to a ſerious explanation, he told the Lord-treaſurer, that he knew the nature of courts full well; that whoever is diſtinguiſhed by a prince's favour, is certainly expected to vote in his intereſt. The Lord Danby told him, that his Majeſty had only a juſt ſenſe of his merits, in regard to which he only deſired to know if there was any place at court he could be pleaſed with. Theſe offers, though urged with the greateſt earneſtneſs, had no effect upon him. He told the Lord-treaſurer, that he could not accept of them with honour; for he muſt be either ungrateful to the king in voting againſt him, or falſe to his country in giving into the meaſures of the court. The only favour therefore he had to requeſt of his Majeſty was, that he would eſteem him as dutiful a ſubject as any he had, and more in his proper intereſt by refuſing his offers, than if he had embraced them. The Lord Danby finding no arguments could prevail, told him, that the king had ordered a thouſand pounds for him, which he hoped he would receive till he could think what farther to aſk of his Majeſty. The laſt offer was rejected with the ſame ſtedfaſtneſs of mind as the firſt; though, as ſoon as the Lord-treaſurer was gone, he was forced to ſend to a friend to borrow a guinea. He died, not without ſtrong ſuſpicions of his being poiſoned, in 1678, in the 58th year of his age. In 1688, the town of Kingſton upon Hull contributed a ſum of money to erect a monument over him in the church of St Giles in the Fields, where he was interred, and an epitaph compoſed by an able hand; but the miniſter of that church forbid both the inſcription and monument to be placed there. He wrote many ingenious pieces; as, The Rehearſal tranſproſed; A ſhort hiſtorical Eſſay concerning General Councils, Creeds, and Impoſitions in matters of Religion, &c.

MARVEL *of Peru*, in botany. See MIRABILIS.

MARY I. of England, daughter of Henry VIII. by Catharine of Spain, queen and tyrant of England, ſucceeded her half-brother Edward VI. in 1553. If ſhe had been educated in Spain, and an inquiſitor had been her preceptor, ſhe could not have imbibed more ſtrongly the bloody principles of Romiſh perſecution; and to the eternal diſgrace of the Engliſh prelacy, though the reformation had taken root in both univerſities, ſhe found Engliſh biſhops ready to carry her cruel deſigns to ſubvert it, into effectual execution. Upon her acceſſion to the throne, ſhe declared, in her ſpeech to the council, that ſhe would not perſecute her

Proteſtant ſubjects; but in the following month, ſhe prohibited preaching without a ſpecial licence: before the expiration of three months, the Proteſtant biſhops were excluded the houſe of lords, and all the ſtatutes of Edward VI. reſpecting the Proteſtant religion were repealed; and before ſhe had enjoyed the crown a year, archbiſhop Cranmer, who had ſaved her life when her father had reſolved to take off her head, and the biſhops Ridley and Latimer, were condemned for hereſy at Oxford, and afterwards burnt. In 1556, the perſecution became general; and Proteſtants of all ranks and ages, and of both ſexes, fell victims to papal fury. It is obſervable, likewiſe, that the ſame perfidious violation of promiſes and treaties prevailed in the queen's council, with reſpect to public affairs. By the treaty of marriage concluded between the queen and Philip prince of Spain, ſon of the famous emperor Charles le Quint, in 1554, it was expreſsly ſtipulated, that England ſhould not be engaged in any wars with France on account of Spain; yet in 1557, Philip, who had brought immenſe ſums of money into England, procured an offenſive and defenſive alliance againſt France, from the Engliſh adminiſtration, and 8000 of the queen's choiceſt troops were ſent over to the aſſiſtance of the Spaniards in the Low Countries: the loſs of Calais to the French was the firſt fruit of this war; and ſome aſſert, that upon this ſingle occaſion the queen ſhewed a ſtrong attachment to her native country, lamenting this ſtroke ſo deeply, that it occaſioned her death; but it is better authenticated, that ſhe was carried off by an epidemic fever, which raged ſo violently that it did not leave a ſufficient number of men in health to get in the harveſt. She died in 1558, in the 43d year of her age, and ſixth of her reign.

MARY *of Medicis*, wife of Henry IV. king of France, was declared ſole regent of the kingdom in 1610, during the conſternation which the aſſaſſination of that beloved king had occaſioned. By her ambitious intrigues, the nation loſt all its influence abroad, and was torn to pieces at home by contending factions. After ſeveral viciſſitudes of fortune, ſhe was abandoned by her ſon Lewis XIII. whoſe reign had been conſtantly diſturbed by the civil commotions ſhe had occaſioned; and died in indigence at Bruſſels, in 1642, aged 68. She built the ſuperb palace of Luxembourg at Paris, and embelliſhed that city with aqueducts and other ornaments.

MARY, queen of Scotland, daughter of James V. was born in December 1542. Her father dying a few days after her birth, ſhe ſcarce exiſted before ſhe was hailed queen of Scotland. Violent were the diſputes among the nobility, who ſhould obtain the guardianſhip of her infant-majeſty, and government of the kingdom. It was however at length adjudged to the earl of Arran, as the heir-apparent and firſt peer of the realm. Whilſt yet in her infancy, Henry VIII. of England demanded her in marriage for his ſon Edward; but her guardian refuſed his conſent, and the famous battle of Muſſelburgh was the conſequence. The Scots being defeated, ſhe was conveyed by the queen-mother to the iſle of Inchemahom; where, we are told, ſhe was inſtructed in the Latin, French, Spaniſh, and Italian languages.

At ſix years old ſhe was ſent to France; where, after continuing a few days with the king and queen, ſhe was removed to a monaſtery, and was there educated with the daughters of the French nobility. In this ſeminary ſhe acquired a taſte for poetry, and alſo became a notable proficient in muſic, dancing, and the art of ſitting gracefully on horſeback: but needle-work was her favourite amuſement, in which ſhe particularly excelled (A). On the 20th of April, 1558, ſhe was married to the young dauphin; who dying in December 1560, ſhe returned to her native country. She had not been long in Scotland, before ſhe received propoſals of marriage from Charles, archduke of Auſtria. Queen Elizabeth of England diſapproved the match; and recommended Henry Stuart, Lord Darnley, ſon to the earl of Lenox. To this nobleman ſhe gave her hand; and by him ſhe had one ſon, James I. of England. They had not been many months married before Darnley was barbarouſly murdered; and, in three months after, ſhe eſpouſed the earl of Bothwell, a man of no eſtimation, and who is generally ſuppoſed to have been the murderer of her late huſband. From that fatal moment her life was a continued ſeries of misfortunes: Scotland became a ſcene of confuſion; her ſubjects rebelled; her huſband fled to Denmark; and ſhe herſelf was made a priſoner, and treated with the utmoſt indignity. She found means to eſcape from the perſecution of her ſubjects, and fled to England for ſafety: but ſhe was too beautiful to find a friend in Elizabeth; who, with conſtant profeſſions of eſteem, after keeping her in confinement during 18 long years, at laſt brought her head to the block.

The fair heroine received her ſentence of death with great compoſure; wrote her will the day before her execution; for which, on the ſucceeding morn, ſhe prepared with religious ſolemnity, and perfect reſignation. She was executed on the 8th of February 1587, in the 46th year of her age, in the caſtle of Fotheringhay, where ſhe had been long confined, and on the firſt of Auguſt was interred in the cathedral church at Peterborough, with great pomp. Twenty-five years after, her remains were, by order of her ſon king James I. removed to Henry VII.'s chapel in Weſtminſter abbey, and a magnificent monument erected to her memory. See (Hiſtory of) SCOTLAND.

She wrote, 1. Poems on various occaſions, in the Latin, French, and Scotch languages. One of her poems is printed among thoſe of A. Blackwood; another in Brantome's *Dames illuſtres*, written on the death of her firſt huſband Francis. 2. Conſolation of her long impriſonment, and royal advice to her ſon.

(A) An impalement of the arms of France and Scotland, embroidered under an imperial crown, on the valence of the canopy in the preſence-chamber at Whitehall, is ſaid to be chiefly *her* performance. *Sandf. Gen. Hiſt.* p. 529.

Embroidery probably made a conſiderable part of her employment during her tedious impriſonment, the laſt almoſt 20 years of her life; for one of her hiſtorians informs us, that about the year 1579, ſhe ſent, with other preſents, to her ſon, a magnificent ſtate-bed, "one of the moſt curious pieces of workmanſhip that that or any age has produced, embroidered with gold and ſilk, deſigned and finiſhed all by her own hand." The principal figures, 29 in number, were emblematical, with Latin mottos, alluding to her unhappy ſituation, and the ſeparate arms of England, Scotland, and France. See *Mackenzie's Lives*, vol. iii. p. 328.

Mary. | Maryland.

3. A copy of verſes, in French, ſent with a diamond-ring to queen Elizabeth. There is a tranſlation of theſe verſes among the Latin poems of Sir Thomas Chaloner. 4. Genuine Letters of Mary queen of Scots, to James earl of Bothwel; tranſlated from the French, by E. Simmonds, 1726. There are, beſides, many other of her epiſtles to queen Elizabeth, ſecretary Cecil, Mildmaye, &c. which are preſerved in the Cotton, Aſhmolean, and other libraries.

Mary II. queen of England, eldeſt daughter of James II. by his firſt wife, was born at St James's in 1662. She was bred up a Proteſtant, and married to the illuſtrious William Henry of Naſſau, then prince of Orange, afterward king of England, in the 16th year of her age. She ſtaid in Holland with her huſband till February 12, 1689, when ſhe came over, and was ſolemnly proclaimed queen of England, &c. She was an equal ſharer with her royal huſband in all the rights belonging to the crown; but the adminiſtration and execution thereof was lodged ſolely in the king. She was a princeſs endowed with the higheſt perfections both of body and mind; ſhe loved hiſtory, as being proper to give her uſeful inſtructions; and was alſo a good judge as well as a lover of poetry. She ſtudied more than could be imagined, and would have read more than ſhe did, if the frequent returns of ill-humours in her eyes had not forced her to ſpare them. She gave her minntes of leiſure to architecture and gardening; and ſince it employed many hands, ſhe ſaid, ſhe hoped it would be forgiven her. She was the moſt gracious of ſovereigns to her ſubjects, and the moſt obliging of wives to her huſband, as well as the moſt excellent of miſtreſſes to her ſervants: ſhe ordered good books to be laid in the places of attendance, that perſons might not be idle while they were in their turns of ſervice. She was exceeding zealous for a reformation of manners; charitable in the higheſt degree, without the leaſt oſtentation. This excellent queen died on the 28th of December 1695, at Kenſington, of the ſmall-pox, in the 33d year of her age. In her the arts loſt a protectreſs, the unfortunate a mother, and the world a pattern of every virtue. As to her perſon, ſhe was tall, of a majeſtic graceful mien, her countenance ſerene, her complexion ruddy, and her features beautiful.

Mary *Magdalen's Day*, a feſtival of the Romiſh church, obſerved on the 22d of July.

MARYGOLD. See Caltha.

Corn Marygold. See Chrysanthemum.

French Marygold. See Tagetes.

MARYLAND, one of the Britiſh colonies in North America. It received that name in honour of Henrietta Maria the conſort of king Charles I. who made a grant of this country, with very extraordinary powers, to Lord Baltimore. It lies between 38 and 40 degrees north latitude, and in longitude from 74 to 78 degrees weſt from London. It is in length about 140 miles, but not quite ſo much in breadth. It is bounded on the north by Penſylvania; on the eaſt by the lower counties of the ſame colony, and by the Atlantic; on the ſouth by Cheſapeak Bay; on the weſt by the river Potowmack, and the province of Virginia. The climate may be well ſtyled mild and pleaſant: for though the winters are cold, they are ſhort; and the heat of their ſummers is tempered by cool breezes from the bay before-mentioned, which is one of the fineſt in the world. The country, except towards the north, is in general a flat open plain, of a deep rich ſoil, and very very fertile. It produces grain of all ſorts, rich fruits of different kinds, timber, hemp, flax, and in the bowels of the earth there is great plenty of iron ore. The ſtaple of this country is tobacco, of which hitherto they have raiſed immenſe quantities, though ſome ſay their lands begin to wear out, which obliges them to keep great numbers of cattle for the ſake of manure. They likewiſe export lumber, naval ſtores, &c. The ſituation of this country and the nature of its ſtaple prevent the building of towns; for the plantations lying on the banks of their numerous navigable rivers, their veſſels come up to the planters doors, and their tobacco is conſequently laden without trouble. Their cuſtom-houſes are on the rivers Pocomocke, Cheſter, Patuxint, and the north-ſide of Potomack. They have however one town, Annapolis, which is the ſeat of government, and tho' ſmall is one of the faireſt and beſt-built in America. The number of inhabitants exceeds 100,000; of which, however, three-fifths are negro-ſlaves; the remainder whites, who live in general much at their eaſe.

The patent which had been promiſed to Sir George Calvert of this part of what was then ſtyled Virginia was granted to his ſon Cæcilius, created lord Baltimore, and bears date 20th of June 1632. He ſent over his brother Leonard Calvert, Eſq; with 200 gentlemen and perſons of ſome property to ſettle there. His ſon Charles Calvert was afterwards governor for near 20 years, and under their adminiſtration the colony flouriſhed exceedingly. They made themſelves ſo acceptable to the Indians at their firſt coming, that they yielded to them half, and as ſoon as their harveſt was over their whole town; and this good underſtanding conſtantly ſubſiſted. By means of a general toleration of all Chriſtians, the number of inhabitants was much increaſed. The government, before the American revolt, was on much the ſame plan with the reſt; for it behoved the deputy-governor, though appointed by the proprietor, to be approved of by the crown. He had a council and an aſſembly, but the laws made therein were not tranſmitted to England. The culture of tobacco made negroes neceſſary; this is of a particular kind called *oroonoko*, or as ſome write it *aranokoe*, which is hotter than what is made in Virginia, and leſs acceptable here, but ſells better in the eaſtern and northern parts of Europe. The inhabitants carry on a conſiderable trade to Great Britain, as well as to the ſouthern parts of Europe, the French and Britiſh Weſt Indies, and the continent of America. They have alſo ſome intercourſe with the coaſts of Africa. The total of their exports, A. D. 1769, amounted to 350,097 l. In A. D. 1770, there were entered inward ſhips 205, ſloops 197; cleared outwards, ſhips 228, ſloops 172.

MAS planta, a plant which upon the ſame root produces male flowers only. See Masculus *Flos*.

MASAFUERO, an iſland of the South-Sea, lying in S. Lat. 33. 45. W. Long. 80. 46. It is very high and mountainous, and at a diſtance ſeems to conſiſt of one hill or rock. It is of a triangular form, and ſeven or eight leagues in circumference. There is ſuch plenty of fiſh, that a boat with a few hooks and lines may very ſoon catch as many as will ſerve 100 people. Here are coal-fiſh, cavilliers, cod, hallibut, and cray-fiſh. Captain Carteret's crew caught a king-fiſher that weighed 87 pounds, and was five feet and an half long. The ſharks were here ſo ravenous, that, in taking ſoundings, one of them ſwallowed the lead, by which they hauled him above water; but he regained his liberty, by diſgorging his prey. Seals are ſo numerous here, that captain Carteret ſays, if many thouſands were killed in a night, they would not be miſſed next morning. Theſe animals yield excellent train-oil; and their hearts and plucks are very good food, having a taſte ſomething like thoſe of a hog; their ſkins are covered with a very fine fur. There are many birds here, and ſome very large hawks. Of the pintado bird one ſhip caught 700 in one night. Commodore Byron landed here with difficulty in 1765, in order to take in wood and water, of both which he found plenty. He found alſo great numbers of goats, whoſe fleſh taſted as well as veniſon in England.

MASCULINE, ſomething belonging to the male, or the ſtronger of the two ſexes. See MALE.

MASCULINE, is more ordinarily uſed in grammar to ſignify the firſt and worthieſt of the genders of nouns. See GENDER.

The maſculine gender is that which belongs to the male kind, or ſomething analogous to it.

Moſt ſubſtantives are ranged under the heads of maſculine or feminine.—This, in ſome caſes, is done with a ſhow of reaſon; but in others is merely arbitrary, and for that reaſon is found to vary according to the languages and even according to the words introduced from one language into another.—Thus the names of trees are generally feminine in Latin, and maſculine in the French.

Farther, the genders of the ſame word are ſometimes varied in the ſame language. Thus *alvus*, according to Priſcian, was anciently maſculine, but is now become feminine. And *navire*, a ſhip, in French, was anciently feminine, but is now maſculine.

MASCULINE *Rhyme*, in the French poetry, is that made with a word which has a ſtrong, open, and accented pronunciation; as all words have, excepting thoſe which have an *e* feminine in their laſt ſyllable. See RHYME.

For inſtance, *amour* and *jour*, *mort* and *ſort*, are maſculine rhymes:—and *pere* and *mere*, *gloire* and *memoire*, are feminine. Hence alſo verſes ending with a maſculine rhyme, are called *maſculine verſes*, and thoſe ending with a feminine rhyme, *feminine verſes*. See VERSE.

It is now a rule eſtabliſhed among the French poets never to uſe the above two maſculine or two feminine verſes ſucceſſively, except in the looſer kind of poetry.

Marot was the firſt who introduced this mixture of maſculine and feminine verſes, and Ronſard was the firſt who practiſed it with ſucceſs. The maſculine verſes ſhould always have a ſyllable leſs than the feminine ones.

MASCULINE *Signs*.—Aſtrologers divide the ſigns into maſculine and feminine; by reaſon of their qualities, which are either active, and hot, or cold, accounted maſculine; or paſſive, dry, and moiſt, which are feminine.

On this principle they call the *ſun*, *Jupiter*, *Saturn*, and *Mars*, maſculine: and the moon and Venus, feminine. Mercury, they ſuppoſe, partakes of the two. Among the ſigns, Aries, Libra, Gemini, Leo, Sagittarius, Aquarius, are maſculine: Cancer, Capricornus, Taurus, Virgo, Scorpio, and Piſces, are feminine.

MASCULUS FLOS, a male flower; a flower which contains the ſtamina, reckoned by the ſexualiſts the male organ of generation, but not the ſtigma or female organ.

All the plants of the claſs diœcia of Linnæus have male and female flowers upon different roots: thoſe of the claſs monœcia, bear flowers of different ſexes on the ſame root. The plants, therefore, of the former are only male or female: thoſe of the latter are androgynous; that is, contain a mixture of both male and female flowers.

MASH, a drink given to a horſe, made of half a peck of ground malt put into a pail, into which as much ſcalding hot water is poured as will wet it very well: when that is done, ſtir it about, till, by taſting, you find it as ſweet as honey; and when it has ſtood till it is lukewarm, it is to be given to the horſe. This liquor is only uſed after a purge, to make it work the better; or after hard labour, or inſtead of drink in the time of any great ſickneſs.

MASILLON (John Baptiſt) biſhop of Clermont, and one of the moſt eloquent preachers of his time, was born at Hieres, in Provence, in 1663, and died in 1742. His ſermons and other works are publiſhed in 14 vols 12mo.

MASINISSA, king of a ſmall territory in Africa, at firſt an enemy to the Romans, and ally of the Carthaginians: but Scipio having taken his nephew priſoner, ſent him home, accompanied by an honourable eſcort, and laden with preſents; which gave him ſo high an opinion of the generoſity of the Romans, that he went over to them, and aſſiſted them in their conqueſts in Africa. He was a renowned warrior, and left 44 children, moſt of whom became illuſtrious in hiſtory.

MASON, a perſon employed under the direction of an architect, in the raiſing of a ſtone-building.

The chief buſineſs of a maſon is to make the mortar; raiſe the walls from the foundation to the top, with the neceſſary retreats and perpendiculars; to form the vaults, and employ the ſtones as delivered to him. When the ſtones are large, the buſineſs of hewing or cutting them belongs to the ſtone-cutters, tho' theſe are frequently confounded with maſons: the ornaments of ſculpture are performed by carvers in ſtones or ſculptors. The tools or implements principally uſed by them are the ſquare, level, plumb-line, bevel, compaſs, hammer, chiſſel, mallet, ſaw, trowel, &c. See SQUARE, &c.

Beſides the common inſtruments uſed in the hand, they have likewiſe machines for raiſing of great burdens, and the conducting of large ſtones, the principal of which are the lever, pulley, wheel, crane, &c. See LEVER, &c.

Free and Accepted MASONS, a very ancient ſociety or body of men; ſo called, either from ſome extraordinary knowledge of maſonry or building, which they

Maſonry.

are ſuppoſed to be maſters of, or becauſe the firſt founders of the ſociety were perſons of that profeſſion. Theſe are now very conſiderable, both for number and character, being found in every country in Europe, and conſiſting principally of perſons of merit and conſideration. As to antiquity, they lay claim to a ſtanding of ſome thouſand years. What the end of their inſtitution is, ſeems ſtill in ſome meaſure a ſecret; and they are ſaid to be admitted into the fraternity by being put in poſſeſſion of a great number of ſecrets, called the *maſon's word*, which have been religiouſly kept from age to age, being never divulged.

MASONRY, in general, a branch of architecture, conſiſting in the art of hewing or ſquaring ſtones, and cutting them level or perpendicular, for the uſes of building: but, in a more limited ſenſe, maſonry is the art of aſſembling and joining ſtones together with mortar.

Hence ariſe as many different kinds of maſonry, as there are different forms and manners for laying or joining ſtones. Vitruvius mentions ſeveral kinds of maſonry uſed among the ancients: three of hewed ſtone, viz. that in form of a net, that in binding, and that called the *Greek maſonry*; and three of unhewed ſtones, viz. that of an equal courſe, that of an unequal courſe, and that filled up in the middle; and the ſeventh was a compoſition of all the reſt.

Plate CLXV.

Net-maſonry, called by Vitruvius *reticulatum*, from its reſemblance to the meſhes of a net, conſiſts of ſtones ſquared in their courſes, and ſo diſpoſed as that their joints go obliquely; and their diagonals are the one perpendicular, and the other level. This is the moſt agreeable maſonry to the eye, but it is very apt to crack. See n° 1.

Bound maſonry, that in which the ſtones were placed one over another, like tiles; the joints of their beds being level, and the mounters perpendicular, ſo that the joint that mounts and ſeparates two ſtones, always falls directly over the middle of the ſtone below. This is leſs beautiful than the net-work; but it is more ſolid and durable. See n° 2.

Greek maſonry, according to Vitruvius, is that where after we have laid two ſtones, each of which makes a courſe, another is laid at the end, which makes two courſes, and the ſame order is obſerved throughout the building; this may be called *double-binding*, in regard the binding is not only of ſtones of the ſame courſe with one another, but likewiſe of one courſe with another courſe. See n° 3.

Maſonry by equal courſes, called by the ancients *iſodomum*, differs in nothing from the bound maſonry, but only in this, that its ſtones are not hewn. See n° 4.

Maſonry by unequal courſes, called *pſeudiſodomum*, is alſo made of unhewed ſtones, and laid in bound work; but then they are not of the ſame thickneſs, nor is there any equality obſerved excepting in the ſeveral courſes, the courſes themſelves being unequal to each other. See n° 5.

Maſonry filled up in the middle, is likewiſe made unhewed ſtones, and by courſes; but the ſtones are only ſet in order as to the courſes. See n° 9. A, the courſes; B, the parts filled up; C, a coat of plaſter.

Compound maſonry is of Vitruvius's propoſing, ſo called as being formed of all the reſt. In this the courſes are of hewed ſtone; and the middle being left void, is filled up with mortar and pebbles thrown in together: after this the ſtones of one courſe are bound to thoſe of another courſe with cramp-irons faſtened with melted lead. See n° 7. E, the ſtones cramped; F, the cramps; G, the middle part filled up.—N° 8. repreſents another ſort of compound maſonry, the middle of which is ſtone, and the edges boards.

Maſs.

All the kinds of maſonry now in uſe may be reduced to theſe five, viz. bound maſonry; that of brickwork, where the bodies and projectures of the ſtones incloſe ſquare ſpaces or pannels, &c. ſet with bricks; that de moilon, or ſmall work, where the courſes are equal, well ſquared, and their edges or beds ruſticated; that where the courſes are unequal; and that filled up in the middle with little ſtones and mortar.

MASS, in mechanics, the matter of any body cohering with it, i. e. moving and gravitating along with it. In which ſenſe, *maſs* is diſtinguiſhed from bulk, or volume, which is the expanſion of a body in length, breadth, and thickneſs.

The maſs of any body is rightly eſtimated by its weight. And the maſſes of two bodies of the ſame weight are in a reciprocal ratio of their bulks.

MASS, *Miſſa*, in the church of Rome, the office or prayers uſed at the celebration of the euchariſt; or in other words, conſecrating the bread and wine into the body and blood of Chriſt, and offering them ſo tranſubſtantiated as an expiatory ſacrifice for the quick and the dead.

As the maſs is in general believed to be a repreſentation of the paſſion of our bleſſed Saviour, ſo every action of the prieſt, and every particular part of the ſervice, is ſuppoſed to allude to the particular circumſtances of his paſſion and death.

Nicod, after Baronius, obſerves that the word comes from the Hebrew *miſſach*, *(oblatum;)* or from the Latin *miſſa*, *miſſorum;* becauſe in the former times, the catechumens and excommunicated were ſent out of the church, when the deacons ſaid, *Ite, miſſa eſt*, after ſermon and reading of the epiſtle and goſpel; they not being allowed to aſſiſt at the conſecration. Menage derives the word from *miſſio*, "diſmiſſing:" Others from *miſſa*, "miſſing, ſending;" becauſe in the maſs, the prayers of men on earth are ſent up to heaven.

The general diviſion of maſſes conſiſts in high and low. The firſt is that ſung by the choriſters, and celebrated with the aſſiſtance of a deacon and ſub-deacon: low maſſes are thoſe in which the prayers are barely rehearſed without ſinging.

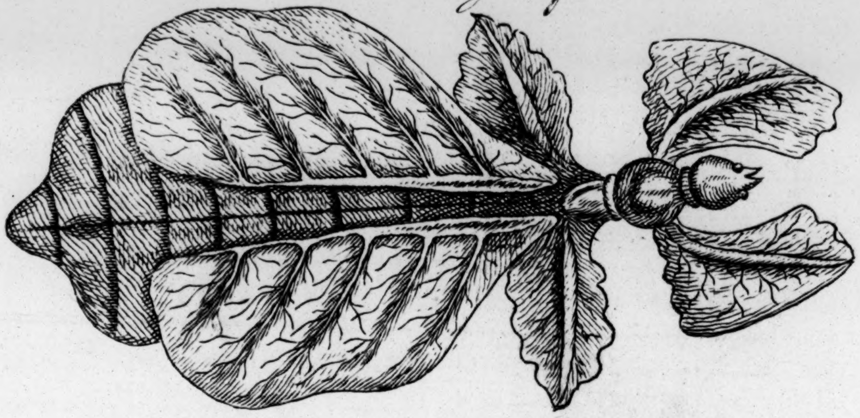
There are a great number of different or occaſional maſſes in the Romiſh church, many of which have nothing peculiar but the name: ſuch are the maſſes of the ſaints; that of St Mary of the ſnow, celebrated on the fifth of Auguſt; that of St Margaret, patroneſs of lying-in women; that of the feaſt of St John the Baptiſt, at which are ſaid three maſſes; that of the Innocents, at which the gloria in excelſis, and the hallelujah are omitted, and it being a day of mourning, the altar is of a violet-colour. As to ordinary maſſes

3 MA 53

Fig. 1.

MANTIS SICIFOLIA,

or walking Leaf.



MAST.

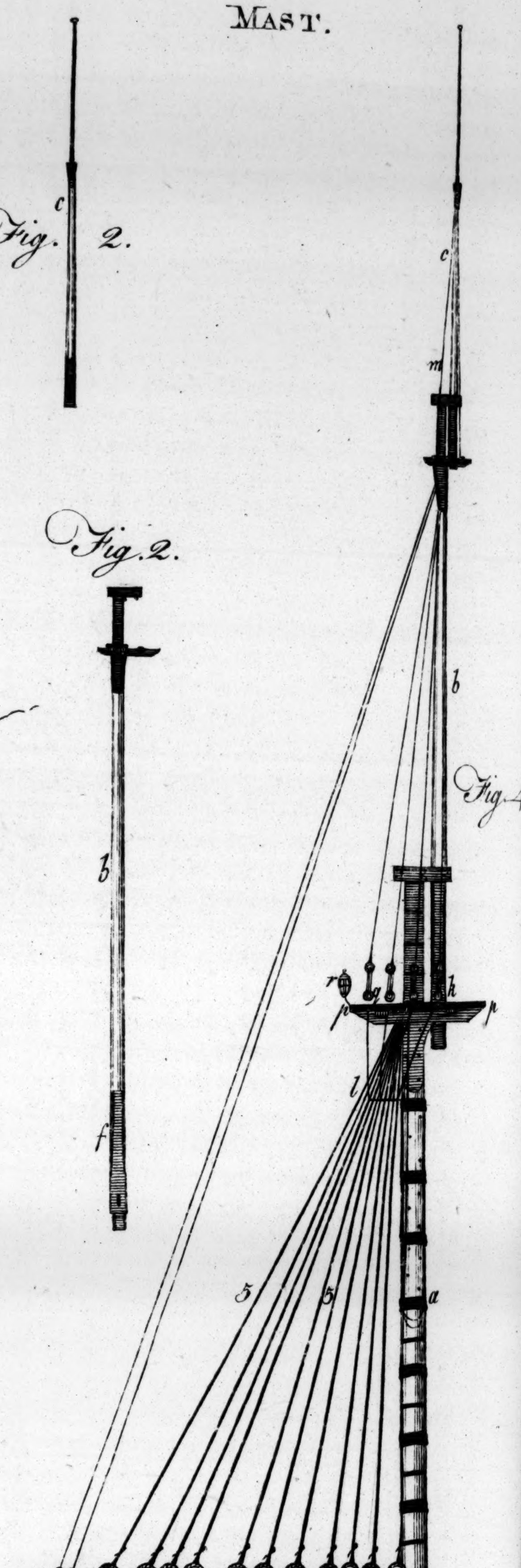

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Fig. 6.

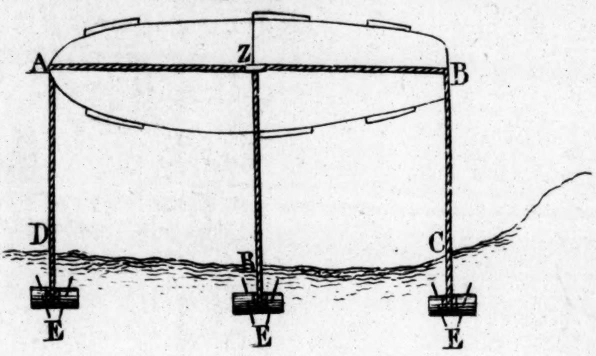
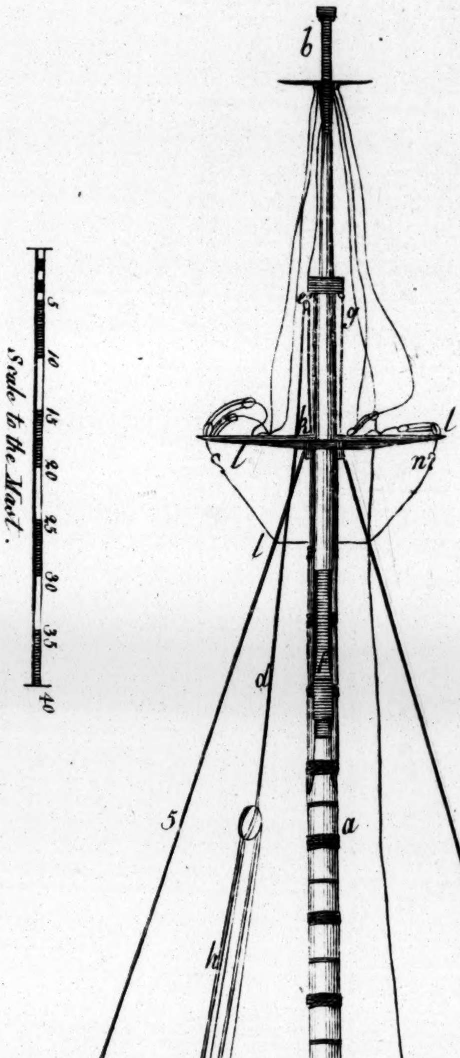


Fig. 3.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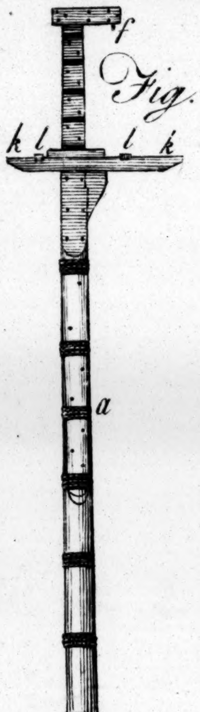
Scale to the Mast.

Fig. 5.



A Bell Sculpt.

maſſes, ſome are ſaid for the dead, and, as is ſuppoſed, contribute to fetch the ſoul out of purgatory: at theſe maſſes the altar is put in mourning, and the only decorations are a croſs in the middle of ſix yellow wax-lights; the dreſs of the celebrant, and the very maſs-book, are black; many parts of the office are omitted, and the people are diſmiſſed without the benediction. If the maſs be ſaid for a perſon diſtinguiſhed by his rank or virtues, it is followed with a funeral oration: they erect a *chapelle ardente*, that is a repreſentation of the deceaſed with branches and tapers of yellow wax, either in the middle of the church or near the deceaſed's tomb, where the prieſt pronounces a ſolemn abſolution of the deceaſed. There are likewiſe private maſſes, ſaid for ſtolen or ſtrayed goods or cattle, for health, for travellers, &c. which go under the name of *votive maſſes*. There is ſtill a further diſtinction of maſſes denominated from the countries in which they were uſed; thus the Gothic maſs, or *miſſa moſarabum*, is that uſed among the Goths when they were maſters of Spain, and which is ſtill kept up at Toledo and Salamanca; the Ambroſian maſs is that compoſed by St Ambroſe, and uſed only at Milan, of which city he was biſhop; the Gallic maſs, uſed by the ancient Gauls; and the Roman maſs, uſed by almoſt all the churches in the Romiſh communion.

Mass *of the Preſanctified, (miſſa præſanctificatorum,)* is a maſs peculiar to the Greek church, in which there is no conſecration of the elements; but after ſinging ſome hymns, they receive the bread and wine which was before conſecrated. This maſs is performed all Lent, except on Saturdays, Sundays, and the annunciation. The prieſt counts upon his fingers the days of the enſuing week on which it is to be celebrated, and cuts off as many pieces of bread at the altar as he is to ſay maſſes; and after having conſecrated them, ſteeps them in wine, and then puts them in a box; out of which, upon every occaſion, he takes ſome of it with a ſpoon, and putting it on a diſh ſets it upon the altar.

MASSA, a town of Italy, in the kingdom of Naples, and in the Terra di Lavoro, with a biſhop's ſee; ſeated on a mountain near the ſea, in E. Long. 10. 0. N. Lat. 43. 5.

Massa, an ancient, populous, and handſome town of Italy, and capital of a ſmall territory of the ſame name, with the title of a principality, and a ſtrong caſtle. It is famous for its quarries of fine marble, and is ſituated in E. Long. 14. 23. N. Lat. 40. 40.

MASSACHUSETS colony, the principal ſubdiviſion of New England, having Hampſhire on the north, the Atlantic ocean on the eaſt and ſouth, and Connecticut and New-York on the weſt. It is about 100 miles long and 40 broad. See *New-England*.

MASSALIANS, a ſet of enthuſiaſts who ſprang up about the year 361, in the reign of the emperor Conſtantius, who maintained that men have two ſouls, a celeſtial and a diabolical, and that the latter is driven out by prayer.

MASSILIA, (anc. geog.), a town of Gallia Narbonenſis; a colony of Phocæans, from Phocæa, a city of Ionia, and in confederacy with the Romans: univerſally celebrated not only for its port, commerce, and ſtrength, but eſpecially for its politeneſs of manners and its learning. It was the ſchool for barbarians, who were excited by its means to ſuch a fondneſs for Greek literature, that even their public and private tranſactions were all executed in that language, according to Strabo; who adds, "At this day the nobleſt Romans repair thither for ſtudy, rather than to Athens." Now *Marſeilles*, a city and port-town of Provence. See Marseilles.

MASSIEU (William), a learned French writer, member of the academy of belles lettres, and of the French academy, was born at Caen in Normandy in 1665, and completed his ſtudies at Paris, when he entered amongſt the Jeſuits; but afterwards left them, that he might follow his inclination to polite literature with the greater freedom. In 1710 he was made Greek profeſſor in the royal college; and enjoyed that poſt till his death, which happened at Paris in 1722. He wrote, 1. Several curious diſſertations in the memoirs of the academy of inſcriptions. 2. A hiſtory of the French poetry, in 12mo, &c.

MASSINGER (Philip), an Engliſh dramatic poet, was born at Saliſbury about the year 1581, and was educated at Oxford. He left the univerſity without taking any degree; and went to London to improve his poetical genius by polite converſation. There he wrote many tragedies and comedies, which were received with vaſt applauſe; and were greatly admired for the œconomy of the plots, and the purity of the ſtyle. He was at the ſame time a perſon of the moſt conſummate modeſty; which rendered him extremely beloved by the poets of his time, particularly by Fletcher, Middleton, Rowley, Field, and Decker, who thought it an honour to write in conjunction with him. He was as remarkable for his abilities as his modeſty. He died ſuddenly at his houſe on the Bank-ſide in Southwark, near the play-houſe; and was interred in St Saviour's church-yard, in the ſame grave with Mr Fletcher the poet.

MASSETER, in anatomy. See there, *(Table of the Muſcles)*.

MASSIVE, among builders, an epithet given to whatever is too heavy and ſolid: thus a maſſive column is one too ſhort and thick for the order whoſe capital it bears; and a maſſive wall is one whoſe openings or lights are too ſmall in proportion.

MASSORA, in matters of literature, a critical work, containing remarks on the verſes, words, letters, and vowel-points of the Hebrew text of the Bible; a work more laborious than uſeful.

MAST, a long round piece of timber, elevated perpendicularly upon the keel of a ſhip, to which are attached the yards, the ſails, and the rigging. A maſt, with regard to its length, is either formed of one ſingle piece, which is called a *pole-maſt*, or compoſed of ſeveral pieces joined together, each of which retains the name of maſt ſeparately. The loweſt of theſe is accordingly named the *lower maſt*, *a*, fig. 2. the next in height is the top-maſt, *b*, which is erected at the head of the former; and the higheſt is the top-gallant maſt, *c*, which is prolonged from the upper end of the top-maſt. Thus the two laſt are no other than a continuation of the firſt upwards. Plate CLXVI.

The lower-maſt is fixed in the ſhip by an apparatus, de-

deſcribed in the articles Hulk and Sheers: the foot, or heel of it, reſts in a block of timber called the *ſtep*, which is fixed upon the *kelſon;* and the top-maſt is attached to the head of it by the *cap* and the *treſtle-trees*. The latter of theſe are two ſtrong bars of timber, ſupported by two prominences, which are as ſhoulders on the oppoſite ſides of the maſt, a little under its upper end: athwart theſe bars are fixed the *croſs-trees*, upon which the frame of the top is ſupported. Between the lower maſt-head and the foremoſt of the croſs-trees, a ſquare ſpace remains vacant, the ſides of which are bounded by the two treſtle-trees. Perpendicularly above this is the foremoſt hole in the cap, whoſe after-hole is ſolidly fixed on the head of the lower-maſt. The top maſt is erected by a tackle, whoſe effort is communicated from the head of the lower maſt to the foot of the top-maſt; and the upper end of the latter is accordingly guided into and conveyed up through the holes between the treſtle-trees and the cap, as above-mentioned. The machinery by which it is elevated, or, according to the ſea-phraſe, *ſwayed up*, is fixed in the following manner: the top rope *d*, fig. 3. paſſing through a block *e*, which is hooked on one ſide of the cap, and afterwards through a hole, furniſhed with a ſheave or pulley *f*, on the lower end of the top-maſt, is again brought upwards on the other ſide of the maſt, where it is at length faſtened to an eye-bolt in the cap *g*, which is always on the ſide oppoſite to the top-block *e*. To the lower end of the top-rope is fixed the top-tackle *h*, the effort of which being tranſmitted to the top-rope *d*, and thence to the heel of the top maſt *f*, neceſſarily lifts the latter upwards, parallel to the lower-maſt. When the top-maſt is raiſed to its proper height, fig. 4. the lower end of it becomes firmly wedged in the ſquare hole, above-deſcribed, between the treſtle-trees. A bar of wood, or iron, called the *fid*, is then thruſt through a hole *i* in the heel of it, acroſs the treſtle-trees, by which the whole weight of the top-maſt is ſupported.

In the ſame manner as the top-maſt is retained at the head of the lower-maſt, the top-gallant-maſt is erected, and fixed at the head of the top-maſt.

Beſides the parts already-mentioned in the conſtruction of maſts, with reſpect to their length, the lower-maſts of the largeſt ſhips are compoſed of ſeveral pieces united into one body. As theſe are generally the moſt ſubſtantial parts of various trees, a maſt, formed by this aſſemblage, is juſtly eſteemed much ſtronger than one conſiſting of any ſingle trunk, whoſe internal ſolidity may be very uncertain. The ſeveral pieces are formed and joined together, as repreſented in the ſection of a lower-maſt of this ſort, fig. 5. where *a* is the ſhaft, or principal piece into which the reſt are fixed, with their ſides or faces cloſe to each other. The whole is ſecured by ſeveral ſtrong hoops of iron, driven on the outſide of the maſt, where they remain at proper diſtances.

The principal articles to be conſidered in equipping a ſhip with maſts are, 1ſt, the number; 2d, their ſituation in the veſſel; and 3d, their height above the water.

The maſts being uſed to extend the ſails by means of their yards, it is evident, that if their number were multiplied beyond what is neceſſary, the yards muſt be extremely ſhort, that they may not entangle each other in working the ſhip, and by conſequence their ſails will be very narrow, and receive a ſmall portion of wind. If, on the contrary, there is not a ſufficient number of maſts in the veſſel, the yards will be too large and heavy, ſo as not to be managed without difficulty. There is a mean between theſe extremes, which experience and the general practice of the ſea have determined; by which it appears, that in large ſhips every advantage of ſailing is retained by three maſts and a bowſprit.

The moſt advantageous poſition of the maſts is undoubtedly that from whence there reſults an equilibrium between the reſiſtance of the water on the body of the ſhip on one part, and of the direction of their effort on the other. By every other poſition this equilibrium is deſtroyed, and the greateſt effort of the maſts will operate to turn the ſhip horizontally about its direction; a circumſtance which retards her velocity. It is counterbalanced indeed by the helm; but the ſame inconvenience ſtill continues; for the force of the wind, having the reſiſtance of the helm to overcome, is not entirely employed to puſh the veſſel forward. The axis of the reſiſtance of the water ſhould then be previouſly determined, to diſcover the place of the *main-maſt*, in order to ſuſpend the efforts of the water equally, and place the other maſts ſo as that their particular direction will coincide with that of the main-maſt. The whole of this would be capable of a ſolution if the figure of the veſſel were regular, becauſe the point, about which the reſiſtance of the water would be in equilibrio, might be diſcovered by calculation.

But when the real figure of the ſhip is conſidered, theſe flattering ideas will inſtantly vaniſh. This obſervation induced M. Saverien to employ a mechanical method to diſcover the axis of reſiſtance of the water, which he apprehended might be uſed with ſucceſs in the manner following:

When the veſſel is lanched, before the places of the maſts are determined, extend a rope A B, fig. 6. from the head to the ſtern. To the extremities A and B attach two other ropes, AD, BC, and apply to the other ends of theſe ropes two mechanical powers, to draw the ſhip according to the direction BC, parallel to itſelf. The whole being thus diſpoſed, let a moveable tube Z, fixed upon the rope A B, have another rope ZR attached to it, whoſe other end communicates with a mechanical power R, equal to the two powers D and C. This laſt being applied to the ſame veſſel, in ſuch manner as to take off the effects of the two others by ſliding upon the rope AB, ſo as to diſcover ſome point Z, by the paralleliſm of the ropes AD BC feebly extended with the rope ZR; the line ZR will be the axis of the equilibrium of the water's reſiſtance, and by conſequence the main-maſt ſhould be planted in the point Z.

The figures E, E, E, are three windlaſſes on the ſhore, by which this experiment is applied.

With regard to the ſituation of the other maſts, it is neceſſary, in the ſame manner, to diſcover two points; ſo that the direction of the two mechanical powers operating, will be parallel to the axis of reſiſtance RZ already found.

The exact height of the maſts, in proportion to the form and ſize of the ſhip, remains yet a problem to be determined. The more the maſts are elevated above the centre of gravity, the greater will be the ſurface of ſail which they are enabled to preſent to the wind; ſo far an additional height ſeems to have been advantageous. But this advantage is diminiſhed by the circular movement of the maſt, which operates to make the veſſel ſtoop to its effort; and this inclination is increaſed in proportion to the additional height of the maſt, an inconvenience which it is neceſſary to guard againſt. Thus what is gained upon one hand is loſt upon the other. To reconcile theſe differences, it is certain, that the height of the maſt ought to be determined by the inclination of the veſſel, and that the point of her greateſt inclination ſhould be the term of this height above the centre of gravity. See the article TRIM.

With regard to the general practice of determining the height of the maſts, according to the different rates of the ſhips in the royal navy, the reader is referred to the article SAIL.

In order to ſecure the maſts, and counterbalance the ſtrain they receive from the effort of the ſails impreſſed by the wind, and the agitation of the ſhip at ſea, they are ſuſtained by ſeveral ſtrong ropes, extended from their upper ends to the outſide of the veſſel, called *ſhrouds*, as repreſented in fig. 4. They are further ſupported by other ropes, ſtretched from their heads towards the fore-part of the veſſel.

The maſt, which is placed at the middle of the ſhip's length, is called the *main-maſt;* that which is placed in the forepart, the *fore-maſt;* and that which is towards towards the ſtern, is termed the *mizen-maſt.*

N. B. *Mizen* is applied to this maſt by all the nations of Europe, except the French, who alone call the fore-maſt *miſaine.*

MASTER (MAGISTER), in general, is a title of authority, and applied to perſons in various characters. It is alſo uſed as a compellation of reſpect.

MASTER *of Arts*, the firſt degree taken up in all foreign univerſities, but the ſecond in thoſe of England; candidates not being admitted to it in that country till they have ſtudied in the univerſity ſeven years.

MASTER *of a Ship of War*, an officer appointed by the commiſſioners of the navy to take charge of the navigating and conducting a ſhip from port to port, under the direction of the captain. The management and diſpoſition of the ſails, the working of the ſhip into her ſtation in the order of battle, and the direction of her movements in the time of action and in the other circumſtances of danger, are alſo more particularly under his inſpection. It is likewiſe his duty to examine the proviſions, and accordingly to admit none into the ſhip but ſuch as are ſound, ſweet, and wholeſome. He is moreover charged with the *ſtowage*, or diſpoſition of theſe materials in the ſhip's hold; and to enable him the better to perform theſe ſervices, he is allowed ſeveral aſſiſtants, who are properly termed *mates* and *quarter-maſters*. See theſe articles.

MASTER *of a Merchant-Ship*, the commanding officer, who is appointed by the merchants to manage the navigation and every thing relating to her cargo, voyage, ſailors, &c.

MASTER-*Attendant*, an officer in the royal dockyards, appointed to haſten and aſſiſt at the fitting out or diſmantling, removing or ſecuring veſſels of war, &c. at the port where he reſides. He is particularly to obſerve that his majeſty's ſhips are ſecurely moored; and for this purpoſe he is expected frequently to review the *moorings* which are ſunk in the harbour, and obſerve that they are kept in proper repair to be always ready when occaſion requires. It is alſo his duty to viſit all the ſhips in *ordinary*, and ſee that they are frequently cleaned and kept in order; and to attend at the general muſters in the dock-yards, taking care that all the officers, artificers, and labourers, regiſtered in the navy-books, are preſent at their duty.

MASTER *at Arms*, an officer appointed to teach the officers and crew of a ſhip of war the exerciſe of ſmall arms; to confine and plant centinels over the priſoners, and ſuperintend whatever relates to them during their confinement. He is alſo to obſerve, that the fire and lights be all extinguiſhed as ſoon as the evening gun is fired, except thoſe which are permitted by proper authority or under the inſpection of centinels. It is alſo his duty to attend the *gangway* when any boats arrive aboard, and ſearch them carefully, together with their rowers, that no ſpirituous liquors may be conveyed into the ſhip, unleſs by permiſſion of the commanding-officer. In theſe ſeveral duties he is aſſiſted with proper attendants, called his *corporals;* who alſo relieve the centinels, and one another, at certain periods.

MASTER *of the Horſe*, a great officer of the crown, who orders all matters relating to the king's ſtables, races, breed of horſes; and commands the equerries and all the other officers and tradeſmen employed in the king's ſtables. His coaches, horſes, and attendants, are the king's, and bear the king's arms and livery.

MASTER *of the Revels*, an officer who orders all things relating to the performance of plays, maſks, balls, &c. at court.

MASTER *of the Rolls*, a patent-officer for life, who has the cuſtody of the rolls of parliament and patents which paſs the great ſeal, and of the records of chancery, as alſo commiſſions, deeds, recognizances; which, being made of rolls of parchment, gave riſe to the name.

In abſence of the chamberlain, he ſits as judge in the court of chancery: at other times he hears cauſes in the rolls chapel, and makes orders; but all hearings before him are appealable to the chancellor.

MASTER *of the Wardrobe*, an officer under the lord-chamberlain, who has the care of the royal robes, as well as the wearing apparel, collar, george, and garter, &c. He has alſo the charge of all former kings and queens robes remaining in the tower, all hangings, bedding, &c. for the king's houſe, the charge and delivery of velvet and ſcarlet allowed for liveries. He has under him a clerk of the robes, wardrobe-keeper, a yeoman, &c.

MASTER *and Servant;* a relation founded in convenience, whereby a man is directed to call in the aſſiſtance of others, where his own ſkill and labour will not be ſufficient to anſwer the cares incumbent upon him. For the ſeveral ſorts of ſervants, and how that character is created or deſtroyed, ſee the article SERVANT. In the preſent article we ſhall conſider, firſt, the

Maſter.

the effect of this relation with regard to the parties themſelves; and ſecondly, its effects with regard to others.

Blackſt. Comment.

1. The manner in which this relation affects either the maſter or ſervant. And, firſt, by hiring and ſervice for a year, or apprenticeſhip under indentures, a perſon gains a ſettlement in that pariſh wherein he laſt ſerved 40 days. In the next place, perſons ſerving ſeven years as apprentices to any trade have an excluſive right to exerciſe that trade in any part of England. This law, with regard to the excluſive part of it, has by turns been looked upon as a hard law, or as a beneficial one, according to the prevailing humour of the times: which has occaſioned a great variety of reſolutions in the courts of law concerning it; and attempts have been frequently made for its repeal, tho' hitherto without ſucceſs. At common law every man might uſe what trade he pleaſed; but this ſtatute reſtrains that liberty to ſuch as have ſerved as apprentices: the adverſaries to which proviſion ſay, that all reſtrictions (which tend to introduce monopolies) are pernicious to trade; the advocates for it allege, that unſkilfulneſs in trades is equally detrimental to the public, as monopolies. This reaſon indeed only extends to ſuch trades, in the exerciſe whereof ſkill is required: but another of their arguments goes much farther; viz. that apprenticeſhips are uſeful to the commonwealth, by employing of youth, and learning them to be early induſtrious; but that no one would be induced to undergo a ſeven years ſervitude, if others, tho' equally ſkilful, were allowed the ſame advantages without having undergone the ſame diſcipline: and in this there ſeems to be much reaſon. However, the reſolutions of the courts have in general rather confined than extended the reſtriction. No trades are held to be within the ſtatute, but ſuch as were in being at the making of it: for trading in a country village, apprenticeſhips are not requiſite, and following the trade ſeven years is ſufficient without any binding; for the ſtatute only ſays, the perſon muſt ſerve *as* an apprentice, and does not require an actual apprenticeſhip to have exiſted.

A maſter may by law correct his apprentice for negligence or other miſbehaviour, ſo it be done with moderation: though, if the maſter or maſter's wife beats any other ſervant of full age, it is good cauſe of departure. But if any ſervant, workman, or labourer, aſſaults his maſter or dame, he ſhall ſuffer one year's impriſonment, and other open corporal puniſhment, not extending to life or limb.

By ſervice all ſervants and labourers, except apprentices, become entitled to their wages: according to agreement, if menial ſervants; or according to the appointment of the ſheriff or ſeſſions, if labourers or ſervants in huſbandry: for the ſtatutes for regulation of wages extend to ſuch ſervants only; it being impoſſible for any magiſtrate to be a judge of the employment of menial ſervants, or of courſe to aſſeſs their wages.

2. Let us now ſee how ſtrangers may be affected by this relation of maſter and ſervant; or how a maſter may behave towards others on behalf of his ſervant, and what a ſervant may do on behalf of his maſter.

Maſter.

And, firſt, the maſter may *maintain*, that is, abet and aſſiſt, his ſervant in any action at law againſt a ſtranger: whereas, in general, it is an offence againſt public juſtice to encourage ſuits and animoſities, by helping to bear the expence of them, and is called in law *maintenance*. A maſter alſo may bring an action againſt any man for beating or maiming his ſervant: but in ſuch caſe he muſt aſſign, as a ſpecial reaſon for ſo doing, his own damage by the loſs of his ſervice; and this loſs muſt be proved upon the trial. A maſter likewiſe may juſtify an aſſault in defence of his ſervant, and a ſervant in defence of his maſter: the maſter, becauſe he has an intereſt in his ſervant, not to be deprived of his ſervice; the ſervant, becauſe it is part of his duty, for which he receives his wages, to ſtand by and defend his maſter. Alſo if any perſon do hire or retain my ſervant, being in my ſervice, for which the ſervant departeth from me and goeth to ſerve the other, I may have an action for damages againſt both the new maſter, and the ſervant, or either of them: but if the new maſter did not know that he is my ſervant, no action lies; unleſs he afterwards refuſe to reſtore him upon information and demand. The reaſon and foundation upon which all this doctrine is built, ſeem to be the property that every man has in the ſervice of his domeſtics; acquired by the contract of hiring, and purchaſed by giving them wages.

As for thoſe things which a ſervant may do on behalf of his maſter, they ſeem all to proceed upon this principle, that the maſter is anſwerable for the act of his ſervant, if done by his command, either expreſsly given or implied: *nam qui facit per alium, facit per ſe.* Therefore, if the ſervant commit a treſpaſs by the command or encouragement of his maſter, the maſter ſhall be guilty of it: not that the ſervant is excuſed, for he is only to obey his maſter in matters that are honeſt and lawful. If an innkeeper's ſervants rob his gueſts, the maſter is bound to reſtitution; for as there is a confidence repoſed in him, that he will take care to provide honeſt ſervants, his negligence is a kind of implied conſent to the robbery; *nam, qui non prohibet, cum prohibere poſſit, jubet.* So likewiſe if the drawer at a tavern ſells a man bad wine, whereby his health is injured, he may bring an action againſt the maſter; for although the maſter did not expreſsly order the ſervant to ſell it to that perſon in particular, yet his permitting him to draw and ſell it at all is impliedly a general command.

In the ſame manner, whatever a ſervant is permitted to do in the uſual courſe of his buſineſs, is equivalent to a general command. If I pay money to a banker's ſervant, the banker is anſwerable for it: if I pay it to a clergyman's or a phyſician's ſervant, whoſe uſual buſineſs it is not to receive money for his maſter, and he imbezzles it, I muſt pay it over again. If a ſteward lets a leaſe of a farm, without the owner's knowledge, the owner muſt ſtand to the bargain; for this is the ſteward's buſineſs. A wife, a friend, a relation, that uſe to tranſact buſineſs for a man, are *quoad hoc* his ſervants; and the principal muſt anſwer for their conduct: for the law implies, that they act under a general command; and without ſuch a doctrine as this no mutual intercourſe between man and man could ſubſiſt with any tolerable convenience. If I uſually deal with a tradeſman by myſelf, or conſtantly pay him ready money, I am not anſwerable for what my ſervant takes up upon truſt; for here is no implied order to the tradeſman to truſt my ſervant: but if I uſually ſend him upon truſt, or ſometimes on truſt and ſometimes with ready money, I am anſwerable for all he takes up; for the tradeſman cannot poſſibly diſtinguiſh when he comes by my order, and when upon his own authority.

If a ſervant, laſtly, by his negligence does any damage to a ſtranger, the maſter ſhall anſwer for his neglect: if a ſmith's ſervant lames a horſe while he is ſhoeing him, an action lies againſt the maſter, and not againſt the ſervant. But in theſe caſes the damage muſt be done while he is actually employed in the maſter's ſervice; otherwiſe the ſervant ſhall anſwer for his own miſbehaviour. Upon this principle, by the common law, if a ſervant kept his maſter's fire negligently, ſo that his neighbour's houſe was burned down thereby, an action lay againſt the maſter; becauſe this negligence happened in his ſervice: otherwiſe, if the ſervant, going along the ſtreet with a torch, by negligence ſets fire to a houſe; for there he is not in his maſter's immediate ſervice, and muſt himſelf anſwer the damage perſonally. But now the common law is, in the former caſe, altered by ſtatute 6 Ann. c. 3. which ordains, that no action ſhall be maintained againſt any in whoſe houſe or chamber any fire ſhall accidentally begin; for their own loſs is ſufficient puniſhment for their own or their ſervant's careleſſneſs. But if ſuch fire happens through negligence of any ſervant (whoſe loſs is commonly very little), ſuch ſervant ſhall forfeit 100 l. to be diſtributed among the ſufferers; and, in default of payment, ſhall be committed to ſome workhouſe, and there kept to hard labour for 18 months. A maſter is, laſtly, chargeable if any of his family layeth or caſteth any thing out of his houſe into the ſtreet or common highway, to the damage of any individual, or the common nuſance of his majeſty's liege people: for the maſter hath the ſuperintendance of all his houſehold. And this alſo agrees with the civil law; which holds, that the *pater familias*, in this and ſimilar caſes, *ob alterius culpam tenetur, ſive ſervi, ſive liberi*.

We may obſerve, that in all the caſes here put, the maſter may be frequently a loſer by the truſt repoſed in his ſervant, but never can be a gainer: he may frequently be anſwerable for his ſervant's miſbehaviour, but never can ſhelter himſelf from puniſhment by laying the blame on his agent. The reaſon of this is ſtill uniform and the ſame; that the wrong done by the ſervant is looked upon in law as the wrong of the maſter himſelf; and it is a ſtanding maxim, that no man ſhall be allowed to make any advantage of his own wrong.

MASTER-*Wort*, in botany. See IMPERATORIA.

MASTERS *of* CHANCERY, in ordinary, of which there are 12, the maſter of the rolls being chief, are uſually choſen out of the barriſters of the common law, and ſit in chancery, or at the rolls, as aſſiſtants to the lord-chancellor or maſter of the rolls.

MASTICATION, the action of chewing, or of agitating the ſolid parts of our food between the teeth, by the motion of the jaws, the tongue, and the lips, whereby it is broken into ſmall pieces, impregnated with ſaliva, and ſo fitted for deglutition and a more eaſy digeſtion. See ANATOMY, n° 368.

MASTICH, a kind of reſin exſuding from the *lentiſcus* tree; and brought from Chio, in ſmall yellowiſh tranſparent grains or tears, of an agreeable ſmell, eſpecially when heated or ſet on fire. This reſin is recommended in old coughs, dyſenteries, hæmoptoës, weakneſs of the ſtomach, and in general in all debilities and laxity of the fibres. Geoffroy directs an aqueous decoction of it to be uſed for theſe purpoſes: but water extracts little or nothing from this reſin. Rectified ſpirit almoſt entirely diſſolves it, and the ſolution is very warm and pungent. Maſtich is to be choſen in drops, clear, well-ſcented, and brittle.

We meet with a kind of cement ſometimes kept in the ſhops under the name of *maſtich*. It is compoſed of this gum, and ſeveral other ingredients, and is formed into cakes for uſe. This is intended for the ſervice of lapidaries, to fill up cracks in ſtones, &c. but is by no means to be uſed for any medicinal purpoſes.

MASTIGADOUR, or SLABBERING-BIT, in the manege, a ſnaffle of iron, all ſmooth, and of a piece, guarded with paternoſters, and compoſed of three halfs of great rings, made into demi-ovals, of unequal bigneſs; the leſſer being incloſed within the greater, which ought to be about half a foot high.

MASULAPATAN, a populous town of Aſia in the Eaſt Indies, and on the coaſt of Coromandel, in the dominions of the Great Mogul. It carried on a great trade, and moſt nations in Europe had factories here; but the Engliſh have now left it, and even the Dutch themſelves have not above a dozen people here to carry on the chintz trade. The inhabitants are Gentoos, who will not feed on any thing that has life; and they had a famous manufacture of chintz, which is greatly decayed ſince the Engliſh left off buying. The Great Mogul has a cuſtom-houſe here; and the adjacent countries abound in corn, tobacco, and timber for building. It is ſeated on the weſt ſide of the Bay of Bengal, 200 miles north of fort St George. W. Long. 81. 25. N. Lat. 16. 30.

MATACA, or MANTACA, a commodious bay in America, on the north coaſt of the iſland of Cuba. Here the galleons uſually come to take in freſh water in their return to Spain. It is 35 miles from the Havannah. W. Long. 85. 6. N. Lat. 25. 0.

MATAMAN, a country of Africa, bounded by Benguela on the north, by Monomotopa on the eaſt, by Cafraria on the ſouth, and by the Atlantic Ocean on the weſt. There is no town in it, and the inhabitants live in miſerable huts, it being a deſart country, and but little viſited by the Europeans.

MATAN, or MACTAN, an iſland of Aſia in the Eaſt-Indian ſea, and one of the Philippines. The inhabitants have thrown off the yoke of Spain; and it was here that Magellan was killed in April 1521.

Cape MATAPAN, the moſt ſouthern promontory of the Morea, between the gulph of Coran and that of Colo-China.

MATARAM, a large town of Aſia, formerly the capital of an empire of that name in the iſland of Java. It is ſtrong by ſituation, and is ſeated in a very fertile, pleaſant, and populous country, ſurrounded with mountains. E. Long. 111. 25. S. Lat. 7. 55.

MATARO, a town of Spain, in Catalonia, remarkable for its glaſs-works; ſeated on the coaſt of the Mediterranean, 15 miles north-eaſt of Barcelona, and 35 ſouth-weſt of Gironne. E. Long. 2. 35. N. Lat. 41. 30.

MATCH, a kind of rope ſlightly twiſted, and prepared to retain fire for the uſes of artillery, mines, fire-works, &c.

It is made of hempen-tow, ſpun on the wheel like cord, but very ſlack; and is compoſed of three twiſts, which are afterwards again covered with tow, ſo that the twiſts do not appear: laſtly, it is boiled in the lees of old wines. This, when once lighted at the end, burns on gradually and regularly, without ever going out, till the whole be conſumed: the hardeſt and drieſt match is generally the beſt.

Quick-MATCH. See QUICK-*Match*.

MATCHING, in the wine-trade, the preparing veſſels to preſerve wines and other liquors, without their growing ſour or vapid. The method of doing it, is as follows: Melt brimſtone in an iron ladle, and when thoroughly melted, dip into it ſlips of coarſe linen-cloth; take theſe out, and let them cool: this the wine-coopers call a *match*. Take one of theſe matches, ſet one end of it on fire, and put it into the bung-hole of a caſk; ſtop it looſely, and thus ſuffer the match to burn nearly out: then drive in the bung tight, and ſet the caſk aſide for an hour or two. At the end of this time examine the caſk, and you will find that the ſulphur has communicated a violent pungent and ſuffocating ſcent to the caſk, with a conſiderable degree of acidity, which is the gas and acid ſpirit of the ſulphur. The caſk may after this be filled with a ſmall wine which has ſcarce done its fermentation; and bunging it down tight, it will be kept good, and will ſoon clarify: this is a common and very uſeful method; for many poor wines could ſcarce be kept potable even a few months without it.

MATE *of a* SHIP *of* WAR, an officer under the direction of the maſter, by whoſe choice he is generally appointed, to aſſiſt him in the ſeveral branches of his duty. Accordingly, he is to be particularly attentive to the navigation in his watch, &c. to keep the *log* regularly, and examine the line, and glaſſes by which the ſhip's courſe is meaſured, and to adjuſt the ſails to the wind in the fore-part of the ſhip. He is to have a diligent attention to the cables, ſeeing that they are well *coiled* and kept clean when laid in the *tier*, and ſufficiently *ſerved* when employed to ride the ſhip. Finally he is to ſuperintend, and aſſiſt at the ſtowage of the hold, taking eſpecial care that all the ballaſt and proviſions are properly ſtowed therein.

MATE *of a Merchant-Ship*, the officer who commands in the abſence of the maſter thereof, and ſhares the duty with him at ſea; being charged with every thing that regards the internal management of the ſhip, the directing her courſe, and the government of her crew.

The number of mates allowed to ſhips of war and merchantmen is always in proportion to the ſize of the veſſel. Thus a firſt-rate man of war has ſix mates, and an Eaſt-Indiaman the ſame number; a frigate of 10 guns, and a ſmall merchant-ſhip, but only one mate in each; and the intermediate ſhips have a greater or ſmaller number, according to their ſeveral ſizes, or to the ſervices on which they are employed.

Dura and *Pia* MATER, the names given by anatomiſts to the two membranes which ſurround the brain. See ANATOMY, nº 394, 395.

MATERA, a conſiderable town of Italy, in the kingdom of Naples, and in the Terra d'Otranto, with a biſhop's ſee, ſeated on the river Canapro. E. Long. 16. 43. N. Lat. 40. 51.

MATERIA MEDICA,

Of Claſſification.

A GENERAL name for every ſubſtance uſed in medicine, and by ſome extended even to every article uſed as food or drink.

Thus the materia medica becomes exceedingly extenſive: however, before we enter upon any particular diſcuſſion of the ſubject, it appears proper to give ſome general idea of medicines and their operation.

A *medicine*, properly ſo called, is a ſubſtance which, when applied to the living human body, makes ſuch an alteration in it as either to prevent the approach of diſeaſe, or to remedy a morbid ſtate when already preſent. Such ſubſtances as may be uſed for theſe purpoſes without any great preparation are called *ſimple medicines*, or *ſimples*; and with theſe the writers on materia medica are chiefly converſant. In treatiſes written profeſſedly on this ſubject, it is common to give a particular deſcription of each article, the characteriſtic marks by which it may be diſtinguiſhed from all other ſubſtances, and the methods by which an adulteration or an imperfection may be diſcovered in it, together with the doſe in which it can ſafely be given: but as all theſe particulars are taken notice of in different parts of this work, it is only neceſſary here to mention the general claſſification, and enumerate the names of the various ſubſtances uſed in medicine, after giving, as hath been already promiſed, a brief and general account of their mode of operation.

Of Claſſification.

Concerning the manner in which medicines act, phyſicians have greatly differed, and each has followed his own particular theory. The followers of Boerhaave have ſuppoſed their action to be directly upon the ſolids and fluids; while thoſe who build their theories on the hypotheſis of Hoffman have aſſerted, that all medicines act immediately upon the nervous ſyſtem, and from thence only in a ſecondary manner are their effects diffuſed over the ſolids and fluids. To diſcuſs this queſtion is not our buſineſs at preſent: neither indeed is it a matter of great conſequence whether it be diſcuſſed or not; ſeeing all parties muſt own, that certain effects follow the uſe of certain particular ſubſtances, whether theſe ſubſtances act firſt upon the nervous ſyſtem or upon the ſolids and fluids.

From their operations on the human body medicines are moſt uſually divided into claſſes. Some are found to have the property of rendering the ſolid parts of the body more lax than before, and are therefore called *relaxing* medicines: Others there are which have an effect directly contrary, and are therefore called *indurating* medicines: A third kind are found to excite inflammation in the part to which they are applied, and are therefore called *inflammatory* medicines: And, laſtly, a fourth kind are found remarkably either to increaſe or diminiſh the vigour of the body, or what is called the *tone* of the ſolids; and have therefore got the name of *tonics* if they increaſe, and *ſedatives* if they diminiſh, this tone.

Some medicines are ſuppoſed neither remarkably to increaſe nor diminiſh the tone of the ſolids; but to perform their office either by correcting ſome morbid matter in the body, or by evacuating it: in the former caſe they are called *alterants*, in the latter *evacuants*.

Theſe are the general diviſions or claſſes into which medicines are commonly divided; but when we begin more particularly to conſider their virtues, a great many inferior diviſions ariſe.—Of the relaxing medicines, ſome, when externally applied, are ſuppoſed only to ſoften the part; and in that caſe are called *emollients*: while others, which have a power of converting the humours ſtagnating in any inflamed part, into pus, are called *maturants*, or *ſuppuratives*. Sedative medicines, externally applied, are ſometimes called *paregorics*: when taken internally, if they take off a ſpaſm then exiſting in the body, they are called *antiſpaſmodics*; if they mitigate pain, *anodynes*; if they produce a quiet ſleep, *hypnotics*; or if they produce a very deep and unnatural ſleep, together with a remarkable ſtupefaction of the ſenſes, they are then called *narcotics*.

Tonic medicines obtain the name of *corroboratives*, *analeptics*, or *nervine* medicines, when they ſlightly increaſe the contractile power of the ſolids; but of *aſtringents*, if they do this in a great degree, eſpecially if at the ſame time that they indurate the ſolids they alſo coagulate the fluids. Some of theſe medicines have received names from their ſuppoſed virtue of promoting the growth of the fleſh, conſolidating wounds, and ſtopping fluxes of blood: but it is now diſcovered that no medicines whatever are endowed with any ſuch powers; and therefore the diviſions into *ſarcotics traumatics*, or *vulneraries*, &c. are ſeldom uſed.—If aſtringent medicines are uſed with an intention to drive, by the conſtriction which they occaſion, any kind of matter from the ſurface towards the internal parts of the body, they are called *repellents*; but if they inſenſiby expel any kind of ſtagnating matter from the parts where it is contained, they are then called *diſcutients*; and laſtly, *ſtimulants*, or *attractives*, if they bring a greater flux of humours to the part to which they are applied.

As to medicines of the inflammatory kind, they are divided into *veſicatories* or bliſters, which by their application raiſe watery bladders on the ſkin; and *catherætics*, *eſcharotics*, or *corroſives*, if they eat into and deſtroy the ſubſtance of the ſolid parts themſelves. Another ſubdiviſion has been added, viz. that of *rubefactive* medicines, or ſuch as only induce a redneſs on the part to which they are applied; but theſe belong to the veſicatories, and what proves only *rubefactive* to one will frequently bliſter another.

The alterants are divided into *abſorbents*, ſuch as by their alkaline quality neutraliſe and deſtroy any acid matter which may be in the ſtomach; and *antiſeptics*, or thoſe which correct any putrid matter in it; *coagulants* when they thicken the humours, and *reſolvents* if they thin them; *heating* medicines when they increaſe the velocity of the blood, and *refrigerating* if they diminiſh it.

The evacuating medicines are divided according to the nature of the humour they evacuate. Thus, if they evacuate the contents of the ſtomach by vomiting, they are called *emetics*; if they induce purging, they are called *cathartics*; if they only evacuate the immediate contents of the inteſtines, they are named *eccoprotics*; or if a moderate evacuation is produced, without ſickneſs or pain, they are called *laxatives*.—The medicines which gently promote the expulſion of humours through the pores of the ſkin, are called *diaphoretics*. If they do this in great quantity and with violence, they are called *ſudorifics*. Such as excite urine, are called *diuretics*. Such as produce their evacuation by the glands of the palate, mouth, and ſalival ducts, are called *ſalivating* medicines; thoſe which promote the evacuation of mucus from the throat, are called *apophlegmatics*; while thoſe which evacuate by the noſe, are called *ptarmics*, *errhines*, *ſternutatories*; and thoſe which promote the menſtrual flux, *emmenagogues*.—To the order of evacuants alſo ſome reduce thoſe medicines which expel any unnatural bodies, as worms, ſtones, and flatus. Thoſe which deſtroy worms are called *anthelmintics*; thoſe which diſſolve the ſtone in the bladder, *lithontriptics*; and ſuch as expel flatus, *carminatives*.

According to theſe diviſions Mr Vogel claſſes the articles of his Materia Medica; but Dr Lews chooſes to arrange them according to the natural qualities of the ſubſtances themſelves, and not their effects on the human body.

1. Writers on the matera medica (he obſerves) have taken great pains in arranging the various articles of which it is compoſed, into different diviſions and ſubdiviſions, according to their real or reputed medicinal powers.

2. It has been imagined, that the whole materia medica is reducible under the three diſtinctions of *alteratives*, *evacuants*, and *reſtoratives*: the firſt comprehending all that has any power to alter the conſtitution, without ſenſibly increaſing or diminiſhing any of the natural evacuations; the ſecond, whatever viſibly promotes thoſe diſcharges; and the third, all that contributes to leſſen them, and make the increaſe greater than the waſte. Theſe diviſions being too general, they are broken into ſubdiviſions; and theſe again are further divided into different claſſes, under more reſtrained denominations, as cardiac, carminative, hyſteric, ſtomachic, &c.

3. Specious as this plan may appear to be, he imagines the execution of it, to any uſeful purpoſe, would require a far more extenſive knowledge of the nature and operation of medicines, than has yet been attained to. A juſt and uſeful method of ſimples is ſcarcely to be expected, while thoſe properties on which the method is founded are imperfectly known, and in many articles only conjectural.

4. In all the arguments that have been hitherto contrived upon this plan, there appears a ſtriking incongruity among the ſeveral articles of which even the ultimate ſubdiviſions are compoſed; ſubſtances extremely diſſimilar being claſſed together, as cantharides and tea, tobacco and bran, hemlock and cowſlips,

Of Arrangement.

ſcurvy-graſs and raiſins, arum root and liquorice, wormwood and parſneps, cinnamon and nettles, raſberries and chalk, artichokes and alum, cloves and coffee, muſtard-ſeed and black cherries, &c. Nor are theſe incongruities to be laid always to the charge of the authors, the nature of the ſyſtem itſelf, rendering them often unavoidable; for the particular effect which entitles a medicine to a particular claſs, may be produced by ſubſtances very diſſimilar, and even oppoſite, in their general powers: thus the alvine excretions are reſtrained by ſtarch, wax, tormentil-root, opium; among the capital diuretics are cantharides, nitre, ſalt, fixt alkaline ſalts, ſquills. It ſhould ſeem, that the method of arrangement cannot be a juſt one which requires ſubſtances ſo diſcordant to be ranked together, and which further requires each of theſe ſubſtances to be ranked over again, in other claſſes, along with other ſubſtances to which they are equally diſcordant.

5. There is alſo a material imperfection in this ſcheme, even in the primary diviſions. Steel and its preparations act, in different circumſtances, both as evacuants and reſtoratives. Mercury and antimony afford, in their different preparations, both evacuants and alteratives; and there are many other drugs which are ſometimes uſed as alteratives, and ſometimes as evacuants: indeed, all evacuants, in diminiſhed doſes, ſeem to act merely as alteratives. It ſhould ſeem therefore, that "the diviſion of the whole materia medica into alteratives, evacuants, and reſtoratives," is a diviſion not founded in nature, even if there was no objection to the vague meaning of the appellations themſelves.

6. Cartheuſer has divided the materia medica on a plan which appears more rational. Inſtead of the operations of medicines in the human body, which are precarious, complicated, and greatly diverſified according to the doſe, the preparation, and the circumſtances of the patient, he takes for the baſis of his arrangement their more ſimple, obvious, and conſtant properties, as bitterneſs, ſweetneſs, aſtringency, acidity, &c. Having conſidered the nature of bitterneſs, for inſtance, in general, be examines what effects medicines poſſeſſed of this property are capable of producing in the body, and in what circumſtances they may be expected to be ſerviceable, and then proceeds to an account of the particular bitters.

7. This method is of real uſe, but its uſe is limited to a ſmall part of the materia medica. There are many of the medicinal ſimples, in which we can diſtinguiſh no prevailing qualities of this kind; there are many, in which different qualities are blended together; and many which, though ſimilar in theſe kinds of qualities, are very diſſimilar in their operations in the human body: thus though gentian and aloes agree in having a bitter taſte, and ſugar and manna in being ſweet, their medicinal virtues are reſpectively very different. Accordingly, the author is obliged in ſome caſes to depart from his general plan, and found the diviſion on the medicinal effects: he makes one claſs of purgatives and emetics, and another of vaporoſe inebriants and narcotics: this laſt claſs conſiſts of tobacco, elder-flowers, ſaffron, opium, and poppy-ſeeds, ſubſtances certainly very diſcordant in all their qualities that relate to medicinal intentions.

8. In this article, inſtead of attempting a medicinal diſtribution of the ſimples, which we apprehend not to be practicable to any good purpoſe, and which, as hitherto executed, ſeems more likely to miſlead the reader than to promote true knowledge, we ſhall take them in the order of the alphabet; and even in this order, we ſhall ſeldom perhaps find ſubſtances more diſſimilar come together, than thoſe which have been joined into one claſs by ſome of the ſyſtematic writers. It may be proper, however, to premiſe ſome general obſervations on certain claſſes of medicines in Cartheuſer's manner, and thus to preſerve the leſs exceptionable parts of his plan, with ſome amendments.

Acids.

Art. I. Acids.

Claſs 1. *Vegetable*
- *native;* as ſorrel, wood-ſorrel, juice of lemon, oranges, barberries, and other fruits.
- *produced by fermentation;* as vinegar and tartar.

Claſs 2. *Mineral:* the acids of vitriol, nitre, and common ſalt.

9. The medical effects of acids, duly diluted and given in proper doſes, are, to cool, quench thirſt, correct a tendency to putrefaction, and allay inordinate motions of the blood. By theſe qualities, in hot bilious temperaments and inflammatory diſorders, they frequently reſtrain immoderate hæmorrhages, and promote the natural ſecretions; in ſome kinds of fever, they excite a copious diaphoreſis, where the warm medicines, called *alexipharmic*, tend rather to prevent this ſalutary diſcharge.

10. Vegetable acids, particularly the native juices of certain plants and fruits, have ſome degree of a ſaponaceous quality; by means of which they attenuate or diſſolve viſcid phlegm and deterge the veſſels, and thus prove ſerviceable in ſundry chronical diſorders. Inveterate ſcurvies have ſometimes yielded to their continued uſe, eſpecially when given in conjunction with medicines of the acrid or pungent kind: experience has ſhown, that the acrid antiſcorbutics have much better effects when thus managed than when exhibited by themſelves; hence in the *ſucci ſcorbutici* of our diſpenſatory, Seville orange juice is uſefully joined to that of the *cochlearia* and *naſturtium*.

11. The mineral acids inſtantly coagulate blood; the vegetable dilute it, even when inſpiſſated or thickened by heat; in which ſtate, watery liquors will not mingle with it. Hence in ſome fevers, where water runs off by the kidneys almoſt as pale and inſipid as it was drank, vegetable acids render the urine of the due colour and quality. The mineral acids (the ſpirit of nitre in particular) combined with vinous ſpirits, have a like effect.

12. Acids are prejudicial in cold, pale, phlegmatic habits, where the veſſels are lax, the circulation languid, bile deficient, and the power of digeſtion weak. In theſe caſes, an acid is often generated in the ſtomach, from milk and moſt vegetable foods; which, whilſt it continues in the firſt paſſages, occaſions uneaſineſs about the ſtomach, flatulencies, ſometimes griping pains of the bowels, and vomitings.

ART. II. INSIPID EARTHS *capable of* ABSORBING ACIDS.

Oyſter-ſhells,
Crabs claws and eyes ſo called,
Coral, red and white,
Pearls,
Bezoar,
Chalk,
Some marles,
Lime-ſtones,
Marbles,
Spars.

13. THE virtues of theſe ſubſtances are, to abſorb or deſtroy acidities in the firſt paſſages, and conſequently to remove ſuch diſorders as proceed from that cauſe. The cordial, alexipharmic, antifebrile, and other like virtues attributed to theſe medicines, appear to have little foundation; or at beſt, are only ſecondary ones. When united with the acid, they form a neutral ſaline compound, poſſeſſing ſome degree of an aperient and detergent quality, though too inconſiderable to be in general regarded.

14. The abſorbent earths were all ſtrangers to medicine in the earlier times; and their uſe does not ſeem to have been eſtabliſhed before the laſt century; when ſome practitioners, from an opinion that moſt kinds of diſeaſes proceeded from a preternatural acid, introduced a great variety of antacid bodies, both of the earthy and ſaline kind, and very liberally exhibited them on almoſt every occaſion.

15. It is certain, that in children, and adults of a weak conſtitution, and whoſe food is chiefly of the vegetable aceſcent kind, ſundry diſorders are occaſioned by acidities; theſe readily diſcover themſelves by ſour eructations, the pale colour of the face, and in children by the ſour ſmell and green colour of the alvine fæces, which are ſometimes ſo manifeſtly acid as to raiſe a ſtrong efferveſcence with alkaline ſalts. In theſe caſes, and theſe only, the uſe of abſorbent earths is indicated.

16. If there are really no acid juices in the ventricle, theſe earths are apt to concrete with the mucous matter uſually lodged there, into hard indiſſoluble maſſes; which have ſometimes been thrown up by vomit, or found in the ſtomach upon diſſection. Hence indigeſtion, loſs of appetite, nauſea, vomiting, obſtructions of the bowels, and other diſorders. Sometimes the ſtomach and inteſtines have been found lined with a cruſt, as it were, of theſe earthy bodies, which muſt not only have prevented the ſeparation of the gaſtric liquor, but likewiſe have cloſed the orifices of the lacteal veſſels, ſo as to obſtruct the paſſage of the chyle into the maſs of blood.

17. Some ſuppoſe the earthy powders capable (without the concurrence of any acid) of paſſing the lacteals along with the chyle; and allege, in ſupport of this opinion, that, when triturated with water, they are in part taken up and carried with it through a filter of paper; the filtrated liquor leaving, upon evaporation, a portion of whitiſh earthy matter. This experiment (allowing the conſequence to be juſtly drawn from it) is itſelf erroneous: the reſiduum proceeds from the earth naturally contained in the water, not from that employed in the experiment; for if pure diſtilled water be made uſe of, it will leave no reſiduum, though long triturated, or digeſted with the earth.

18. All theſe bodies, particularly thoſe of the animal kind, contain, beſides their purely alkaline earth, a portion of glutinous matter. An inſtance of this we have in crabs-eyes, which if macerated in the weaker acids, or in the ſtronger ſufficiently diluted with water, the earthy part will be diſſolved, and the animal-glue remain in form of a ſoft tranſparent mucilage. The glutinous ſubſtance increaſes their tendency to concrete in the ſtomach; and thence thoſe which contain leaſt thereof ſhould be preferred to the others. The mineral earths contain the leaſt of this kind of matter, and ſome of them are very eaſy of ſolution; chalk, for inſtance; which may therefore be given with greater ſafety than the animal-abſorbents. Theſe ſubſtances, diveſted of their conglutinating matter by means of fire, are reduced into acrimonious calces or limes, and thus become medicines of a different claſs.

19. The teeth, bones, hoofs, and horns of animals conſiſt of the ſame principles with the animal-abſorbents above-mentioned, but combined in different proportions: the quantity of gelatinous matter is ſo large, as to defend the earthy part from the action of weak acids; whilſt the earth, in its turn, protects the gluten from being eaſily diſſolved by watery liquors. Hence theſe bodies in their crude ſtate, though recommended as poſſeſſing ſingular virtues, are not found to have any virtue at all.

20. Experiments have been made for determining the degree of ſolubility, or comparative ſtrength of theſe earths; the principal of which are arranged in the two following tables, one taken from Langius, and the other from Homberg.

TABLE *of the quantity of Acid deſtroyed by different Abſorbents.*

Ten grains of	Some kinds of Limeſtones	deſtroyed the acidity of	160	Drops of Spirit of Salt.
	Oyſter ſhells		120	
	Chalk		100	
	Shells of Garden-ſnails		100	
	Calcined Cray-fiſh		100	
	Pearls		80	
	Tooth of the Sea-horſe		80	
	Volatile Salts		80	
	Fixt Salts		60	
	Coral, red and white		60	
	Crabs-eyes		50	
	Egg-ſhells		50	
	Mother of Pearl		50	
	Crabs-claws		40	
	Jaw-bone of the Pike fiſh		30	

TABLE *of the quantity of Abſorbent Earths ſoluble in Acids.*

576 grains of Spirit of Salt diſſolved of	Crabs-eyes	216
	Mother of Pearl	144
	Pearls	128
	Oyſter-ſhells	156
	Hartſhorn	165
	Coral	186
	Oriental Bezoar	118
	Occidental Bezoar	123
	Quick Lime	199
	Slacked Lime	193
576 grains of Spirit of Nitre diſſolved of	Crabs-eyes	297
	Mother of Pearl	202
	Pearls	219
	Oyſter-ſhells	236
	Hartſhorn	234
	Coral	233
	Oriental Bezoar	108
	Occidental Bezoar	144
	Quick Lime	180
	Slacked Lime	216

Indiſſoluble Earths.

24. Theſe experiments do not ſufficiently aſcertain the point intended by them: in the firſt ſett, the quantity of acid is too vague and indetermined; in the ſecond, we are not told whether the acid was perfectly ſaturated; and in both, the acids made uſe of were ſo very different from any that can be ſuppoſed ever to exiſt in the human body, that little can be concluded from them with regard to the medical effects of theſe abſorbents. Trial ſhould have been made with the mild vegetable acids, as the juices of certain fruits, ſour fermented liquors, or rather with ſour milk. Nevertheleſs theſe tables, though not ſo perfect as could be wiſhed, have their uſe in the hands of ſuch as can make proper allowances.

ART. III. EARTHS NOT DISSOLUBLE *in Acids, or other liquors.*

These may be ranged in two claſſes.

Claſs 1. *Hard cryſtalline earths:* as the ruby, garnet, emerald, ſapphire, hyacinth, and other precious ſtones; cryſtal, flint, &c.

25. THESE kinds of ſubſtances were introduced into medicine, and many fabulous virtues attributed to them by the ſuperſtition of the earlier ages. Some of them are ſtill preſerved in foreign pharmacopœias, but at length very juſtly expunged from ours, notwithſtanding what ſome late writers of repute ſpeak of their medical virtue. Theſe indiſſoluble hard bodies are not capable of producing any other effect, than by their rigid angular particles (which, though levigated with the utmoſt care, the microſcope ſtill diſcovers in them) to offend or wound the inteſtines. In levigation, they wear off ſo much from the hardeſt marble inſtruments, as will equal or exceed their own weight: from this circumſtance we may account for their having ſometimes appeared to act as abſorbents. Some of theſe ſtones, expoſed to a vehement fire, become in ſome meaſure friable; but nevertheleſs remain indiſſoluble. Moſt of the coloured ones by this treatment loſe their colour; and in this ſtate, prove nearly of the ſame quality with common cryſtal: ſuch are, the ſapphire, emerald, amethyſt, and cornelian. Others melt into a blackiſh vitreous matter, from which a portion of iron is obtainable by proper fluxes; as the hyacinth and garnet. Geoffroy concludes from hence, that theſe ſtones really poſſeſs ſome medical virtues, depending upon their metallic part; but the quantity of metallic matter, ſufficient to give them a conſiderable tinct, is ſo exceedingly ſmall, and ſo incloſed in a ſtony matter not at all ſoluble by any of the known menſtrua, as ſcarce to admit of any poſſibility of its acting in the human body.

Claſs 2. *Softer earths;* the talky, gypſeous, and argillaceous.

26. THE talcs and gypſums have rarely been uſed as medicines. Some of the former, from their unctuous ſoftneſs and ſilver hue, ſtand recommended externally as coſmetics; and ſome of the latter, on little better foundation, internally as aſtringents. But they have long been deſervedly rejected by the judicious practitioners. They ſeem to poſſeſs the ill qualities of the alkaline earths, (concreting with the mucus of the ſtomach, &c.) without any of their good ones.

27. Several of the clays, boles, and terræ ſigillatæ, were highly celebrated by the ancients as aſtringents and alexipharmics, and ſome of them ſtill continue in eſteem; though it is certain they have no great claim to the virtues that have been attributed to them. Their real effects are, to give a greater degree of conſiſtency to the fluids in the firſt paſſages, and in ſome meaſure defend the ſolids from their acrimony.

28. Moſt of theſe bodies contain, beſides the tenacious indiſſoluble earth, which is their principal characteriſtic, (1.) A portion of an earth ſoluble in acids, ſimilar to thoſe of the firſt ſection. (2.) Of acid, ſeparable by diſtillation in a ſtrong fire: this acid is always of the ſame nature with that obtained from vitriol, ſulphur, and alum. (3.) The coloured ones contain likewiſe ſmall quantities of iron, reducible, by inflammable fluxes, into its metallic form. In conſequence of the firſt of theſe ingredients, theſe earths may be looked upon in ſome meaſure as abſorbent: the acid appears to be united with a part of the abſorbent earth into a ſaline compound, approaching to an aluminous nature; whence they have ſome degree of aſtringency: whether they receive any peculiar virtue from the iron, is greatly to be doubted; ſince it is in a very crude ſtate, and in quantity extremely ſmall.

29. Theſe earths unite with water into a turbid liquor, ſlippery and ſmooth to the touch, and remain for ſome time ſuſpended; the ſand, grit, or other groſſer matters, which are often found naturally mingled with them, ſubſiding. They may be freed by means of acids from their alkaline earth; by coction in water, from their ſaline matter; and the coloured ones from their iron by digeſtion in aqua regis, the only menſtruum we are acquainted with that will extract the ferrugineous matter of argillaceous and bolar earths. This purified, they have all nearly the ſame appearance and qualities. Expoſed to a ſtrong fire, they loſe their ſoft glutinous quality, and are reduced into hard maſſes, indiſſoluble as at firſt.

ART. IV. GLUTINOUS *vegetable and animal ſubſtances.*

Claſs 1. *Vegetable.*

Pure gums:	Vegetables abounding with mucilage:
Tragacanth,	Orchis root,
Seneca,	Althæa root,
The gums of cherry, plum, and other European trees.	Quince-ſeeds, &c.

30. GUMS and mucilages are glutinous vegetable productions, of no particular taſte or ſmell, ſoluble in water, but not in vinous ſpirits or in oils. They differ from one another, only in degree of tenacity: the more tenacious are called *gums;* thoſe which are leſs ſo, *mucilages*. The firſt naturally exude from certain trees and ſhrubs; the latter are extracted by art. Almoſt all vegetable ſubſtances contain ſome portion of theſe, which, after the reſinous part has been extracted by ſpirit, may be ſeparated from the remaining matter by means of water.

31. The general virtues of theſe kinds of ſubſtances are, to thicken the fluids, and defend the ſolids from them when grown ſharp or corroſive. Hence their uſe in a thin acrimonious ſtate of the juices, and where the natural mucus of the inteſtines is abraded.

ctuous
ſtances.

Claſs 2. *Animal.*

32. Most animal-ſubſtances (the fat excepted) contain a viſcous matter, in many reſpects ſimilar to the foregoing, and capable of being extracted by ſtrong coction in water.

33. Animal glues and gellies have the general qualities of the vegetable gums and mucilages; with this difference, that the former are more nutrimental, and apt to run into a putrid ſtate. Conſidered as the ſubjects of chemiſtry, the difference betwixt them is very great: thoſe of the animal kind are changed by fire into a volatile alkaline ſalt, and a fetid oil; the vegetable into an acid liquor, and a very ſmall portion of oily matter, conſiderably leſs fetid than the former.

Art. V. *Soft* Unctuous *Subſtances.*

Claſs 1. *Inſipid vegetable oils; and ſubſtances abounding with them,* as almonds, and the kernels of moſt fruits; linſeed, and the medullary part of ſundry other ſeeds.

Claſs. 2. *Animal fats;* as ſpermaceti.

34. Unctuous vegetables unite with water, by trituration, into a milky liquor; and give out their oil upon expreſſion.—Theſe kinds of oils and animal-fats diſſolve not in any menſtruum except alkaline ones; which change their quality, and reduce them into a ſoap, diſſoluble in water, but more perfectly in vinous ſpirits: from this compound, the oil may, by a ſkilful addition of acids, be recovered in a purer ſtate than before, and rendered ſoluble, like eſſential oils, in ſpirit of wine.

35. The medical virtues of theſe ſubſtances are, to obtund acrimonious humours, and to ſoften and relax the ſolids: hence their uſe internally, in tickling coughs, heat of urine, pains, and inflammations; and externally in tenſion and rigidity of particular parts. The milky ſolutions, commonly called *emulſions*, tho' much leſs emollient than the oils themſelves or animal-fats, have this advantage, that they may be given in acute or inflammatory diſtempers, without danger of the ill conſequences which the others might ſometimes produce: fats and oils, kept in a degree of heat no greater than that of the human body, ſoon become rancid and acrimonious; whilſt emulſions tend rather to grow ſour.

Art. VI. Astringents.

Galls,
Tormentil-root,
Biſtort root,
Balauſtines,
Terra Japonica,
Acacia, &c.

36. Astringent ſubſtances are diſtinguiſhed by a rough auſtere taſte; and changing ſolutions of iron, eſpecially thoſe made in the vitriolic acid, of a dark purple or black colour.

37. Aſtringents yield their virtues by infuſion both to water and vinous ſpirits, generally in greateſt perfection to the former. Oils extract nothing from them; nor do they give over any of their virtue in diſtillation: nevertheleſs their aſtringency is conſiderably abated by evaporating decoctions of them to the conſiſtence of an extract, and totally deſtroyed by long keeping.

Aſtringents
and
Sweets.

38. The medical effects of theſe kinds of ſubſtances are, to conſtringe the fibres, and incraſſate or lightly thicken the juices. Their more experienced uſe is in diſorders proceeding from a debility or flaccid ſtate of the ſolids; in hæmorrhages, from a thinneſs of the blood, laxity or rupture of the veſſels; in preternatural diſcharges of other kinds, after the offending matter has been duly corrected or evacuated; and in external relaxations.

39. In ſome caſes, they produce the effects of aperients; the veſſels, conſtringed and ſtrengthened by them, being enabled to protrude the circulating juices with greater force.

40. A good deal of caution is requiſite in the uſe of theſe medicines, eſpecially thoſe of the more powerful kind. In plethoric habits, inveterate obſtructions, critical evacuations, and in all kinds of fluxes in general before the morbific matter has been expelled, or where there is any ſtricture or ſpaſmodic contraction of the veſſels, aſtringents prove eminently hurtful. Where critical dyſenteries or diarrhœas are reſtrained by ſtyptics, the acrimonious matter, now confined in the inteſtines, corrodes or inflames them; and ſometimes occaſions a gangrene of the parts.

Art. VII. Sweets.

Sugar,
Honey,
Raiſins,
Liquorice, &c.

41. The vegetable ſweets are a very numerous tribe; almoſt every plant that has been examined, diſcovering in ſome of its parts a ſaccharine juice. The bottoms of flowers, and moſt kinds of ſeeds and grain when they begin to vegetate, are remarkably ſweet.

42. Vegetable ſweets are extracted both by water and vinous ſpirits, moſt readily by the firſt, but in greateſt perfection by the latter. Nothing of their taſte ariſes in diſtillation with either of theſe liquors: nevertheleſs, by long boiling with water they become ſomewhat leſs agreeable; but are not much injured by being treated in the ſame manner with rectified ſpirit.

43. The purer ſweets, as ſugar, promote the union of diſtilled oils with watery liquors, and prevent the ſeparation of the butyraceous part from milk: from this quality, they are ſuppoſed to unite the unctuous part of the food with the animal juices. Hence ſome have concluded, that they increaſe fat: others, that they have a contrary effect, by preventing the ſeparation of the unctuous matter which forms the fat from the blood: and others, that they render the juices thicker and more ſluggiſh, retard the circulation and cuticular excretion, and thus bring on a variety of diſorders. But ſweets have not been found to produce any of theſe effects in any remarkable degree: common experience ſhows, that their moderate, and even liberal, uſe is at leaſt innocent; that they reconcile, not only to the palate, but to the ſtomach alſo, ſubſtances of themſelves diſguſtful to both; and thus render ſalutary what would otherwiſe be injurious to the body.

44. The unctuous and mucilaginous ſweets, as the impure ſugars, liquorice, &c. have a conſiderable degree of emollient and lubricating virtue.—Thoſe ac-

companied with a manifeſt acid, as in the juices of moſt ſweet fruits, are remarkably relaxing; and if taken immoderately, occaſion diarrhœa and dyſenteries, which ſometimes have proved fatal.

Art. VIII. Acrids.

45. Acrids are ſubſtances of a penetrating pungency. Applied to the ſkin, they inflame or exulcerate it: chewed, they occaſion a copious diſcharge of ſaliva: and ſnuffed up the noſe, they provoke ſneezing.

46. Theſe ſubſtances, conſidered as the ſubjects of pharmacy, may be divided into three claſſes,

Yielding their acrimony
1. In diſtillation with water: as horſe-radiſh, muſtard, ſcurvy-graſs, &c.
2. By infuſion only: as the greater celandine, pyrethrum, &c.
3. Neither to infuſion, nor diſtillation: as arum and dracunculus.

47. The general effects of acrid medicines are, to ſtimulate the veſſels, and diſſolve tenacious juices. In cold leucophlegmatic habits, ſtagnations of the fluids, and where the contractile power of the ſolids is weak, they prove powerful expectorants, deobſtruents, diuretics, and emmenagogues; and if the patient is kept warm, ſudorifics. In hot bilious conſtitutions, plethoric habits, inflammatory diſtempers, where there is already a degree of irritation, where the juices are too thin and acrimonious, or the viſcera unſound, theſe ſtimulating medicines prove highly prejudicial, and never fail to aggravate the diſeaſe.

48. Certain acrid ſubſtances have been lately recommended in dry convulſive aſthmas: of the efficacy of the ſquill in particular, for the cure of this diſorder, ſeveral inſtances are related in the *Commercium Literarium* of Norimberg for the years 1737 and 1739. Cartheuſer thinks, that not the aſthma itſelf, but a particular effect of it, was removed by this medicine. He obſerves, that in all aſthmas the free circulation of the blood through the pulmonary veſſels is impeded; and hence, during every paroxyſm, the lungs are in a kind of œdematous ſtate: that if this œdema, becoming habitual, remains after the fit is over, it is either perpetually occaſioning freſh ones, or gives riſe to a dropſy of the breaſt: that acrid medicines, by removing the œdema, remove what was originally an effect of the aſthma, and in time a cauſe of its aggravation.

Art. IX. Aromatics.

49. Aromatics are ſubſtances of a warm pungent taſte, and a more or leſs fragrant ſmell. Some of the ſpices are purely aromatic, as cubebs, pepper, cloves; ſome ſubſtances have a ſweetneſs mixed with the aromatic matter, as angelica root, aniſeed, fennel ſeed; ſome an aſtringency, as cinnamon; ſome a ſtrong mucilage, as caſia lignea; ſome a bitterneſs, as orange-peel. The aromatic matter itſelf, contained in different ſubjects, differs alſo not a little in its pharmaceutic properties. It is extracted from all by rectified ſpirit of wine; from ſome in great part, from others ſcarcely at all, by water. The aromatic matter of ſome ſubjects, as of lemon-peel, riſes wholly in diſtillation both with ſpirit and water; that of others, as cinnamon, riſes wholly with water, but ſcarcely at all with ſpirit; while that of others, as pepper, is in part left behind after the diſtillation of water itſelf from the ſpice.

50. With regard to the general virtues of aromatics, they warm the ſtomach, and by degrees the whole habit; raiſe the pulſe, and quicken the circulation. In cold languid caſes, phlegmatic habits, and a weak flaccid ſtate of the ſolids, they ſupport the vis vitæ, and promote the ſalutary ſecretions. In hot bilious temperaments, plethoric habits, inflammatory indiſpoſitions, dryneſs and ſtrictures of the fibres, they are generally hurtful.

Art. X. Bitters.

Gentian root,
Hops,
Leſſer centaury,
Carduus, &c.

51. Bitters for the moſt part yield their virtue both to watery and ſpirituous menſtrua; ſome more perfectly to one, and others to the other. None of the ſubſtances of this claſs give over any thing conſiderable of their taſte in diſtillation, either to water or to ſpirit; their bitterneſs remaining entire, and frequently improved, in the extracts. Such as are accompanied with flavour, as wormwood, may by this proceſs be reduced into ſimple flavourleſs bitters.

52. Theſe ſubſtances participate of the virtues of aſtringents and aromatics. Their general effects are, to conſtringe the fibres of the ſtomach and inteſtines, to warm the habit, attenuate the bile and juices in the firſt paſſages, and promote the natural evacuations, particularly of ſweat and urine. In weakneſs of the ſtomach, loſs of appetite, indigeſtion, and the like diſorders, proceeding from a laxity of the ſolids, or cold ſluggiſh indiſpoſition of the juices, theſe kinds of medicines do good ſervice. Where the fibres are already too tenſe and rigid, where there is any immoderate heat or inflammation, bitters very ſenſibly increaſe the diſtemper; and, if their uſe is continued, communicate it to the kidneys: hence the urine becomes high-coloured, ſmall in quantity, and at length ſuppreſſed; a dropſy ſoon ſucceeding. If the kidneys were before ſo lax as to remain now uninjured, yet the other viſcera become gradually more and more rigid, and a tabes is at length brought on.

53. Bitter ſubſtances deſtroy inſects, and prevent putrefaction. Hence they are recommended as anthelmintic, and externally as antiſeptics.

Art. XI. Emetics *and* Cathartics.

Hellebore,
Julip,
Ipecacoanha,
Colocynth,
Scammony,
Gamboge, &c.

54. Theſe ſubſtances conſiſt of a reſinous part, in which the purgative or emetic quality reſides: and a gummy ſaline one, which acts chiefly as a diuretic. The firſt is extracted or diſſolved by vinous ſpirits; the latter by water. Nothing ariſes in diſtillation from either.

55. The acrid reſins, exhibited by themſelves, tenaciouſly adhere to the coats of the inteſtines, by their ſtimulating power irritate and inflame them, and thus produce ſundry violent diſorders. Hoffman relates,

lates, that he has ſometimes obſerved convulſions, and a paralyſis of both ſides, from their uſe.

56. Theſe inconveniencies may be avoided, by previouſly triturating them with ſubſtances capable of dividing their tenacious texture, and preventing their adheſion: by this means, they become mild and ſafe, operate without diſturbance, and at the ſame time more effectually anſwer the purpoſes intended by them.

57. Some have endeavoured to correct the ill quality of the reſinous purgatives, by the addition of acids and aromatic oils. Acids weaken their power, but have no other effect than what a diminution of the doſe would equally anſwer. The pungent eſſential oils may ſerve to warm the ſtomach, make the medicine ſit eaſier, and thus prevent the nauſea, which ſometimes happens; but as ſoon as the reſin begins to exert itſelf in the inteſtines, theſe oils, inſtead of correcting, increaſe its virulence; being themſelves apt to occaſion the inconveniencies which they are here intended to prevent, an irritation and inflamation of the bowels. Alkaline ſalts or ſoaps have a better effect; as they diſpoſe the reſin to ſolution, and promote its operation.

58. The medicines of this claſs ſeem to act by liquefying the juices, and ſtimulating the coats of the ſtomach and inteſtines. If the irritation is ſtrong and ſudden, their action is quick and upwards: if ſlower, downwards. Cathartics given in a liquid form, or in very ſenſible habits, often prove emetic; and emetics, where mucus abounds, cathartic. They operate more violently in robuſt conſtitutions, than in thoſe of a contrary temperament; the veſſels being in the former more tenſe and rigid, and conſequently leſs capable of bearing an equal degree of irritation.

59. The action of theſe medicines is extended beyond the primæ viæ: This appears evident from the increaſe of the pulſe which always accompanies their operation; and from the common obſervation of children being purged by the milk, if the nurſe has taken a cathartic. Some of them, particularly hellebore, are ſaid to purge, if only applied externally in iſſue.—Purgatives, even of the more powerful kind, exhibited in ſuitable ſmall doſes, in conjunction with the milder aperients, may be introduced into the habit, ſo as to prove notable deobſtruents, diuretics, and diaphoretics, without acting ſenſibly by ſtool.

A CATALOGUE *of the* SIMPLES *uſed in the* MATERIA MEDICA, *exhibiting at one view their* TECHNICAL NAMES, ENGLISH NAMES, PARTS USED IN MEDICINE, VIRTUES, *and the different* PREPARATIONS FROM THEM.—*The particular methods of making the* Preparations *and all* Compound Medicines *are ſhown under the article* PHARMACY.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Abies ruber, (*Pinus abies*, Lin.)	The fir-tree.	The wood, tops, and cones.	Diuretic and diaphoretic.	A decoction.
Abrotanum fæmina (*Santolin, chamæcypar.* Lin.)	Lavender cotton.	The leaves.	Stimulant, detergent, and anthelmintic.	Decoction.
Abrotanum mas, (*Artemiſia abrotanum*, Lin.)	Southernwood.	The leaves.	Stimulant, detergent, aperient, and ſudorific.	Decoction.
Abſinthium Romanum (*Artemiſia pont.* Lin.)	Roman wormwood.	The leaves and tops.	Stomachic.	An oil, extract of conſerve, and ſeveral diſtilled waters. They alſo enter the common fomentation and green oil.
Abſinthium vulgare (*Artemiſia abſinthium, Lin.*)	Common wormwood.	The leaves.	Stomachic.	
Acacia Germanica (*Prunus ſpinoſa*, Lin.)	The ſloe.	Inſpiſſated juice.	Aſtringent.	
Acacia vera (*Mimoſa nilotica*, Lin.)	Acacia.	Inſpiſſated juice.	Aſtringent.	
Acetoſa, (*Rumex acetoſ.* Lin.)	Sorrel.	Juice.	Aſtringent and antiſcorbutic.	An eſſential ſalt for taking out ſpots in clothes.
Acetoſella (*Oxalis acetoſel.* Lin.)	Wood ſorrel.	The leaves.	Aſtringent and antiſcorbutic.	A conſerve.
Acetum.	Vinegar.		Cordial and refrigerant.	A diſtilled ſpirit.
Aconitum (*Aconit. napell.* Lin.)	Wolf's-bane.	The leaves.	Narcotic.	
Adianthum verum (*Adianth. capill. Ven.* Lin.)	Maiden-hair.	The leaves.	Attenuating and aperient.	Decoction.
Aër dephlogiſticus.	Dephlogiſticated air.		Suppoſed to be antiſeptic and corroborative.	

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Aër mephiticus.	Fixed air.		Antiſeptic.	
Aër nitroſus.	Nitrous air.		Very antiſeptic.	
Æs. See *Cuprum*.	Braſs. See *Copper*.			
Agaricus, (*Boletus pinilaricis*, Lin.)	Agaric.		Cathartic.	An aqueous extract, but now much diſuſed.
Agaricus quercinus.	Agaric of the oak, touchwood and ſpunk.		Styptic.	
Agrimonia, (*Agrimonia Eupator.* Lin.)	Agrimony.	The leaves.	Attenuant and tonic.	
Albumen ovi.	White of an egg.		Diſcutient.	
Alchemilla, (*Alchemilla vulg.* Lin.)	Ladies-mantle.	The leaves.	Aſtringent.	
Alkekengi, (*Phyſalis*, Lin.)	Winter-cherry.	The fruit.	Aperient and diuretic.	
Alliaria, (*Eryſimum*, Lin.)	Sauce-alone, or Jack-by-the-hedge.	The leaves.	Sudorific and antiſeptic.	
Allium, (*Allium ſativum*, Lin.)	Garlic.	The roots.	Stimulant, attenuant, and diuretic.	A ſyrup and oxymel.
Aloes, (*Aloe*, Lin.)	Aloes.	Inſpiſſated juice.	Cathartic.	Ingredient in ſeveral tinctures and pills.
Alſine, (*Alſine med.* Lin.)	Chickweed.	The leaves.	Refrigerant.	
Althæa.	Marſhmallow.	The root.	Emollient.	A ſyrup and ointment.
Alumen.	Alum.	The whole.	Strongly aſtringent	A ſtyptic powder, ſtyptic water, whey, &c.
Ambragriſea.	Ambergriſe.	The whole.	A high cordial.	A tincture or eſſence.
Ammi vulgaris.	Biſhop's weed.	The leaves.	Stimulant.	An ingredient in the theriaca.
Amomum verum.	True amomum.	The ſeeds.	Aromatic.	An ingredient in the theriaca.
Amomum vulgare, (*Siſon*, Lin.)	Baſtard ſtone-parſley.	The ſeeds.	Carminative and diuretic.	
Amygdala, (*Am. com.* Lin.)	Sweet and bitter almonds.	The fruit.	Relaxing.	Expreſſed oil and emulſion.
Amylum.	Starch.		Aſtringent.	
Anacardium occidentale.	Caſhew-tree.	The nuts.	Corroſive.	
Anacardium orientale (*Avicen. officinalis*, Lin.)	Malacca bean.	The nuts.	Tonic and cordial, but very doubtful.	A confection.
Anagallis.	Pimpernel.	The leaves.	Sudorific and Nervine.	Extract, or inſpiſſated juice.
Ananas, (*Bromelia*, Lin.)	The pine-apple.	The fruit.	Refrigerant.	
Anchuſa.	Alkanet.	The root.	Only uſed for its colour.	
Anethum.	Dill.	The ſeeds.	Carminative.	Diſtilled oil, water, and ſpirituous extract.
Angelica.	Angelica.	The roots, leaves, and ſeeds.	Aromatic.	Several compound waters.
Anguillæ hepar.	Eel's liver.		Diuretic and tonic, (*Boerhaave.*)	
Aniſum, (*Aniſ. pimpernell.* Lin.)	Aniſe.	The ſeed.	Aromatic and tonic.	An eſſential oil, a ſpirituous compound water, &c.
Anthora, (*Aconit. anthor.* Lin.)	Wholeſome wolfsbane.	The roots.	Cathartic and anthelmintic, but uncertain.	
Antimonium.	Antimony.		Diaphoretic, cathartic, emetic, or cauſtic.	A number of chemical preparations. See CHEMISTRY, n° 211, 250, 449,—459. KERMES *Mineral*, and REGULUS *of Antimony*.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Aparine, (*Gallium aparine*, Lin.)	Gooſegraſs, or clivers.	The leaves.	Aperient.	
Apis.	The bee.	The whole inſect powdered.	Diuretic.	
Apium, (*Apium graveol.* Lin.)	Smallage.	The roots.	Carminative.	
Aqua ferrata.	Water in which hot iron hath been quenched.		Tonic.	
Aqua marina.	Sea-water.		Cathartic and alterative.	
Aquæ minerales.	Mineral waters.		Tonic and alterative.	
Aquæ ſulphureæ.	Sulphureous waters.		Alterative.	
Argentina, (*Potentill. argentin.* Lin.)	Silverweed.	The leaves.	Corroborant.	
Argentum vivum.	Quickſilver.		A moſt powerful alterant.	Several chemical preparations; ſee CHEMISTRY, n° 154, 207, 251, 256, 417, 421. An ingredient in ſeveral other officinal preparations.
Ariſtolochia longa, rotunda, et tenuis.	Birthwort.	The roots.	Attenuating and ſtimulant.	
Armeniaca, (*Prunus Armeniac.* Lin.)	The plum-tree.	The fruit.	Refrigerant.	
Arſenicum.	Arſenic.		Corroſive.	
Artemiſia, (*Artemiſia vulg.* Lin.)	Mugwort.	The leaves.	Antiſpaſmodic.	Infuſion.
Arum.	Wake-robin.	The root.	Stimulant.	A compound powder.
Aſarum.	Aſarabacca.	The roots and leaves.	Errhine, cathartic, and emetic.	A compound powder.
Aſparagus.	Aſparagus.	The root.	Suppoſed diuretic, but uncertain.	
Aſperula.	Woodruff.	The flowers.	Attenuant and aperient.	
Aſphodelus.	Aſphodel, or king's ſpear.	The roots.	Emollient and ſuppurative.	
Atriplex, (*Chenonopod. vulvar.* Lin.)	Stinking orach.	The leaves.	Antiſpaſmodic.	A ſpirituous tincture, decoction, or conſerve, recommended by Tournefort and others.
Avena.	Oats.	The grain.	Emollient.	Decoction.
Aura electrica.	Electricity.		A violent ſtimulant.	
Aurantia curſlavenſia.	Curaſſow oranges, or apples.	The fruit.	Stomachic.	Ingredients in ſeveral ſtomachic tinctures.
Aurantium, (*Citrus aurant.* Lin.)	The orange.	The leaves, fruit, and flowers.	Cordial, ſtomachic, and refrigerant.	An eſſential oil, a diſtilled water, and a conſerve.
Auricula Judæ, (*Tremell. verruc.* Lin.)	Jews-ears.	The whole.	Purgative, or aſtringent; uncertain.	
Auripigmentum.	Orpiment.		Corroſive, but leſs ſo than arſenic.	
Auxungia viperina.	Viper's fat.		Emollient.	
Balauſtia, (*Punica granat.* Lin.)	Balauſtine, or double-flowered pomegranate tree.	The flowers.	Aſtringent.	Ingredient in a powder.
Balſamita, (*Tanacetum balſaminum*, Lin.)	Coſtmary.	The leaves.	Aromatic.	

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Balſamum Canadenſe.	Balſam of Canada.		Diuretic and tonic.	
Balſamum Copayvæ.	Balſam of Copivi.		Diuretic and tonic.	An empyreumatic oil, and an ingredient in ſome tinctures.
Balſamum Gileadenſe.	Opobalſam, or balm of Gilead.		Said to be a moſt extraordinary vulnerary.	
Balſamum Peruvianum.	Balſam of Peru.		A fine warm aromatic.	An ingredient in many tinctures, and ſome ointments.
Balſamum Tolutanum.	Balſam of Tolu.		Aromatic and corroborant.	An ingredient in ſeveral tinctures, elixirs, and a kind of pectoral pills.
Bardana major, (*Arctium lappa*, Lin.)	Burdock.	The roots and ſeeds.	Aperient, diuretic, and ſudorific.	Decoction.
Bechen album, (*Centaurea bechen*, Lin.)		The root.	Stimulant.	
Bechen rubrum, (*Statice limon.* Lin.)		The root.	Stimulant.	
Belladona, (*Atroph. belladon.* Lin.)	Deadly nightſhade.	The juice.	Narcotic.	An extract of the juice.
Bellis minor, (*Bell. peren.* Lin.	Common daiſy.	The leaves.	Attenuant.	
Berberis, (*Berber. vulgar.* Lin.)	Barberry.	The bark and fruit.	Aſtringent.	A jelly.
Beta, (*Bet. vulg.* Lin.)	The beet.	The leaves.	Cathartic and errhine.	
Betonica.	Betony.	The leaves.	Corroborant.	
Bezoar.	Bezoar-ſtone.		Many virtues falſely aſcribed to it; now found to be only an abſorbent.	
Bilis animalis.	The gall or bile of animals.		Cathartic.	
Biſtorta, (*Polygon. biſtort.* Lin.)	Biſtort or ſnakewort.	The roots.	Powerfully aſtringent.	An ingredient in a powder.
Bolus Armena.	Armenian bole.		Aſtringent.	An ingredient in ſeveral powders.
Bolus Gallica.	French bole.		Aſtringent and ſlightly abſorbent.	An ingredient in ſome powders.
Bonus Henricus, (*Chenopod. bon. Hen.* Lin.)	Engliſh mercury, all-good, or good Henry.	The leaves.	Laxative.	
Borax.	Tincar, or borax.	The whole.	Diuretic and emmenagogue.	An ingredient in a powder, and a ſalt prepared from it. See CHEMISTRY, n°265—272.
Branca urſina, (*Acanth. moll.* Lin.)	Bear's-breech.	The root.	Emollient.	
Braſſica, (*Braſſica, olerac.* Lin.)	Cabbage.	The leaves.	Refrigerant and laxative	
Bryonia alba.	White briony.	The root.	Diſcutient and violently cathartic.	
Bucabunga, (*Veronica bucabung.* Lin.)	Brooklime.	The leaves.	Attenuant and antiſcorbutic.	
Burſa paſtoris, (*Thlapſi burſa*, Lin.)	Shepherd's purſe.	The leaves.	Aſtringent, but very doubtful.	

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Cacao, (*Theobroma cacao*, Lin.)	Chocolate tree.	The fruit.	Analeptic.	Chocolate.
Calamintha, (*Meliſſa calamintha*, Lin.)	Calamint.	The leaves.	Aromatic and ſtilant.	
Calamus aromaticus, (*Acor. ver.* Lin.)	Sweet-ſcented flag.	The roots.	Aromatic and ſtomachic.	
Calendula.	Garden marigold.	The flowers.	Attenuating and ſudorific, but very doubtful.	
Calx viva.	Quicklime.		A violent corroſive, and powerful alterant and abſorbent.	A medicated water.
Camphor, (*Laur. camphor.* Lin.)	Camphire tree.	The concreted eſſential oil.	Refrigerant and diaphoretic.	A ſolution in rectified ſpirit, in expreſſed and eſſential oils. Ingredient in many other compoſitions.
Canella alba.	White cinnamon, or canella alba.	The bark.	Aromatic and ſtimulating.	An ingredient in ſeveral tinctures.
Cannabis.	Hemp.	The ſeeds.	Aperient and refrigerant, but doubtful.	Decoctions and infuſions.
Cantharides.	Spaniſh-flies.		Violently ſtimulating and veſicatory.	A ſpirituous tincture.
Caparis, (*Capar. ſpinoſ.* Lin.)	Caper-buſh.	The bark of the root, and flower-buds.	Aperient and ſtomachic.	Pickled.
Caprifolium, (*Leonicera caprif.* Lin.)	Woodbind, or honeyſuckle.	The leaves and flowers.	Aperient and diuretic.	
Cardamines, (*Cardamine pratenſ.* Lin.)	Cardamine.	The flowers.	Antiſpaſmodic.	
Cardamomum majus, (*Amom. cardam.* Lin.)	Greater cardamom.	The ſeeds.	Aromatic and ſtimulant.	A ſpirituous water and tincture. Ingredient alſo in ſeveral officinal compoſitions.
Cardamomum minus, (*Amom. cardam.* Lin.)	Leſſer cardamom.	The ſeeds.	Aromatic and ſtimulant.	
Cardiaca, (*Cardiac. leonur.* Lin.)	Mother-wort.	The leaves.	Antiſpaſmodic.	
Carduus benedictus, (*Centaur. benedict.* Lin.)	Bleſſed-thiſtle.	The leaves and ſeed.	Stomachic.	An ingredient in a ſtomachic tincture.
Carlina, (*Carlin. acaul.* Lin.)	Carline-thiſtle.	The root.	Diaphoretic.	
Carthamus, (*Cartham. tinct.* Lin.)	Baſtard ſaffron.	The ſeeds.	Cathartic.	
Carum, (*Carum carvi*, Lin.)	Caraway.	The ſeeds.	Aromatic.	An eſſential oil, a ſpirituous water. Ingredient alſo in many officinal compoſitions.
Caryophyllata, (*Geum urban.* Lin.)	Avens, or herb benet.	The root.	Aromatic.	An eſſential oil.
Caryophyllus aromaticus.	The clove-tree.	The flower-cups.	Strongly aromatic.	An eſſential oil. Ingredient alſo in many officinal compoſitions.
Caryophyllus ruber, (*Dianth. caryophill.* Lin.)	Clove July-flowers.	The flowers.	Aromatic.	A ſyrup.
Caſcarilla, (*Croton. caſcar.* Lin.)	Caſcarilla.	The bark.	Aromatic and ſtimulant.	Infuſions.

Caſſia

List of Simples.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Caſſia fiſtularis.	Caſſia.	The fruit.	Purgative.	An ingredient in two electuaries.
Caſſia lignea, (*Laurus caſſia*, Lin.)	Caſſia.	The bark.	Aromatic.	
Caſſumunar.	Caſſumar.	The root.	Stomachic and carminative.	
Caſtoreum, (*Caſtor fiber*, Lin.)	Caſtor.		Nervine and antiſpaſmodic.	A ſimple water; a ſpirituous water; a tincture. Ingredient in many officinal compoſitions.
Cataputia major, vel palma Chriſti, (*Ricinus commun.* Lin.)	Palma Chriſti.	The ſeeds.	Purgative.	An expreſſed oil.
Cataputia minor, vel tithymalus, (*Euphorb. lithyr.* Lin.)	Broad-leaved ſpurge, or cataputia.	The juice.	Violently inflammatory.	Inſpiſſated juice.
Celeri, (*Apium graveolens*, Lin.)	Celery.	The leaves.	Laxative.	
Centaureum minus, (*Gentian. centaur.* Lin.)	Leſſer centaury.	The tops.	Stomachic.	Ingredient in ſome tinctures and infuſions.
Cepa, (*Allium cepa*, Lin.)	The onion.	The roots.	Attenuating and diuretic.	
Cera alba.	White wax.		Emollient.	Ingredient in many plaſters and ointments.
Cera flava.	Yellow wax.		Emollient.	Ingredient in almoſt all ointments.
Ceraſus, (*Prunus ceraſus*, Lin.)	The cherry-tree.	The fruit.	Refrigerant.	
Ceterach, (*Aſplen. ceterach*, Lin.)	Spleenwort.	The leaves.	Diuretic.	
Chamædrys, (*Teucrium chamædr.* Lin.)	Germander.	The leaves and tops with the ſeed.	Sudorific and diuretic.	
Chamæmelum, (*Anthemis nobilis*, Lin.)	Camomile.	The flowers.	Stomachic, carminative, and emollient.	An eſſential oil, a ſimple water, and extract.
Chamæpithys, (*Teucrium chamæpit.* Lin.)	Ground-pine.	The leaves.	Aperient.	
Cheiri, ſeu Leucojum luteum, (*Cheiranth. cheiri*, Lin.)	Wallflower.	The flower.	Aperient, cordial, and attenuant.	
Chelæ cancrorum.	Crab's claws.		Abſorbent.	Levigated.
Chelidonium majus.	Common celandine.	The leaves and roots.	Inflammatory.	
Chelidonium minus, (*Ranunc. ficar.* Lin.)	Pilewort.	The leaves and root.	Emollient.	
China, (*Smilax China*, Lin.)	China.	The root.	Diaphoretic and diuretic.	
Cicer, (*Cicer arietin.* Lin.)	Red chices, or chick peas.	The ſeeds.	Lithontriptic and diuretic, but very doubtful.	
Cichorium, (*Cichor. intyb.* Lin.)	Wild ſuccory.	The roots and leaves.	Laxative and antiſcorbutic.	
Cicuta major, (*Conium maculat.* Lin.)	Hemlock.	The leaves.	Reſolvent and alterant.	

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Cinnamomum, (*Laurus cinnam.* Lin.)	The cinnamon tree.	The bark.	Aromatic and corroborant.	An eſſential oil, a ſimple and ſpirituous diſtilled water, and an ingredient in a great number of compoſitions.
Clematis.	Virgin's bower.	The root.	Pugative.	
Coccinella, (*Coccus cacti*, Lin.)	Cochineal.		Sudorific, but chiefly uſed for colouring.	
Cocculus Indicus, (*Meniſperm. cocul.* Lin.)	Indian berry.	The fruit.	Narcotic.	
Cochlearia.	Scurvy-graſs.	The leaves.	Stimulating and attenuant.	A conſerve and ſpirit. An ingredient in ſome other officinal preparations.
Coffea.	The coffee-tree.	The fruit.	Stomachic and corroborant.	A decoction.
Colchicum, (*Colchic. autumnal.* Lin.)	Meadow ſaffron.	The root.	Powerfully diuretic.	A ſyrup and oxymel.
Colocynthis, (*Cucum. colocynth.* Lin.)	Coloquintida, or bitter-apple.	The medullary part of the dried fruit.	Violently cathartic.	An ingredient in ſome cathartic pills and extracts.
Columbo.	Columbo.	The root.	A moſt excellent antiſeptic and ſtomachic.	A vinous tincture.
Conſolida major, (*Symphyt. officin.* Lin.)	Comfrey.	The root.	Emollient.	
Contrayerva, (*Dorſtenia*, Lin.)	Contrayerva.	The root.	Aromatic and diaphoretic.	Gives name to a powder, and is an ingredient in the theriaca.
Corallina, (*Sertularia*, Lin.)	Coralline.		Abſorbent.	
Corallium rubrum.	Red coral.		Abſorbent.	
Coriandrum, (*Coriandr. ſativ.* Lin.)	Coriander.	The ſeeds.	Carminative and ſtomachic.	An ingredient in ſeveral officinal compoſitions.
Cornu cervi.	Hartſhorn.		Emollient and nutritious.	Shavings, a jelly, a volatile alkaline ſalt and ſpirit, and an empyreumatic oil.
Cornu cervi calcinatum.	Calcined or burnt hartſhorn.		Abſorbent.	
Coſtus, (*Coſt. Arab.* Lin.)	Coſtus.	The root.	Attenuant and diuretic.	
Cotula fœtida.	May-weed, or wild chamomile.	The leaves.	Antiſpaſmodic.	
Craſſula.	Orpine.	The leaves.	Emollient and aſtringent.	
Creta alba.	White chalk.		Abſorbent.	
Crithmum.	Samphire.	The leaves.	Aperient, ſtomachic, and diuretic.	
Crocus.	Saffron.	The chives, or fleſhy capillaments growing at the end of the flower.	Aromatic and cordial.	A ſpirituous tincture; a vinous tincture; a ſyrup; and an ingredient in many officinal compoſitions.
Cubebæ, (*Piper*, Lin.)	Cubebs.	The fruit.	Aromatic and ſtimulant.	An ingredient in ſeveral officinal compoſitions.
Cucumis hortenſis.	The garden cucumber.	The ſeeds.	Refrigerant.	
Cucumis agreſtis.	Wild cucumber.	The fruit.	Violently cathartic.	The juice inſpiſſated.
Cucurbita.	The gourd and pompion.	The ſeeds.	Refrigerating.	An expreſſed oil.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Cupreſſus.	The cypreſs.	The fruit.	A ſtrong aſtringent.	
Cuprum.	Copper.		A violent emetic, diuretic, and alterative.	Calcined, and producing ſalts by combination with ſeveral acids, and with volatile alkali. See CHEMISTRY, n° 142, 200, 278, 298, 332.
Curcuma, (*Curcum. long.* Lin.)	Tumeric.	The root.	Aromatic, aperient, and emmenagogue.	
Cydonia.	The quince.	The fruit and ſeeds.	Stomachic and corroborative.	A ſyrup and jelly of the fruit, and mucilage of the ſeeds.
Cyminum.	Cumin.	The ſeeds.	Aromatic and antiſpaſmodic.	An eſſential oil, and an ingredient in ſome officinal compoſitions.
Cynogloſſum.	Hound's tongue.	The root.	Narcotic, but doubtful.	
Cynoſbatum, (*Roſa canin.* Lin.)	The wild briar, dog-roſe, or hip-tree.	The fruit and flowers.	Refrigerant and antiſcorbutic.	A diſtilled water and conſerve.
Cyperus longa.	Long cyperus.	The root.	Aromatic and carminative.	
Dactylus, (*Phœnix dactyliſ.* Lin.)	The date-tree.	The fruit.	Emollient and ſlightly aſtringent.	
Daucus Creticus, (*Athamant. Cretenſ.* Lin.)	Candy carrot.	The ſeeds.	Aromatic.	Ingredient in mithridate and theriaca.
Daucus ſativus, (*Daucus carota*, Lin.)	The carrot.	The roots.	Powerfully antiſeptic.	A poultice from them for cancers, and a marmalade.
Daucus ſilveſtris.	Wild carrot.	The ſeeds.	Aromatic.	
Dens leonis, (*Leontod. tarax.* Lin.)	Dandelion.	The root and herb.	Attenuant, but doubtful.	
Dictamnus Creticus, (*Dictamn. origan.* Lin.)	Dittany of Crete.	The leaves.	Aromatic.	An eſſential oil; and ingredient in ſeveral officinal powders.
Digitalis.	Fox-glove.	The leaves.	Emetic and cathartic.	
Doronicum Germanicum, (*Arnica montan.* Lin.)	German leopards-bane.	The leaves and roots.	Violently emetic and cathartic.	
Dulcamara, (*Solan. dulcamar.* Lin.)	Bitter, ſweet, or woody nightſhade.	The herb and root.	Diaphoretic, attenuant, and cathartic.	
Ebulus, (*Sambuc. ebul.* Lin.)	Dwarf-elder, or Danewort.	The root, bark, leaves, and fruit.	Strongly cathartic.	A rob from the berries.
Elatine, (*Veronica officinal.* Lin.)	Fluellin, or female ſpeedwell.	The leaves.	Diuretic and attenuant.	Gives name to one of the officinal honeys.
Eleutheria. See CASCARILLA.				
Endivia, (*Cichor. endiv.* Lin.)	Endive.	The leaves and roots.	Aperient and refrigerant.	
Erigerum.	Groundſel.	The leaves.	Emetic.	
Eruca.	Rocket.	The ſeeds.	Stimulant.	
Eryngium, (*Eryng. maritim.* Lin.)	Eryngo, or ſea-holly.	The root.	Aperient and diuretic.	
Eryſimum, (*Eryſim. officinal.* Lin.)	Hedge-muſtard.	The leaves.	Attenuant and diuretic.	
Eupatorium canabinum.	Hemp-agrimony, water-agrimony, or water-hemp.	The leaves.	Attenuant and corroborant.	

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Faba Indica, ſeu Sancti Ignatii.	St Ignatius's bean.	The ſeeds.	Antiſpaſmodic.	
Faba vicia.	The garden-bean.	The ſeeds and flowers.	Nutritive and coſmetic.	A diſtilled water from the flowers.
Fagopyrum, (*Polyg. fagopyr.* Lin.)	Snakeweed.	The ſeeds.	Refrigerant.	
Farina tritici vel avenæ.	Bran.		Diſcutient.	
Ferrum.	Iron.		Corroborative and alterant.	Infuſions in wine; the metal reduced to a calx by ruſt, or by fire, and ſome ſalts produced from it by combinations with different acids. See CHEMISTRY, nº 146, 242—245, 279, 299.
Fæx vini rubri.	Lees of red wine.		Diſcutient and repellent.	
Ficus, (*Ficus caric.* Lin.)	The fig-tree.	The fruit.	Emollient and ſuppurative.	
Filipendula, (*Spiræa filipend.* Lin.)	Common dropwort.	The root.	Aſtringent and corroborant.	
Filix mas, (*Polypod. Filix*, Lin.)	The male fern.	The leaves and root.	Anthelmintic and deobſtruent.	
Flores cereviſiæ.	Yeaſt.		Inflammatory.	
Fœnum Græcum, (*Trigonell. fœn. græc.* Lin.)	Fenugreek.	The ſeed.	Emollient.	
Fœniculum dulce et vulgare, (*Aneth. fœnic.* Lin.)	Sweet and common fennel.	The ſeeds, roots, and leaves.	Aromatic, ſtimulant, and carminative.	An eſſential oil.
Fœniculum aquaticum, *Pharmac. Roſſ.* (*Phelland. aquat.* Lin.)	Waterwort.	The leaves and ſeeds.	Corroborant.	
Formica, (*Formica rufa*, Lin.)	The ant.	The whole inſect.	Stimulant.	An oil and acid ſpirit.
Fragaria, (*Fragar. veſc.* Lin.)	The ſtrawberry buſh.	The leaves and fruit.	Aſtringent, corroborant, and refrigerant.	
Frangula, (*Alnus nigr.* Lin.)	Black alder.	The bark.	Violently cathartic.	
Fraxinella, (*Dictamnus albus*, Lin.)	White or baſtard dittany.	The root.	Diaphoretic.	
Fraxinus, (*Fraxin. excelſior*, Lin.)	The aſh-tree.	The bark and ſeeds.	Aſtringent and ſtimulant.	
Fuligo ligni ſplendens.	Shining woodſoot.		Antiſpaſmodic.	A ſpirituous tincture.
Fumaria.	Fumitory.	The leaves.	Stimulating and attenuant.	
Fungus melitenſis, *Pharmac. Roſſ.* (*Cynomor. coccin.* Lin.)				
Galanga minor, (*Marant. galang.* Lin.)	Galangal.	The root.	Stomachic.	
Galega.	Goat's rue.	The herb.	Diaphoretic, but very doubtful.	
Gallæ.	Galls.		Aſtringent.	

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Gallium luteum, (*Gall. ver.* Lin.)	Yellow ladies bedſtraw, or cheeſerennet.	The tops.	Aſtringent.	
Geniſta, (*Geniſt. tinctor.* Lin.)	Broom.	The leaves, flowers, and ſeeds.	Diuretic and cathartic.	
Gentiana alba, (*Laſerpitium latifol.* Lin.)	Leſſerwort.	The root.		
Gentiana, (*Gentian. lut.* Lin.)	Common gentian.	The root.	Stomachic and ſtimulant.	A ſpirituous tincture, and an ingredient in many officinal compoſitions.
Geranium Robertianum.	Herb Robert.	The leaves.	Aſtringent, but very doubtful.	
Ginſeng, (*Panax quinquefol.* Lin.)	Ginſeng.	The root.	Stimulant and corroborant.	
Gladiolum luteum, (*Iris pſeudacorus*, Lin.)	Yellow water-flag, baſtard acorus, or water flower-deluce.	The roots.	Strongly cathartic.	
Glycyrrhiza, (*Glycyr. glabr.* Lin.)	Liquorice.	The root.	Emollient and pectoral.	An extract and powder. An ingredient in many officinal compoſitions.
Gramen caninum, (*Triticum repens*, Lin.)	Quick-graſs.	The roots.	Aperient.	
Grana paradiſi, (*Amomum*, Lin.)	Grains of paradiſe.	The ſeeds.	Aromatic and ſtimulant.	
Granatum, (*Punica granatum*, Lin.)	The pomegranate.	The fruit and bark.	Refrigerant and aſtringent.	
Gratiola.	Hedge-hyſſop.	The leaves and root.	Emetic and cathartic.	
Guajacum.	Lignum-vitæ, or guajacum.	The wood and bark.	Aperient, ſtimulant, and corroborative.	An extract, two tinctures, and a gummy reſin. An ingredient in many officinal preparations.
Gummi arabicum.	Gum-arabic.		Aſtringent and mucilaginous.	An ingredient in a great number of officinal compoſitions.
Gum. ammoniacum	Gum ammoniac.		Aperient, antiſpaſmodic, and emollient.	A ſolution. An ingredient in ſeveral pectoral compoſitions.
Gum. aſafœtida.	Aſafœtida.		A powerful antiſpaſmodic.	An ingredient in very many officinal compoſitions.
Gum. bdellium.	Bdellium.		Sudorific, diuretic, and emollient.	
Gum. benzoin.	Benzoin.		Coſmetic.	An ingredient in ſeveral anodyne compoſitions.
Gum. elemi.	Elemi.		Aromatic.	An eſſential oil, and gives name to ointment.
Gum. galbanum.	Galbanum.		Antiſpaſmodic.	An ingredient in many antihyſteric medicines.
Gum. gambogia.	Gamboge.		Emetic and cathartic.	Gives name to a certain kind of pills.
Gum. kino.	Kino.		Aſtringent.	
Gum. labdanum.	Labdanum.		Stomachic.	An ingredient in the ſtomachic pills and plaſters.
Gum. laricis, (*Pharm. Roſſ.*)				
Gum. lacca.	Gum lac.		Aſtringent.	A tincture.
Gum. maſtic.	Maſtich.		Corroborant.	
Gum. myrrha.	Myrrh.		Antiſpaſmodic and corroborant.	A tincture, and an ingredient in many officinal compoſitions.

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Gum. olibanum.	Olibanum.		Aſtringent, but uncertain.	An ingredient in ſome powders, and other officinal compoſitions.
Gum. opoponax.	Opoponax.		Attenuant and ſtimulant.	An ingredient in ſome officinal compoſitions.
Gum. ſanguis draconis.			Aſtringent.	An ingredient in ſome ſtyptic and balſamic medicines.
Gum. Senegal.			Aſtringent and mucilaginous.	
Gum. ſtyrax calamit.	Storax.		Stimulant and corroborant.	An ingredient in ſome tinctures and pills.
Gum. ſtyrax liquida	Liquid ſtorax.			Ingredient in a mercurial plaſter.
Gum. thus.	Frankincenſe.		Suppoſed corroborative.	An ingredient in the theriaca, and ſome plaſters.
Gum. tragacanth.	Gum tragacanth, commonly gum-dragon.		Aſtringent and corroborant.	
Hæmatites.	Blood-ſtone.		Aſtringent and corroborative.	
Hedera arborea, (*Hedera helix.* Lin.)	Ivy.	The leaves, berries, and reſin.	Diaphoretic.	
Hedera terreſtris, (*Glechom. hederac.* Lin.)	Ground-ivy.	The leaves.	Aperient and corroborant.	
Helenium.	Elecampane.	The root.	Aperient and pectoral.	An ingredient in ſeveral officinal compoſitions.
Helleboraſter, *Pharmac. Brunſwic.* (*Helleborus fœtid.* Lin.)		The root.		
Helleborus albus, (*Veratrum alb.* Lin.)	White hellebore.	The root.	Moſt violently emetic and errhine.	A tincture and honey.
Helleborus niger.	Black hellebore.	The root.	A powerful alterative and emmenagogue.	A tincture and extract.
Helleborus niger, *Pharmac. Roſſ.* (*Adonis vernal.* Lin.)		The root.		
Hepatica nobilis, (*Anemone hepatic.* Lin.)	Noble liver-wort.	The leaves.	Corroborant.	
Hermodactylus, (*Iris tuberoſa,* Lin.)	Hermodactyl.	The root.	Purgative, but doubtful.	
Herniaria, (*Herniar. glab.* Lin.)	Rupture-wort.	The leaves.	Aſtringent.	
Hippocaſtanum, *Ph. Roſſ.* (*Æſcul. hippocaſt.* Lin.)		The bark.		
Hirundinaria, (*Aſclep. vincetox.* Lin.)	Swallow-wort, or tame-poiſon.	The root.	Sudorific, diuretic, and emmenagogue.	
Hordeum, (*Hord. diſtich.* Lin.)	Barley.		Refrigerant.	A decoction.
Horminum, (*Salv. hormin.* Lin.)	Garden clary.	The leaves and ſeeds.	Corroborative.	
Hydrolapathum, (*Rumex aquat.* Lin.)	Great water-dock.	The leaves and roots.	Alterant and laxative.	
Hyoſciamus, (*Hyoſciam. nig.* Lin.)	The common wild or black hen-bane.	The leaves.	Narcotic.	

Hypericum,

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Hypericum, (*Hyperic. perforat.* Lin.)	St John's-wort.	The leaves, flowers, and ſeeds.	Diuretic, ſudorific, and alterant.	Gives name to a coloured oil.
Hypociſtis, (*Cytiſus hypociſt.* Lin.)	Hypociſtis.		Aſtringent.	Juice inſpiſſated.
Hyſſopus, (*Hyſſop. officinal.* Lin.)	Hyſſop.	The leaves.	Aromatic.	A diſtilled water.
Jalappa, (*Convolv. jalap.* Lin.)	Jalap.	The root.	Cathartic.	An extract, a ſimple tincture, a compound tincture, a reſin, and powder.
Japonica terra.	Japan earth.		Aſtringent.	A tincture, troches, and confection; and an ingredient in ſeveral officinal compoſitions.
Imperatoria, (*Imper. oſtrut.* Lin.)	Maſter-wort.	The root.	Aromatic.	
Ipecacoanha, (*Viola ipecac.* Lin.)	Ipecacuanha.	The root.	Emetic and cathartic.	A vinous tincture, and a powder.
Iris Florentina.	Florentine orris.	The root.	Aromatic and ſtimulant.	An ingredient in ſeveral pectoral medicines.
Iris noſtras, (*Iris german.* Lin.)	Flower-de-luce.	The root.	The ſame with the former.	
Juglans, (*Jug. reg.*)	The walnut-tree.	The fruit.	The kernel emollient, the ſhell aſtringent.	
Jujuba, (*Rhamnus zizyph.* Lin.)	Jujubes.	The fruit.	Emollient and balſamic.	
Juncus odoratus.	Sweet-ruſh, or camel's-hay.	The herb.	Aromatic.	An ingredient in theriaca.
Juniperus, (*Junip. commun.* Lin.)	Juniper.	The berries, wood, and reſin.	Carminative and ſtomachic.	An eſſential oil, and ſpirituous water. Ingredient in a great number of officinal compoſitions.
Kali, (*Salſol.* Lin.)	Glaſs-wort.			An alkaline ſalt.
Kermes, (*Coccus querc. ilic.* Lin.)	Kermes.		Aſtringent and corroborant.	A confection.
Lac.	Milk.		Analeptic and corroborant.	A ſaccharine ſalt.
Lactuca, (*Lactuca tiv.* Lin.)	Lettuce.	The juice.	Suppoſed narcotic.	
Lamium album.	White archangel, or dead-nettle.	The leaves and flowers.	Suppoſed corroborant.	
Lavendula, (*Lavend. ſpic.* Lin.)	Greater, or broad-leaved lavender.	The flowers.	An excellent cordial and aromatic.	An eſſential oil, a ſimple and compound ſpirit, and a conſerve. An ingredient in ſome officinal preparations.
Laurus, (*Laur. nobilis.* Lin.)	The bay tree.	The leaves and berries.	Carminative and antiſpaſmodic.	An expreſſed oil.
Lazuli lapis.			A ſtrong emetic.	
Lentiſcus, (*Piſtacia lentiſc.*	The lentiſc or maſtich tree.	The wood.	Aſtringent.	
Lepidium, (*Lepid. latifol.* Lin.)	Common broad dittander, pepperwort, or poor man's pepper.	The leaves.	Antiſcorbutic and diuretic.	
Leviſticum, (*Liguſt. leviſt.* Lin.)	Lovage.	The root and ſeed.	Aromatic.	Ingredients in ſome compound waters.
Lichen cinereus terreſtris, (*Lichen. canin.* Lin.)	Aſh-coloured ground liverwort.	The whole.	Recommended by Dr Mead as a ſpecific againſt the bite of a mad dog, but without foundation.	Principal ingredient in the *pulvis antilyſſus*.

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Lignum campechenſe, (*Hæmatox. campech.* Lin.)	Logwood.	The wood.	Aſtringent.	An extract.
Lignum rhodium, (*Geniſt. canarien.* Lin.)	Roſe-wood.	The wood.	Cordial.	An eſſential oil.
Lilium album, (*Conval. maial.* Lin.)	White lily.	The root and flowers.	Emollient and antiſpaſmodic.	
Limon, (*Citrus limon.* Lin.)	The lemon-tree.	The fruit.	Aromatic, antiſcorbutic, and cordial.	An eſſential oil.
Linaria, (*Antirrhin. linar.* Lin.)	Toad-flax.	The leaves.	Diuretic and cathartic, but doubtful.	
Lingua cervina, (*Aſplen. ſcolopend.* Lin.)	Hart's tongue.	The leaves.	Aperient.	
Linum catharticum.	Purging flax, or mill-mountain.	The leaves.	Cathartic.	
Linum vulgare, (*Lin. uſitatiſſ.* Lin.)	Flax.	The ſeed.	Emollient.	An expreſſed oil.
Liquida ambra.	Sweet gum, or ſtorax tree.	The reſinous juice.	Cordial.	
Lithoſpermum, (*Lithoſperm. officin.* Lin.)	Gromwell.	The ſeeds.	Reſolvent.	
Lobelia, *Pharmac. Roſſ.* (*Lobel. ſiphilit.* Lin.)		The root.	Alterant.	
Lumbrici et limaces terreſtres.	Earth-worms and ſnails.		Aperient and analeptic.	Decoction in milk.
Lupinus, (*Lupin. alb.* Lin.)	White lupines.	The ſeeds.	Anthelmintic.	
Lupulus, (*Humul. lup.* Lin.)	Hops.	The looſe leafy heads which grow upon the tops of the ſtalks.	Diuretic and ſtomachic.	
Lycoperdon, (*Lycoperd. boviſt.* Lin.)	Puff-ball, or duſty muſhroom.	The whole.	Styptic.	
Lycopodium, *Pha. Roſſ.* (*Lycopod. clavat.* Lin.)				
Macis. See Nux *Moſchata.*				
Majorana, (*Origan. majoran.* Lin.)	Sweet marjoram.	The leaves and flowers.	Aromatic and errhine.	An eſſential oil.
Malabathrum.	Indian leaf.		Aromatic.	An ingredient in mithridate and theriaca.
Malva, (*Malv. rotundifol.* Lin.)	The mallow.	The leaves and flowers.	Emollient.	A conſerve of the flowers.
Malus.	The apple-tree.	The fruit.	Refrigerant and laxative.	
Mandragora, (*Atrop. mandrag.* Lin.)	The mandrake.	The leaves.	Narcotic.	
Manna, (*Fraxin. orn.* Lin.)	The manna aſh.	The concreted juice.	Cathartic.	Gives name to an officinal lohoch, and enters ſeveral other compoſitions.
Marrubium,) *Marrub. vulg.* Lin.)	White horehound.	The leaves.	Stomachic and aperient.	An ingredient in theriaca.

Marum

List of Simples.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PEREPARATIONS FROM THEM.
Marum Syriacum, (*Teucrium mar.* Lin.)	Syrian herb maſtich.	The leaves.	Aromatic and errhine.	An ingredient in ſome cephalic ſnuffs.
Matricaria, (*Matricar. parthen.* Lin.)	Feverfew.	The leaves and flowers.	Aperient and antiſpaſmodic.	
Mechoacanna, (*Convolv. mechoan.* Lin.)	White jalap.	The root.	Cathartic.	
Mel.	Honey.		Aperient and detergent.	
Melilotus, (*Trifol. melilot.* Lin.)	Melilot.	The leaves and flowers.	Emollient and carminative.	Gives name to a plaſter.
Meliſſa, (*Meliſſ. officin.* Lin.)	Balm.	The leaves.	Aromatic.	An infuſion, and ſimple water.
Melo, (*Cucumis melo,* Lin.)	The melon.	The ſeeds.	Refrigerant and emollient.	
Mentha criſpa, (*Pharmac. Roſſ.*)	Daniſh or German curled mint.	The herb.	Aromatic and cordial.	A diſtilled water, eſſential oil, and eſſence. An ingredient in ſeveral officinal preparations.
Mentha vulgaris, (*Menth. virid.* Lin.)	Spearmint.	The herb.	Aromatic and cordial.	A diſtilled water, eſſential oil, and eſſence. An ingredient in ſeveral officinal preparations.
Mentha piperitis.	Pepper-mint.	The herb.	Aromatic and cordial.	A diſtilled water, eſſential oil, and eſſence. An ingredient in ſeveral officinal preparations.
Mercurialis, (*Mercur. annua,* Lin.)	French mercury.	The leaves.	Emollient and laxative.	A ſyrup.
Meum, (*Æthuſa meum,* Lin.)	Spignel.	The root.	Aromatic and carminative.	
Mezereon.	Mezereon, or ſpurge olive.	The root, bark, and berries.	Violently cathartic.	
Millefolium, (*Achil. millefol.* Lin.)	Millefoil, or yarrow.	The leaves and flowers.	Mildly aſtringent and aromatic.	An eſſential oil.
Millefolium nobile, *Pharmac. Roſſ.* (*Achill. nob.* Lin.)				
Millepedæ.	Wood-lice, hog-lice, or ſlaters.		Diuretic.	The inſects dried and powdered; an infuſion in wine; alſo an ingredient in ſome other officinal preparations.
Minium. See PLUMBUM.				
Morſus diaboli, (*Scabioſ. ſucciſ.* Lin.)	Devil's bit.	The leaves and roots.	Diaphoretic.	
Morus nigra.	The mulberry-tree.	The fruit and bark of the roots.	Refrigerant, aſtringent, and anthelmintic.	A ſyrup from the juice of the fruit.
Moſchus.	Muſk.		Diaphoretic and antiſpaſmodic.	A julep.
Mungos, (*Pharm. Brunſ. et Roſſ.*)				
Myrobolani.	Myrobalans.	The fruit.	Purgative.	
Muſcus Iſlandicus, ſeu Catharticus, *Pharm. Roſſ. et Brunſ.* (*Lichen. iſland.* Lin.)				

Liſt of Simples.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Myrrhis, (*Siſon Canadenſe*, Lin.)	Sweet cicely.	The leaves and ſeeds.	Diuretic.	
Myrtillus, (*Vaccin. myrtil.* Lin.)	Whortle-berry.	The leaves and berries.	Aſtringent.	
Napus, (*Rapa napus*, Lin.)	Sweet navew, or navew gentle.	The ſeeds.	Aromatic.	An ingredient in the theriaca.
Rapa ſylveſtris, (*Braſſic. nap.* Lin.)	Rape.	The ſeeds.	Aromatic and ſtimulant.	An expreſſed oil.
Nardus Celtica, (*Valerian. Celt.* Lin.)	Celtic nard.	The roots.	Stomachic and carminative.	Ingredients in the mithridate and theriaca.
Nardus Indica, (*Andropog. nardus*, Lin.)	Indian nard.	The roots.	Stomachic and carminative.	Ingredients in the mithridate and theriaca.
Naſturtium aquaticum, (*Siſymb. naſtur. aquat.* Lin.)	Water creſſes.	The leaves and juice.	Aperient and antiſcorbutic.	An ingredient in the ſucci ſcorbutici.
Naſturtium hortenſe, (*Lepid. ſativ.* Lin.)	Garden creſſes.	The leaves and ſeeds.	Aperient and antiſcorbutic, but much weaker than the former.	
Nepeta, (*Nepet. catar.* Lin.)	Nep, or catmint.	The leaves.	Aromatic and cordial.	
Nephriticum lignum, (*Guilandin. moring.* Lin.)	Nephritic wood.	The wood in ſubſtance.	Diuretic, but uncertain.	
Nicotiana, (*Nicotian. tabac.* Lin.)	Tobacco.	The leaves.	Violently emetic, cathartic, and narcotic.	An extract recommended by Stahl and other German phyſicians.
Nigella, (*Nigel. ſativ.* Lin.)	Fennel-flower.	The ſeeds.	Aperient and diuretic, but uncertain.	
Ninſi, (*Pharmac. Brunſ. et Roſſ.* (*Siam. ninſi*, Lin.)				
Nitrum, (*Nitrum. nativ.* Lin.)	Nitre or ſalt-petre.		Diaphoretic, diuretic, and refrigerant.	An acid ſpirit and fixed alkaline ſalt, an aqueous decoction or ſolution, troches. An ingredient in many other officinal preparations.
Nummularia, (*Lyſimach. nummular.* Lin.)	Moneywort, or herb twopence.	The leaves.	Antiſcorbutic.	
Nux moſchata, (*Myriſtica*, Lin.)	The nutmeg-tree.	The fruit, and covering called *mace*.	An excellent aromatic, cordial, and ſtomachic.	An expreſſed oil, falſely called *oil of mace*; an eſſential oil; a ſimple water; a ſpirituous water; an ingredient in many officinal compoſitions.
Nux piſtachia, (*Piſtac. terebinth.* Lin.)	The piſtachia tree.	The fruit.	Emollient and analeptic.	
Nux vomica, (*Strychnos nux vom.* Lin.)	Nux vomica.	The fruit.	Uſed only as a poiſon for dogs, &c.	
Nymphæa alba.	White water-lily.	The roots and flowers.	Aſtringent and corroborative.	
Ochra, (*Ochra ferri*, Lin.)	Yellow ochre.		Aſtringent, but very weak.	
Oliva, (*Olea Europæa*, Lin.)	The olive-tree.	The fruit.	Emollient.	An expreſſed oil uſed in almoſt all ointments, plaſters, &c.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Ononis, (*Onon. arvenſ.* Lin.)	Reſt-harrow, cammock, or pettywhin.	The root.	Aperient and diuretic.	
Opium, (*Papaver Orientale*, Lin.)	The Aſiatic poppy.	The inſpiſſated juice.	A moſt excellent anodyne and cordial when properly applied, but a very fatal poiſon if taken in too great quantity.	Purified by ſtraining, called the *Thebaic extract;* a vinous and ſpirituous tincture, called *liquid laudanum.* Alſo a capital ingredient in many officinal preparations.
Origanum, (*Origan. vulg.* Lin.)	Wild marjoram.	The leaves.	Aromatic.	An eſſential oil.
Oryza, (*Oryza ſativ.* Lin.)	Rice.	The grain.	Emollient and refrigerant.	
Oſtreæ, (*Oſtre. edul.* Lin.)	Oyſters.	The ſhells.	Abſorbent.	Levigated.
Oxylapathum, (*Rumex acutus*, Lin.)	Sharp-pointed dock.	The roots and leaves.	Alterant and laxative.	
Oxycoccos, *Phar. Roſſ.* (*Vaccin. occycoc.* Lin.)				
Pæonia, (*Pæon. officinal.* Lin.)	Male and female peony.	The roots, flowers, and ſeeds.	Emollient and antiſpaſmodic.	Ingredients in ſome anti-epileptic powders.
Palma, (*Cocos nucifera*, Lin.)	The palm-tree.	The kernels of the fruit.	Emollient and anodyne.	An expreſſed oil uſed in ſtomachic plaſters.
Papaver album, (*Papaver ſomnifer.* Lin.)	The white poppy.	The heads.	Anodyne.	A ſyrup.
Papaver erraticum, (*Papaver rhœas*, Lin.)	Red poppy, or corn-roſe.	The flowers.	Valued chiefly for the colour they communicate.	A ſyrup.
Paralyſis, (*Primula elatior.* Lin.)	Cowſlip.	The flowers.	Corroborant and antiſpaſmodic.	A ſyrup.
Pareira brava, (*Ciſſampelos pareir.* Lin.)	Pareira brava.	The root.	Attenuant, diuretic, and lithontriptic.	
Parietaria, (*Parietar. officinal.* Lin.)	Pellitory of the wall.	The leaves.	Emollient and diuretic.	Ingredient in a nephritic decoction.
Paſtinaca, (*Paſtina. ſativ.* Lin.)	Garden parſnep.	The roots and ſeeds.	Emollient and aromatic.	
Paſtinaca ſilveſtris.	Wild parſnep.	The ſeeds.	Aromatic.	
Pentaphyllum, (*Potentill. reptans*, Lin.)	Cinquefoil.	The root.	Aſtringent.	
Pechurim faba, *Pharmac. Roſſ.* (*An ſpecies laur.?* Lin.)				
Perſicaria urens, (*Perſic. hydropip.* Lin.)	Bitter arſmart, lake-weed, or water-pepper.	The leaves.	Diuretic and detergent when externally applied.	
Perſicaria mitis.	Spotted arſmart.	The leaves.	Antiſeptic and aſtringent.	
Perſica.	The peach-tree.	The leaves, flowers, and fruit.	Laxative, anthelmintic, and refrigerant.	
Peruvianus cortex, (*Cinchona offic.* Lin.)	The quinquina, or Jeſuit's-bark tree.	The bark.	A moſt excellent corroborative.	An extract, a reſin, a ſpirituous tincture, a compound tincture, a tincture in volatile ſpirit; alſo an ingredient in the ſtomachic tincture.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Petaſites, (*Tuſſilag. petaſit.* Lin.)	Butterbur.	The roots.	Aromatic, aperient, and deobſtruent.	
Petrolium.	Rock oil.		Anodyne and corroborative when applied externally.	
Petroleum Barbadenſe.	Barbadoes tar.		Diſcutient, ſudorific, and corroborative.	
Petroſelinum, (*Apium petroſelin.* Lin.)	Common parſley.	The roots, leaves, and ſeeds.	Aperient and ſomewhat aromatic.	The ſeeds an ingredient in an electuary.
Peucedanum, (*Peucedan. officinal.* Lin.)	Hog's-fennel, or ſulphur-wort.	The root.	Aperient, ſtimulating, and errhine.	
Pimpinella ſanguiſorba, (*Sanguiſorba officinalis,* Lin.)	Burnet.	The leaves.	Aſtringent.	
Pimpinella ſaxifraga.	Burnet ſaxifrage.	The root, leaves, and ſeeds.	Diaphoretic, diuretic, and antiſcorbutic.	
Pinus ſylveſtris.	The pine tree.	The kernels of its fruit or cones, and reſin.	The kernels emollient; for the reſin, ſee TEREBINTHINA.	
Piper album.	White pepper.		Highly aromatic and ſtimulant.	
Piper longum.	Long pepper.			
Piper nigrum.	Black pepper.			
Piper Jamaicenſe.	Jamaica pepper, pimento, or all-ſpice.			A ſimple diſtilled water, and an eſſential oil.
Piper Indicum, (*Capſicum annuum,* Lin.)	Guinea pepper.			A powder called *Cayenne pepper.*
Pix liquida.	Tar.		Attenuant and ſtimulating.	An infuſion in water, and an ingredient in a kind of pectoral pills.
Pix arida.	Dry, or ſtone pitch.		A warm adheſive reſinous ſubſtance.	Ingredients in ſeveral plaſters, ointments, and cerates.
Pix Burgundica.	Burgundy pitch.			
Plantago latifolia, (*Plantago major,* Lin.)	Common broad-leaved plantane.	The leaves.	Aſtringent.	
Plumbum, (*Plumbum nativum,* Lin.)	Lead.		Aſtringent and refrigerating, but very dangerous.	Several chemical preparations. See CHEMISTRY, n° 401—405. A tincture and extract, or ſolution in vegetable acids; alſo an ingredient in ſeveral ointments, &c.
Polium montanum, (*Polium teucrium,* Lin.)	Poley-mountain.	The tops.	Aromatic.	Ingredient in the Mithridate and theriaca.
Polygala amara, *Pharm. Roſſ.* (*Polyg. amar.* Lin.)		The root.		

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Polypodium, (*Polypod. vulgar.* Lin.)	Polypody.	The root.	Laxative.	
Populus nigra.	Black poplar.	The buds.	Aromatic.	Uſed only in an ointment, but capable of being applied to better purpoſes. (*Lewis.*)
Porrum, (*Allium porrum*, Lin.)	The leek.	The root.	A ſtimulating diuretic.	
Portulaca, (*Portulac. olerac.* Lin.)	Purſlane.	The ſeeds.	Refrigerant.	
Primula veris.	Primroſe.	The herb and root.	Aromatic and ſtomachic.	An infuſion and diſtilled ſpirit.
Prunella, (*Prunell. vulg.* Lin.)	Self-heal.	The leaves.	Attenuant and detergent.	
Pruna brignolenſia.	Brignole plums, or prunelloes.			
Pruna Gallica.	French, or common prunes.		Gently laxative.	
Pruna Damaſcena.	Damaſcen plums, or damſons.			
Pruna Silveſtria. See *Acacia*.				
Pſyllium, (*Plantago pſyll.* Lin.)	Fleawort.	The ſeeds.	Emollient and laxative.	
Ptarmica, (*Achil. ptarmic.* Lin.)	Sneezewort, or baſtard pellitory.	The root.	Errhine and ſtimulating.	
Pulegium, (*Menth. puleg.* Lin.)	Pennyroyal.	The leaves.	A warm aromatic.	A ſimple water, a ſpirituous water, an eſſential oil; and an ingredient in ſome other officinal compoſitions.
Pulmonaria maculoſa, (*Pulmon. officinal.* Lin.)	Spotted lung-wort, or ſage of Jeruſalem.	The leaves.	Said to be aperient and analeptic.	
Pulſatilla nigricans, *Pharmac. Roſſ.* (*Anemone pratenſ.* Lin.)		The herb.		An extract and diſtilled water.
Pyrethrum, (*Anthemis pyrethr.* Lin.)	Pellitory of Spain.	The root.	Promotes the ſalival flux.	
Quaſſia, (*Quaſſia amar.* Lin.)		The root.	An excellent ſtomachic and tonic.	An extract.
Quercus, (*Quercus robur*, Lin.)	Oak tree.	The bark.	Strongly aſtringent.	
Quercus marina, *Pharm. Roſſ.* (*Fucus veſiculoſus*, Lin.)				
Raphanus ruſticanus, (*Raphanus ſativus* Lin.)	Horſe-radiſh.	The root.	Stimulating and attenuant.	A compound water.
Rapa.	The turnip.	The roots and ſeeds.	Aperient, and ſlightly aromatic.	
Rhabarbarum, (*Rheum palmat.* Lin.)	Rhubarb.	The root.	Cathartic and ſtomachic.	Toaſted; a watery infuſion; vinous and ſpirituous tinctures; and an ingredient in ſeveral officinal compoſitions.
Rhaponticum, (*Rhæum rhapon.* Lin.)	Rhapontic.	The roots.	Laxative.	
Ribes nigrum.	The black-currant buſh.	The fruit.	Refrigerant and detergent.	A gelly.
Ribres rubrum.	The red-currant buſh.	The fruit.	Ditto.	

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Rhododendron, *Pharm. Roſſ.* (*Rhodod. chryſanthum*, Lin.)		The herb.		
Roſa damaſcena.	Damaſk roſe.	The flower.	Aromatic and gently laxative.	A diſtilled water and ſyrup.
Roſa rubra.	The red roſe.	The flower.	Aſtringent and corroborative.	A conſerve, honey, tincture, troches, vinegar, and ſyrup. An ingredient in ſeveral officinal compoſitions.
Roſmarinus hortenſis, (*Roſm. officinal.* Lin.)	Roſemary.	The tops and flowers.	A fine aromatic and cordial.	An eſſential oil; a diſtilled ſpirit called *Hungary water*. An ingredient in many cordial and antiſpaſmodic medicines.
Rubia tinctorum.	Madder.	The root.	Aperient and detergent.	
Rubus arcticus, *Pharm. Roſſ.*				
Rubus idæus.	The raſp-berry buſh.	The fruit.	Refrigerant.	A ſyrup.
Rubus niger, (*Rubus fruticoſ.* Lin.)	The bramble.	The leaves.	Aſtringent.	
Ruſcus, (*Ruſc. aculeat.* Lin.)	Butcher's-broom, or knee-holly.	The root.	Aperient.	
Ruta, (*Rut. graveol.* Lin.)	Broad-leaved rue.	The leaves and ſeeds.	Powerfully ſtimulating, attenuating, and detergent.	An extract, an eſſential oil, diſtilled water, and conſerve.
Sabadilla, *Pharm. Roſſ.* (*An ſpecies veratr.?* Lin.)		The ſeeds.		
Sabina, (*Junip. ſabin.* Lin.)	Savin.	The leaves or tops.	A ſtimulating aperient.	An eſſential oil; diſtilled water; watery extract; and an ingredient in ſeveral officinal compoſitions.
Saccharum album.	White ſugar.		Emollient & laxative	
Saccharum candum.	Sugar-candy.			
Sagapenum.	Gum ſagapenum.		Aperient and deobſtruent.	An ingredient in ſeveral antiſpaſmodic medicines.
Sal alkali vegetabile.	Vegetable alkaline ſalt, or pearl-aſhes.		Aperient, diuretic, and cauſtic.	The baſis of a great number of neutral ſalts.
Sal alkali minerale.	Mineral alkali, ſalt of Soda, or baſis of ſea-ſalt.		Ditto.	Ditto.
Sal catharticus amarus.	Epſom ſalt.		Cathartic.	Magneſia.
Sal commune.	Common ſalt.		In ſmall doſes ſtimulant, in large ones cathartic.	
Salicaria, *Pharm. Roſſ.* (*Lythrum Salicar.* Lin.)	Purple looſe-ſtrife.	The herb.	Aſtringent.	
Salix, (*Salix fragilis*, Lin.)	The crack-willow.	The bark.	Corroborant.	
Salvia, (*Salvia officinal.* Lin.)	Common ſage.	The leaves.	Moderately ſtimulating and aſtringent.	Infuſions.
Salvia ſylveſtris.	Wood ſage.	The leaves.	Ditto.	
Sambucus, (*Sambuc. niger*, Lin.)	Common black-berried alder.	The leaves, bark, flowers, and berries.	Cathartic, aromatic, and aperient.	A rob for internal uſe from the berries, and an ointment and oil from the flowers and bark; the flowers are alſo ingredients in ſome compound waters.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Sanguis draconis.	Dragon's-blood.		Aſtringent.	An ingredient in ſome officinal compoſitions.
Sanicula, (*Sanicul. Europæa*, Lin.)	Sanicle.	The leaves.	Suppoſed to be corroborant.	
Santalum citrinum, (*Santal. alb.* Lin.)	Yellow ſanders.	The wood.	Greatly recommended by Hoffman as a reſtorative.	
Santalum rubrum.	Red ſanders.	The wood.	Uſed only for its colour.	
Santonicum.	Worm-ſeed.		Anthelmintic.	
Sapo durus.	Hard Spaniſh ſoap.		Reſolvent and ſtimulating.	The firſt gives name to a plaſter, liniment, balſam, and pills; the ſecond is an ingredient in the milder cauſtic; and the third in an anodyne plaſter.
Sopa mollis.	Common ſoft ſoap.			
Sapo niger.	Black ſoap.			
Saponaria, (*Saponar. officinal.* Lin.)	Soapwort or bruiſewort.	The herb and root.	Aperient, corroborant, and ſudorific.	
Sarcocolla.	Gum ſarcocoll.		Suppoſed a vulnerary.	
Sarſaparilla, (*Smilax. ſarſap.* Lin.)	Sarſaparilla.	The root.	Alterant, and diaphoretic.	Infuſions and extract.
Saſſafras, (*Laurus ſaſſafras*, Lin.)	Saſſafras.	The root.	Alterant, aperient, and corroborant.	An eſſential oil; an ingredient in ſome officinal preparations.
Satureia, (*Satureia hortenſ.* Lin.)	Summer ſavoury.	The leaves.	A very pungent warm aromatic.	
Satyrium mas, (*Orchis bifol.* Lin.)	Orchis.	The root.	Coagulant and corroborative.	Salep ſuppoſed to be a preparation from a root of this kind (*Lewis*).
Saxifraga alba, (*Saxifrag. granulat.* Lin.)	White-flowered ſaxifrage.	The roots and leaves.	Suppoſed to be aperient, diuretic, and lithontriptic, but without juſt foundation.	
Saxifraga vulgaris.	Meadow ſaxifrage.	The leaves and ſeeds.		
Scabioſa, (*Scabioſ. arvenſ.* Lin.)	Scabious.	The leaves.	Aperient, ſudorific, and expectorant.	
Scammonium.	Scammony.		Strongly cathartic.	Gives name to a powder, and is an ingredient in ſome officinal preparations.
Scilla, (*Scill. maritim.* Lin.)	The ſquill, or ſea-onion.	The root.	Powerfully diuretic, ſtimulant, and expectorant.	A ſyrup, vinegar, oxymel, pills; the root dried, baked, and made into troches.
Scordium, (*Teucr. ſcordium*, Lin.)	Water germander.	The leaves.	Deobſtruent, diuretic, and ſudorific, but doubtful.	An ingredient in mithridate, theriaca, and ſeveral other preparations.
Scorzonera, (*Scorzon. humilis*, Lin.)	Viper's graſs.	The root.	Cordial and ſtimulant, but doubtful.	
Scrophularia, (*Scrophular. nodoſ.* Lin.)	Fig-wort.	The leaves and root.	Suppoſed corroborant, but doubtful.	
Sebeſten, (*Cordia myxa.* Lin.)	Sebeſten plum.		Emollient.	
Sedum majus, (*Sedum album*, Lin.)	Greater houſeleek.	The leaves.	Refrigerant.	
Sena, (*Caſſia ſena*, Lin.)	Sena.	The leaves.	Cathartic.	Spirituous tinctures, compound powders, and a ſyrup.

Seneka,

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Seneka, (*Polygal. ſenek.* Lin.)	Seneka.	The root.	Cathartic, diaphoretic, diuretic, and ſometimes emetic.	
Serpentaria Virginiana, (*Ariſtolochia ſerpentar.* Lin.)	Virginian ſnake-weed.	The root.	A warm diaphoretic and diuretic.	A ſpirituous tincture; a compound decoction; and an ingredient in a number of tinctures.
Serpyllum, (*Thymus ſerpil.* Lin.)	Mother of thyme.	The herb.	Aromatic.	
Seſelis vulgaris, (*Tordyl. officin.* Lin.)	Common hartwort.	The ſeeds.	Agreeable aromatics, but neglected. *Lewis.*	
Seſelis maſſilienſis.	Italian hartwort.	The ſeeds.		
Sigillum Salomonis, (*Convallaria Polygon.* Lin.)	Solomon's ſeal.	The root.	Probably emollient.	
Simarouba.	Simarouba bark.		Aſtringent.	
Sinapi, (*Sinapis nigra,* Lin.)	Muſtard.	The ſeeds.	Strongly pungent and ſtimulant.	An expreſſed oil.
Solanum, (*Solan. nigr.* Lin)	Nightſhade.	The leaves.	Powerfully evacuant.	
Spermaceti.	Spermaceti.		A mild emollient.	Gives name to a lohoch.
Spina cervina, (*Rham. cathart.* Lin.	Buckthorn.	The berries.	Strongly cathartic.	A ſyrup.
Spiritus vinoſi.	Vinous Spirits.		Cordial and ſtimulant.	Uſed as menſtruums for tinctures, &c. in almoſt every preparation of that kind.
Spongia, (*Spongia officinal.* Lin.)	Sponge.		Uſed as a tent for dilating ulcers, &c.	Burnt.
Stannum, (*Stan. chryſtallin.* Lin.)	Tin.		Anthelmintic.	Powdered.
Staphiſagria, (*Delphin. ſtaphiſagr.* Lin.)	Staveſacre.	The ſeeds.	A violent cathartic taken internally. Its external application deſtroys lice and other inſects.	
Stoechas, (*Lavendul. ſtoechas,* Lin.)	Arabian ſtoechas, or French lavender.	The flowers.	Aromatic.	An ingredient in mithridate and theriaca.
Stramonium, (*Datur. ſtramon.* Lin.)	Thorn-apple.	The herb.	Narcotic.	An extract.
Suber, (*Querc. ſub.* Lin.)	The cork-tree.	The bark.	Aſtringent.	
Succinum, (*Succin. electric.* Lin.)	Amber.		Aſtringent and corroborant.	A tincture, balſam, eſſential oil, and an ingredient in ſeveral officinal preparations.
Sulphur.	Sulphur, or brimſtone.		Laxative, diaphoretic, and alterant.	Solutions in different kinds of oils, called *balſams,* and an ingredient in ſome ointments.
Sumach, (*Rhus coriaria,* Lin.)	Common ſumach.	The leaves and ſeeds.	Aſtringent.	
Tacamahac.	Gum tacamahac.		Diſcutient, emollient, and ſuppurative.	An ingredient in ſeveral plaſters.

Tamarindus,

List of Simples.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PREPARATIONS FROM THEM.
Tamarindus, (*Tamarind. Indica*, Lin.)	Tamarinds.	The fruit.	Refrigerant and laxative.	Ingredients in ſome laxative electuaries.
Tamariſcus, (*Tamarix Gallica*, Lin.)	The tamariſk-tree.	The leaves and bark.	Aſtringent.	
Tanacetum, (*Tanacet. vulgar.* Lin.)	Tanſy.	The leaves, flowers, and ſeeds.	Stimulating, antiſpaſmodic, and anthelmintic.	
Thapſus barbatus, (*Verbaſc. thapſus*. Lin.)	Great white mullein.	The leaves and flowers.	Analeptic.	A ſpirituous extract from the flowers.
Tartarum.	Tartar.		Refrigerant and cathartic.	Purified from its earthy parts, and called *cream of tartar*, the baſis of ſome uſeful purging ſalts. An alkali is alſo prepared from it by fire.
Terebinthina Chia.	Chian, or Cyprus turpentine.		Warm ſtimulating diuretics and aperients.	
Terebinthina Veneta.	Venice turpentine.			
Terebinthina Argentoratenſis.	Straſburgh turpentine.			
Terebinthina communis.	Common turpentine.		Uſed chiefly in external applications.	An eſſential oil. The reſiduum forms the *reſina alba et nigra*, or white and black roſin of the ſhops, uſed in almoſt every ointment.
Thea bohea et viridis.	Bohea and green tea.	The leaves.	Cordial, diuretic, and diaphoretic.	An infuſion.
Thlaſpi, (*Thlaſp. arvenſ.* Lin.)	Treacle, or mithridate muſtard.	The ſeeds.	Aromatic and ſtimulant.	Ingredient in theriaca.
Thymus citratus.	Lemon thyme.	The leaves.	An agreeable aromatic.	A diſtilled water and eſſential oil.
Thymus vulgaris.	Common thyme.	The leaves.	An agreeable aromatic.	A diſtilled water and eſſential oil.
Tilia, (*Tilia Europæa*, Lin.)	The lime, or linden tree.	The flowers.	Antiſpaſmodic.	
Tithymalus.	The ſpurge.	The juice of the root.	Moſt violent and inflammatory cathartics.	
Tormentilla, (*Tormentill. erect.* Lin.)	Tormentil, or ſeptfoil.	The root.	Aſtringent.	An ingredient in ſeveral officinal compoſitions.
Trifolium paludoſum, (*Menyanthes trifoliata*. Lin.)	Marſh trefoil, or buck bean.	The leaves.	Laxative and alterant.	
Triticum.	Wheat.	The grain and flour.	Nutritive and glutinous.	Starch.
Turpethum, (*Convolv. turpeth.* Lin.)	Turbith.	The root.	Violently cathartic.	An extract.
Tuſſilago, (*Tuſſilag. farfar.* Lin.)	Coltsfoot.	The leaves and flowers.	Emollient and mucilaginous.	An ingredient in pectoral decoctions.
Valeriana ſylveſtris, (*Valer. officin.* Lin.)	Wild valerian.	The root.	Antiſpaſmodic.	A tincture in proof ſpirit, and in volatile ſpirit; alſo an ingredient in ſeveral cephalic and anti-epileptic medicines.
Veronica mas, (*Veron. officin.* Lin.)	Male ſpeedwell.	The leaves.	Aperient.	Infuſions.

Vinum.

TECHNICAL NAMES.	ENGLISH NAMES.	PARTS USED IN MEDICINE.	VIRTUES.	PEREPARATIONS FROM THEM.
Vinum.	Wine.		Cordial and corroborant.	A menſtruum for a great number of medicinal ſubſtances.
Viola, (*Viola odorat.* Lin.)	The ſingle March violet.	The flowers.	Laxative.	A ſyrup.
Vipera, (*Coluber viper.* Lin.)	The viper.	The fleſh and fat.	Reſtorative and emollient.	A vinous tincture; an ingredient in theriaca.
Vitis vinifera.	The vine.	The leaves, ſap, flowers, and fruit.	Aſtringent, diuretic, aromatic, and pectoral.	Wine. The dried fruit or raiſins are ingredients in ſome pectoral and ſtomachic medicines.
Winteranus cortex, (*Winteran. aromat.* Lin.)	Winter's bark.		Aromatic.	
Urtica.	The nettle.	The herb.	Refrigerant and diuretic.	
Uva urſi, (*Arbutus uv. urſ.* Lin.)		The leaves.	Aſtringent and lithontriptic.	
Zedoaria, (*Kæmpſeria rotund.* Lin.)	Zedoary.	The root.	Stomachic and corroborant.	An extract with proof-ſpirit. Alſo an ingredient in ſome cordial medicines.
Zincum.	Zinc.		Suppoſed to be a good antiepileptic.	The metal reduced to a calx by fire. Calamine and tutty are a kind of ores of this metal. Theſe laſt are the baſis of two officinal ointments. A ſalt produced by its combination with the vitriolic acid. See CHEMISTRY, n° 157.
Zinziber, (*Amom. zinzib.* Lin.)	Ginger.	The root.	Aromatic.	A ſyrup. Alſo an ingredient in many officinal compoſitions.

N. B. To moſt of the articles taken from the *Pharmacopœia Roſſica* (lately publiſhed at Peterſburg,) no virtues are annexed in the above liſt, becauſe none are mentioned in the original.

MATHEMATICS, the ſcience of quantity; or a ſcience that conſiders magnitudes either as computable, or meaſurable.

The word in its original, μαθησις, ſignifies *diſcipline*, or *ſcience* in the general; and ſeems to have been applied to the doctrine of quantity, either by way of eminence, or becauſe, this having the ſtart of all other ſciences, the reſt took their common name therefrom. See SCIENCE.

For the origin of the mathematics, Joſephus dates it before the flood, and makes the ſons of Seth obſervers of the courſe and order of the heavenly bodies: he adds, that to perpetuate their diſcoveries, and ſecure them from the injuries either of a deluge or a conflagration, they had them engraven on two pillars, the one of ſtone, the other of brick; the former of which he ſays was ſtanding in Syria in his days. See ASTRONOMY.

The firſt who cultivated mathematics after the flood, were the Aſſyrians and Chaldeans; from whom, the ſame Joſephus adds, they were carried by Abraham to the Egyptians; who proved ſuch notable proficients, that Ariſtotle makes no ſcruple to fix the firſt riſe of mathematics among them. From Egypt, 584 years before Chriſt, they paſſed into Greece through the hands of Thales; who having learned geometry of the Egyptian prieſts, taught it in his own country. After Thales, comes Pythagoras; who, among other mathematical arts, paid a particular regard to arithmetic; fetching the greateſt part of his philoſophy from numbers: he was the firſt, as Laërtius tells us, who abſtracted geometry from matter; and to him we owe the doctrine of incommenſurable magnitude, and the five regular bodies, beſides the firſt principles of muſic and aſtronomy. Pythagoras was ſucceeded by Anaxagoras, Oenopides, Briſo, Antipho, and Hippocrates of Scio; who all applied themſelves particularly to the quadrature of the circle, the duplicature of the cube, &c. but the laſt with moſt ſucceſs: this laſt is alſo mentioned by Proclus, as the firſt who compiled elements of mathematics.

Democritus excelled in mathematics as well as phyſics; though none of his works in either kind are extant, the deſtruction of which ſome authors lay at Ariſtotle's door. The next in order is Plato, who not only improved geometry, but introduced it into phyſics, and ſo laid the foundation of a ſolid philoſophy. Out of his ſchool proceeded a crowd of mathematicians. Proclus mentions 13 of note; among whom was Leodamus, who improved the analyſis firſt invented by Plato; Theætetus, who wrote elements; and Archytas, who has the credit of being the firſt who applied Mathematics to uſe in life. Theſe were ſucceeded by Neocles and Theon, the laſt of whom contributed to the elements. Eudoxus excelled in arithmetic and geometry, and was the firſt founder of a ſyſtem of aſtronomy. Menechmus invented the conic-ſections, and Theudius and Hermotimus improved the elements.

For Ariſtotle, his works are ſo ſtored with mathematics, that Blancanus compiled a whole book of them: out of his ſchool came Eudemus and Theophraſtus; the firſt of whom wrote of numbers, geometry, and inviſible lines; the latter, a mathematical hiſtory. To Ariſteus, Iſidorus, and Hypſicles, we owe the books of ſolids; which, with the other books of elements, were improved, collected, and methodiſed by Euclid, who died 284 years before Chriſt.

An hundred years after Euclid, came Eratoſthenes and Archimedes. Cotemporary with the latter was Conon, a geometrician and aſtronomer. Soon after came Apollonius Pergæus; whoſe conics are ſtill extant. To him are likewiſe aſcribed the 14th and 15th books of Euclid, which are ſaid to have been contracted by Hypſicles. Hipparchus and Menelaus wrote on the ſubtenſes in a circle, the latter alſo on ſpherical triangles: Theodoſius's three books of ſphericks are ſtill extant. And all theſe, Menelaus excepted, lived before Chriſt.

A. D. 70. Ptolemy of Alexandria was born; the prince of aſtronomers, and no mean geometrician: he was ſucceeded by the philoſopher Plutarch, of whom we have ſtill extant ſome mathematical problems. After him came Eutocius, who commented on Archimedes, and occaſionally mentions the inventions of Philo, Diocles, Nicomedes, Sporus, and Heron, on the duplicature of the cube. To Cteſebes of Alexandria, we owe our pumps; and Geminus, who came ſoon after, is preferred by Proclus to Euclid himſelf.

Diophantus of Alexandria was a great maſter of numbers, and the firſt inventor of algebra: among others of the ancients, Nicomachus is celebrated for his arithmetical, geometrical, and muſical works; Serenus, for his books on the ſection of the cylinder; Proclus, for his comments on Euclid; and Theon has the credit, among ſome, of being author of the books of elements aſcribed to Euclid. The laſt to be named among the ancients, is Pappus of Alexandria, who flouriſhed A. D. 400, and is celebrated for his books of mathematical collections ſtill extant.

Mathematics are commonly diſtinguiſhed into *pure and ſpeculative*, which conſider quantity abſtractedly; and *mixed*, which treat of magnitude as ſubſiſting in material bodies, and conſequently are interwoven every where with phyſical conſiderations.

Mixed mathematics are very comprehenſive; ſince to them may be referred aſtronomy, optics, geography, hydroſtatics, mechanics, fortification, navigation, &c. See the articles ASTRONOMY, OPTICS, &c.

Pure mathematics have one peculiar advantage, that they occaſion no diſputes among wrangling diſputants, as in other branches of knowledge; and the reaſon is, becauſe the definitions of the terms are premiſed, and every body that reads a propoſition has the ſame idea of every part of it. Hence it is eaſy to put an end to all mathematical controverſies, by ſhowing, either that our adverſary has not ſtuck to his definitions, or has not laid down true premiſſes, or elſe that he has drawn falſe concluſions from true principles; and in caſe we are able to do neither of theſe, we muſt acknowledge the truth of what he has proved.

It is true, that in mixed mathematics, where we reaſon mathematically upon phyſical ſubjects, we cannot give ſuch juſt definitions as the geometricians: we muſt therefore reſt content with deſcriptions; and they will be of the ſame uſe as definitions, provided we are conſiſtent with ourſelves, and always mean the ſame thing by thoſe terms we have once explained.

Dr Barrow gives a moſt elegant deſcription of the excellence and uſefulneſs of mathematical knowledge, in his inaugural oration, upon being appointed profeſſor of mathematics at Cambridge.

The mathematics, he obſerves, effectually exerciſe, not vainly delude, nor vexatiouſly torment, ſtudious minds with obſcure ſubtilties; but plainly demonſtrate every thing within their reach, draw certain concluſions, inſtruct by profitable rules, and unfold pleaſant queſtions. Theſe diſciplines likewiſe enure and corroborate the mind to a conſtant diligence in ſtudy; they wholly deliver us from a credulous ſimplicity, moſt ſtrongly fortify us againſt the vanity of ſcepticiſm, effectually reſtrain us from a raſh preſumption, moſt eaſily incline us to a due aſſent, and perfectly ſubject us to the government of right reaſon. While the mind is abſtracted and elevated from ſenſible matter, diſtinctly views pure forms, conceives the beauty of ideas, and inveſtigates the harmony of proportions; the manners themſelves are ſenſibly corrected and improved, the affections compoſed and rectified, the fancy calmed and ſettled, and the underſtanding raiſed and excited to more divine contemplations.

MATHEMATICAL, any thing belonging to the ſcience of mathematics.

MATHEMATICAL *Inſtruments*, ſuch inſtruments as are uſually employed by mathematicians, as compaſſes, ſcales, quadrants, &c.

Machine for dividing MATHEMATICAL *Inſtruments*. See RAMSDEN'*s Machine*.

MATHER (Dr Cotton), an eminent American divine, born at Boſton in New England in the year 1663. He was educated in Harward college, and in 1684 became miniſter of Boſton; in the diligent diſcharge of which office he ſpent his life, and promoted ſeveral excellent ſocieties for the public good: particularly one for ſuppreſſing diſorders, one for reforming manners, and a ſociety of peace-makers, whoſe profeſſed buſineſs it was to compoſe differences and prevent lawſuits. His reputation was not confined to his own country: for in 1710, the univerſity of Glaſgow ſent him a diploma for the degree of doctor in divinity; and, in 1714, the Royal Society of London choſe him one of their fellows. He died in 1728; and is ſaid to have publiſhed in his life-time 382 pieces, including ſingle ſermons, eſſays, &c. yet ſeveral were of a larger ſize, among which was *Magnalia Chriſti Americana*, or an Eccleſiaſtical Hiſtory of New-England, from its firſt planting in 1620, to 1698, folio. But the moſt remarkable of all his works was that in which, like Glanville, he defended the doctrine of witchcraft. We ſhall content ourſelves with giving the title at large, which is as follows: "The wonders of the inviſible world; being an account of the trials of ſeveral witches lately executed in New England, and of ſeveral remarkable curioſities therein occurring. Together with, 1. Obſervations on the nature, the number, and the operations of the devils. 2. A ſhort narrative of a late outrage committed by a knot of witches in Swedeland; very much reſembling, and ſo far explaining, that under which New-England has laboured. 3. Some counſels directing a due improvement of the terrible things lately done by the unuſual and amazing range of evil ſpirits in New-England. 4. A brief diſcourſe upon the temptations which are the more ordinary devices of Satan. By Cotton Mather; publiſhed by the ſpecial command of his excellency the governor of the province of Maſſachuſet's Bay in New England." Printed firſt at Boſton in New-England, and reprinted at London in 1736, 4to.

MATRASS, CUCURBIT, or BOLT-HEAD, among chemiſts. See CHEMISTRY, n° 80.

MATRICARIA, FEVERFEW; a genus of the polygamia ſuperflua order, belonging to the ſyngeneſia claſs of plants. There are five ſpecies, but the only remarkable one is the parthenium or common feverfew. This hath very fibrous cluſtering roots, crowned with numerous compound leaves; upright ſtalks branching on every ſide two or three feet high; garniſhed with compound plain leaves of ſeven oval folioles, cut into many parts; and all the branches terminated by many compound radiated white flowers having a yellow diſk. There are varieties with double flowers, with ſemi-double flowers, with double fiſtular flowers, with a fiſtular diſc and plain radius, with ſhort-rayed flowers, with rayleſs flowers, with rayleſs ſulphur-coloured heads, and with finely curled leaves.—All theſe varieties flower abundantly in June, each flower being compoſed of numerous hermaphrodite and female florets; the former compoſe the diſc, the latter the radius or border, and which, in the double and fiſtulous kinds, are very ornamental in gardens, but of a diſagreeable odour; and are all ſucceeded by plenty of ſeed in autumn, by which they are eaſily propagated, as well as by parting the roots and cuttings.

Medical uſes. This plant has received a moſt extraordinary character in hyſteric and other affections of the nerves, as well as for being a carminative, or warm ſtimulating bitter. Dr Lewis, however, thinks it inferior to camomile; with which he ſays it agrees in all its ſenſible qualities, only being ſomewhat weaker.

MATRICULA, a regiſter kept of the admiſſion of officers and perſons entered into any body or ſociety, whereof a liſt is made.

MATRIMONY. See MARRIAGE.

MATRIX, or UTERUS. See ANAT. n° 372.

MATRON, an elderly married woman.

Jury of MATRONS. When a widow feigns herſelf with child in order to exclude the next heir, and a ſuppoſititious birth is ſuſpected to be intended, then, upon the writ *de ventre inſpiciendo*, a jury of women is to be impanelled to try the queſtion whether the woman is with child or not. So, if a woman is convicted of a capital offence, and, being condemned to ſuffer death, pleads in ſtay of execution, that ſhe is pregnant, a jury of matrons is impanelled to inquire into the truth of the allegation; and, if they find it true, the convict is reſpited till after her delivery.

MATRONALIA, a feſtival of the ancient Roman matrons, from whom it had its name. It was celebrated on the kalends of March in honour of the god Mars; and was to the Roman ladies what the Saturnalia was to their huſbands, for at this time they ſerved their women-ſlaves at tables and received preſents from their huſbands.

MATROSSES, are ſoldiers in the train of artillery, who are next to the gunners, and aſſiſt them in loading, firing, and ſpunging the great guns. They carry firelocks, and march along with the ſtore waggons, both as a guard, and to give their aſſiſtance in caſe a waggon ſhould break down.

MATT, in a ſhip, is a name given to rope-yarn, junk, &c. beat flat and interwoven; uſed in order to preſerve the yards from galling or rubbing in hoiſting or lowering them.

MATTER, whatever is extended, and capable of making reſiſtance: hence, becauſe all bodies, whether ſolid of fluid, are extended, and do reſiſt, we conclude that they are material, or made up of matter. See MECHANICS, chap. i.

MATTHEW, *or Goſpel of St* MATTHEW, a canonical book of the New Teſtament.

St MATTHEW wrote his goſpel in Judæa, at the requeſt of thoſe he had converted; and it is thought he began in the year 41, eight years after Chriſt's reſurrection. It was written, according to the teſtimony of all the ancients, in the Hebrew or Syriac language; but the greek verſion, which now paſſes for the original, is as old as the apoſtolical times.

St MATTHEW *the Evangeliſt's Day*, a feſtival of the Chriſtian church, obſerved on September 21ſt.

St MATTHEW, the ſon of Alpheus, was alſo called *Levi*. He was of Jewiſh original, as both his names diſcover, and probably a Galilean. Before his call to the apoſtolate, he was a publican or toll-gatherer to the Romans: an office of bad repute among the Jews, on account of the covetouſneſs and exaction of thoſe who managed it; St Matthew's office particularly conſiſting in gathering the cuſtoms of all merchandize that came by the ſea of Galilee, and the tribute that paſſengers were to pay who went by water. And here it was that Matthew ſat at the receipt of cuſtom, when our Saviour called him to be a diſciple. It is probable, that, living at Capernaum, the place of Chriſt's uſual reſidence, he might have ſome knowledge of him before he was called. Matthew immediately expreſſed his ſatisfaction in being called to this high dignity, by entertaining our Saviour and his diſciples at a great dinner at his own houſe, whither he invited all his friends, eſpecially thoſe of his own profeſſion, hoping, probably, that they might be influenced by the company and converſation of Chriſt. St Matthew continued with the reſt of the apoſtles till after our Lord's aſcenſion. For the firſt eight years afterwards, he preached in Judæa. Then he betook himſelf to propagating the goſpel among the Gentiles, and choſe Ethiopia as the ſcene of his apoſtolical miniſtry; where it is ſaid he ſuffered martyrdom, but by what kind of death is altogether uncertain. It is pretended, but without any foundation, that Hyrtacus, king of Ethiopia, deſiring to marry Iphigenia, the daughter of his brother and predeceſſor Æglippus, and the apoſtle having repreſented to him that he could not lawfully do it, the enraged prince ordered his head immediately to be cut off. Baronius tells us, the body of St Matthew was tranſported from Ethiopia to Bithynia, and from thence was carried to Salernum in the kingdom of Naples in the year 954, where it was found in 1080, and where duke Robert built a church bearing his name.

St MATTHEW, a town of Spain in the kingdom of Arragon, ſeated in a pleaſant plain, and in a very fertile country watered with many ſprings. W. Long. 0. 15. N. Lat. 40. 22.

MATTHEW *of Paris*. See PARIS.

MATTHEW *of Weſtminſter*, a Benedictine monk and accompliſhed ſcholar, who wrote a hiſtory from the beginning of the world to the end of the reign of Edward I. under the title of *Flores Hiſtoriarum*; which was afterwards continued by other hands. He died in 1380.

St MATTHIAS, an apoſtle, was choſen inſtead of Judas. He preached in Judæa and part of Æthiopia, and ſuffered martyrdom. See the *Acts of the Apoſtles*, chap. i. There was a Goſpel publiſhed under Matthias's name, but rejected as ſpurious; as likewiſe ſome traditions, which met with the ſame fate.

St MATTHIAS'*s Day*; a feſtival of the Chriſtian church, obſerved on the 24th of February. St Matthias was an apoſtle of Jeſus Chriſt, but not of the number of the twelve choſen by Chriſt himſelf. He obtained this high honour upon a vacancy made in the college of the apoſtles by the treaſon and death of Judas Iſcariot. The choice fell on Matthias by lot; his competitor being Joſeph called *Barſabas*, and ſirnamed *Juſtus*. Matthias was qualified for the apoſtleſhip, by having been a conſtant attendant upon our Saviour all the time of his miniſtry. He was, probably, one of the ſeventy diſciples. After our Lord's reſurrection, he preached the goſpel firſt in Judæa. Afterwards it is probable he travelled eaſtwards, his reſidence being principally near the irruption of the river Apſarus and the haven Hyſſus. The barbarous people treated him with great rudeneſs and inhumanity; and, after many labours and ſufferings in converting great numbers to Chriſtianity, he obtained the crown of martyrdom; but by what kind of death, is uncertain.—They pretend to ſhew the relics of St Matthias at Rome; and the famous abbey of St Matthias near Treves boaſts of the ſame advantage; but doubtleſs both without any foundation. There was a goſpel aſcribed to St Matthias; but it was univerſally rejected as ſpurious.

MATTINS, the firſt canonical hour, or the firſt part of the daily ſervice, in the Romiſh church.

MATTHIOLUS (Peter Andrew), an eminent phyſician in the 16th century, born at Sienna, was well ſkilled in the Greek and Latin tongues. He wrote learned commentaries on Dioſcorides, and other works which are eſteemed; and died in 1577.

MATURANTS, in pharmacy, medicines which promote the ſuppuration of tumours.

MAUCAUCO, MACACO, or *Maki*, in zoology. See LEMUR, n° 3.

MAVIS, in ornithology, a ſpecies of turdus. See TURDUS.

MAUBEUGE, a town of the Netherlands in Hainault, with an illuſtrious abbey of canoneſſes, who muſt be noble both by the father and mother's ſide. This place was ceded to France in 1678; and fortified after the manner of Vauban. It is ſeated on the river Sambre, in E. Long. 5. 0. N. Lat. 50. 15.

MAUNCH, in heraldry, the figure of an ancient coat ſleeve, borne in many gentlemens eſcutcheons.

MAUNDY THURSDAY, is the Thurſday in Paſſion-week; which was called *Maundy* or *Mandate Thurſday*, from the command which our Saviour gave his apoſtles to commemorate him in the Lord's ſupper, which he this day inſtituted; or from the new commandment which he gave them to love one another, after he had waſhed their feet as a token of his love to them.

MAUPERTUIS (Peter Louis Morceau de), a celebrated French academician, was born at St Malo in 1698; and was there privately educated till he arrived at his 16th year, when he was placed under the celebrated profeſſor of philoſophy M. le Blond, in the college of la Marche, at Paris. He ſoon diſcovered a paſſion for mathematical ſtudies, and particularly for geometry. He likewiſe practiſed inſtrumental muſic in his early years with great ſucceſs; but fixed on no profeſſion till he was 20, when he entered into the army. He firſt ſerved in the Grey Muſqueteers; but in the year 1720, his father purchaſed him a company of cavalry in the regiment of La Rocheguyon.

He remained but five years in the army, during which time he purſued his mathematical ſtudies with great vigour; and it was ſoon remarked by M. Freret, and other academicians, that nothing but geometry could ſatisfy his active ſoul and unbounded thirſt for knowledge. In the year 1723, he was received into the Royal Academy of Sciences, and read his firſt performance, which was a memoir upon the conſtruction and form of muſical inſtruments, November 15. 1724.

During the firſt years of his admiſſion he did not wholly confine his attention to mathematics; he dipt into natural philoſophy, and diſcovered great knowledge and dexterity in obſervations and experiments upon animals.

If the cuſtom of travelling into remote climates, like the ſages of antiquity, in order to be initiated into the learned myſteries of thoſe times, had ſtill ſubſiſted, no one would have conformed to it with greater eagerneſs than M. de Maupertuis. His firſt gratification of this paſſion was to viſit the country which had given birth to Newton; and during his reſidence at London he became as zealous an admirer and follower of that philoſopher as of any one of his own countrymen.

His next excurſion was to Baſil in Switzerland, where he formed a friendſhip with the famous John Bernouilli and his family, which continued to his death.

At his return to Paris, he applied himſelf to his favourite ſtudies with greater zeal than ever:—and how well he fulfilled the duties of an academician, may be gathered by running over the memoirs of the academy from the year 1724 to 1736; where it appears that he was neither idle, nor occupied by objects of ſmall importance. The moſt ſublime queſtions in geometry and the relative ſciences received from his hands that elegance, clearneſs, and preciſion, ſo remarkable in all his writings.

In the year 1736, he was ſent by the king of France to the polar circle, to meaſure a degree in order to aſcertain the figure of the earth, accompanied by Meſſrs Clairaut, Camus, Le Monnier, l'Abbé Outhier, and Celſius the celebrated profeſſor of aſtronomy at Upſal. This diſtinction rendered him ſo famous, that, at his return, he was admitted a member of almoſt every academy in Europe.

In the year 1740, he had an invitation from the king of Pruſſia to go to Berlin; which was too flattering to be refuſed. His rank among men of letters had not wholly effaced his love for his firſt profeſſion, namely, that of arms. He followed his Pruſſian majeſty into the field, and was a witneſs of the diſpoſitions and operations that preceded the battle of Molwitz; but was deprived of the glory of being preſent, when victory declared in favour of his royal patron, by a ſingular kind of adventure. His horſe, during the heat of the action, running away with him, he fell into the hands of the enemy, and was at firſt but roughly treated by the Auſtrian ſoldiers, to whom he could not make himſelf known for want of language; but being carried priſoner to Vienna, he received ſuch honours from their imperial majeſties as were never effaced from his memory.

From Vienna, he returned to Berlin; but as the reform of the academy which the king of Pruſſia then meditated was not yet mature, he went again to Paris, where his affairs called him, and was choſen, in 1742, director of the academy of ſciences.

In 1743, he was received into the French academy. This was the firſt inſtance of the ſame perſon being a member of both the academies at Paris at the ſame time.

M. de Maupertuis again aſſumed the ſoldier at the ſiege of Fribourg, and was pitched upon by marſhal Cogny and the count d'Argenſon to carry the news to the French king of the ſurrender of that citadel.

He returned to Berlin in the year 1744, when a marriage was negotiated and brought about by the good offices of the queen mother, between our author and mademoiſelle de Borck, a lady of great beauty and merit, and nearly related to M. de Borck, at that time miniſter of ſtate. This determined M. de Maupertuis to ſettle at Berlin, as he was extremely attached to his new ſpouſe, and regarded this alliance as the moſt fortunate circumſtance of his life.

In the year 1746, he was declared by his Pruſſian majeſty preſident of the royal academy of ſciences at Berlin, and ſoon after by the ſame prince was honoured with the order of Merit.

However, all theſe accumulated honours and advantages, ſo far from leſſening his ardour for the ſciences, ſeemed to furniſh new allurements to labour and application. Not a day paſſed but he produced ſome new project or eſſay for the advancement of knowledge. Nor did he confine himſelf to mathematical ſtudies only: metaphyſics, chemiſtry, botany, polite literature, all ſhared his attention, and contributed to his fame.

But his conſtitution, though naturally robuſt, ſoon felt the effects of this intemperance in his philoſophical purſuits. Indeed his health had been conſiderably impaired before, by the great fatigues of various kinds in which his active mind had involved him. Though from the amazing hardſhips he had undergone in his northern expedition, moſt of his future bodily ſufferings may be traced. The intenſe ſharpneſs of the air could only be ſupported by means of ſtrong liquors; which helped but to lacerate his lungs, and bring on a ſpitting of blood, which began at leaſt 12 years before he died.

Yet ſtill, after his bodily ſtrength was thus impaired, his mind ſeemed to enjoy the greateſt vigour; for the beſt of his writings were produced, and moſt ſublime ideas developed, during the time of his confinement by ſickneſs, when he was unable to occupy his preſidial chair at the academy

M. de Maupertuis took ſeveral journeys to St Malo, during the laſt years of his life, for the recovery of his health. And though he always received benefit by breathing his native air, yet ſtill, upon his return to Berlin, his diſorder likewiſe returned with greater violence.—His laſt journey into France was undertaken in the year 1757; when he was obliged, ſoon after his arrival there, to quit his favourite retreat at St Malo, on account of the danger and confuſion which that town was thrown into by the arrival of the Engliſh in its neighbourhood.

From thence he went to Bourdeaux, hoping there to meet with a neutral ſhip to carry him to Hamburgh, in his way back to Berlin; but, being diſappointed in that hope, he went to Toulouſe, where he remained ſeven mouths. He had then thoughts of going to Italy, in hopes a milder climate would reſtore him to health;—but finding himſelf grow worſe, he rather inclined towards Germany, and went to Neufchatel, where for three months he enjoyed the converſation of lord Marſhal, with whom he had formerly been much connected. At length he arrived at Baſil, October 16. 1758, where he was received by his friend Bernouilli and his family, with the utmoſt tenderneſs and affection. He at firſt found himſelf much better here than he had been at Neufchatel: but this amendment was of ſhort duration; for as the winter approached, his diſorder returned, accompanied by new and more alarming ſymptoms. He languiſhed here many months, during which he was attended by M. de la Condamine; and died in 1759.

He wrote in French, 1. The figure of the earth determined. 2. The meaſure of a degree of the meridian. 3. A diſcourſe on the parallax of the moon. 4. A diſcourſe on the figure of the ſtars. 5. The elements of geography. 6. Nautical aſtronomy. 7. Elements of aſtronomy. 8. A phyſical diſſertation on a white inhabitant of Africa. 9. An eſſay on coſmography. 10. Reflexions on the origin of languages. 1. An eſſay on moral philoſophy. 12. A letter on the progreſs of the ſciences. 13. An eſſay on the formation of bodies. 14. An elogium on M. de Monteſquieu. 15. Letters, and other works.

MAURUA, one of the Society-Iſlands in the South Sea. It is a ſmall iſland, entirely ſurrounded with a ridge of rocks, and without any harbour for ſhipping. It is inhabited; and its productions are the ſame with thoſe of the neighbouring iſlands. A high round hill riſes in the middle of it, which may be ſeen at the diſtance of ten or twelve leagues.

MAURITIUS, or Maurice, an iſland of Africa, about 500 miles eaſt of Madagaſcar. It lies in the latitude of 20 and 21 degrees ſouth; the climate warm, but very wholſome; the ſoil ſtony. It is encumbered with high rocks and lofty mountains along the coaſts; but within-land it is tolerably flat and fertile, exceedingly well watered, abounding with fiſh, fowl, and cattle, plentifully ſtored with ebony and other valuable woods, and, in point of extent, large enough to invite and ſupport a conſiderable colony. In the beginning of the 16th century it was diſcovered by the Portugueſe, who, knowing that Pliny and other ancient writers had mentioned the iſland of Cerne in theſe ſeas, took it for granted that this muſt be it; and accordingly we find it ſtiled *Cerne*, or *Sirne*, in their maps: but, notwithſtanding this, they did not think fit to ſettle it; and indeed their force was ſo ſmall, in compariſon of the vaſt dominions they graſped, that it was very excuſable. However, according to their laudable cuſtom, they put ſome hogs, goats, and other cattle upon it, that in caſe any of their ſhips either going to the Indies, or returning to Portugal, ſhould be obliged to touch there, they might meet with refreſhments. The Dutch, in the ſecond voyage they made to the Eaſt-Indies under their admiral James Cornelius Vanneck, came together with five ſhips on the 15th of September 1568; anchored in a commodious port, to which they gave the name of *Warwick Haven;* and gave a very good account of the place in their journals. Captain Samuel Caſtleton, in the Pearl, an Engliſh Eaſt-India ſhip, arrived there on the 27th of March 1612; and taking it to be an iſland undiſcovered before, beſtowed upon it the name of *England's-Foreſt*, though others of his crew called it *Pearl-Iſland*, and in the account of their voyage, written by John Tatton the maſter of the ſhip, celebrated it as a place very convenient for ſhipping, either outward or homeward bound, to refreſh at. This they ſometimes accordingly did, and brought ſome cargoes of ebony and rich wood from thence, but without fixing any ſettlement.

At length, in 1638, the Dutch ſeated themſelves here; and it is highly remarkable, that at the very time they were employed in making their firſt ſettlement, the French ſent a veſſel to take poſſeſſion of it, who found the Dutch before-hand with them, and refuſed the aſſiſtance of an Engliſh Indiaman, wooding and watering in another port of the iſland, who very frankly offered it, to drive the Dutch from their half-ſettled poſts. They continued for ſome time in quiet poſſeſſion of the places they fortified in this iſland, to which they gave the name of *Mauritius*. But having engaged the French, who were ſettled on Madagaſcar, to ſteal 50 of the natives, and ſell them for ſlaves, for the improvement of the Dutch ſettlements here, this proved the ruin of both colonies: for the negroes ſurpriſed and maſſacred the French in Madagaſcar; and the ſlaves in Mauritius fled into the centre of the iſland; from whence they ſo much and ſo inceſſantly moleſted thoſe who had been formerly their maſters, that they choſe to quit a country where they could no longer remain in any tolerable degree of ſafety. The Eaſt-India company, however, from motives of conveniency, and a very imperfect notion of its value, diſapproved this meaſure, and therefore ordered it to be reſettled; which was accordingly done, and three forts erected at the principal havens. Things now went on ſomewhat better than they did before; but they were ſtill very much diſturbed by the revolted negroes in the heart of the iſle, whom they could never ſubdue. One principal uſe that the company made of this place, was to ſend thither ſtate-priſoners, who, as they were not men of the beſt morals, quickly corrupted the reſt of the inhabitants, and rendered them ſuch a race of outrageous ſmugglers, the ſituation of the place concurring with their bad diſpoſitions, that, after various ineffectual attempts made to reform them, orders were at length given to abandon Mauritius a ſecond time, which, after ſome delays, were put in execution in the year 1710.

In this deſerted ſituation, it was occupied as a derelict, we cannot preciſely ſay when, by the old French Eaſt-India company, who beſtowed upon it the name of the *Iſle of France;* by which, amongſt their other poſſeſſions, it was granted to the preſent perpetual company of the Indies, who cauſed it to be ſettled, and, as if it had been a place of great ſignificancy, procured an edict for eſtabliſhing a provincial council there, dependent upon that in the iſle of Bourbon; both which councils, however, were in all reſpects below the very meaneſt corporation in this country, yet that of the iſle of France was by much the meaner of the two. In truth, it had coſt ſo much, and was conſidered in every light worth ſo little, that it had been more than once under deliberation, whether, after the example of the Dutch, they ſhould not leave it again to its old negro inhabitants; which ſooner or later in all likelihood would have been its fate, if, in 1735, the famous Mr de la Bourdonnaye had not been ſent thither, with the title of *governor-general of the French iſlands*.

He found this iſle in the worſt ſtate poſſible, thinly inhabited by a ſet of lazy people, who equally hated induſtry and peace, and who were continually flattering this man to his face, and belying him wherever and as far as they durſt. He gave himſelf no trouble about this, having once found the means to make himſelf obeyed; he ſaw the vaſt importance of the iſland; he conceived that it might be ſettled to great advantage; and, without ſo much as expecting the thanks of thoſe for whom he laboured, he began to execute this great deſign. His firſt ſtep was to bring over black boys from Madagaſcar, whom he carefully trained up in good principles, and in continual exerciſe; by which he rendered them ſo good ſoldiers, that he very quickly obliged the Marones, or wild negroes, either to ſubmit, or to quit the iſland: he taught the planters to cultivate their lands to advantage; he, by an aqueduct, brought freſh water to the ſea-ſide; and whereas they had not ſo much as a boat at his coming thither, he made a very fine dock, where he not only built ſloops and larger veſſels, but even a ſhip of the burden of 500 ton. However incredible it may ſeem, yet it is certainly fact, that in the ſpace of five years he rendered this country a paradiſe, that had been a

mere

ritania. mere wilderneſs for 5000; and this in ſpite of the inhabitants, and of the company, who being originally prejudiced by them, behaved ill to him at his return. He ſoon made the cardinal de Fleury, however, ſenſible of the true ſtate of things; and compelled the company to acknowledge, though they did not reward, his ſervices. He afterwards returned into the Indies, and perfected the work he had begun; and to him it is owing that the Iſle of France is at preſent one of the fineſt, as it was always one of the moſt important and improveable ſpots upon the globe.

MAURITANIA, an ancient kingdom of Africa, bounded on the weſt by the Atlantic Ocean, on the ſouth by Getulia or Libya Interior, and on the north by the Mediterranean, and comprehending the greater part of the kingdoms of Fez and Morocco.—Its ancient limits are not exactly mentioned by any hiſtorian; neither can they now be aſcertained by any modern obſervations, theſe kingdoms being but little known to Europeans.

This country was originally inhabited by a people called *Mauri*, concerning the etymology of which name authors are not agreed. It is probable, however, that this country, or at leaſt a great part of it, was firſt called *Phut*, ſince it appears from Pliny, Ptolemy, and St Jerom, that a river and territory not far from Mount Atlas went by that name. From the Jeruſalem Targum it likewiſe appears, that part of the Mauri may be deemed the offspring of Lud the ſon of Miſraim, ſince his deſcendents, mentioned Geneſis x. are there called מרוטאי, *Mauri* or *Mauritani*, It is certain, that this region, as well as the others to the eaſtward of it, had many colonies planted in it by the Phœnicians. Procopius tells us, that in his time two pillars of white ſtone were to be ſeen there, with the following inſcription in the Phoenician language and character, upon them: "We are the *Canaanites*, that fled from *Joſhua* the ſon of Nun, that notorious robber." *Ibnu Rachic*, or *Ibnu Raquig*, an African writer cited by Leo, together with Evagrius and Nicephorus Calliſtus, aſſert the ſame thing.

The Mauritanians, according to Ptolemy, were divided into ſeveral cantons or tribes. The *Metagonitæ* were ſeated near the ſtraits of Hercules, now thoſe of Gibraltar. The *Saccoſii*, or *Cocoſii*, occupied the coaſt of the Iberian ſea. Under theſe two petty nations the *Maſices*, *Verues*, and *Verbicæ* or *Vervicæ*, were ſettled. The *Saliſæ*, or *Salinſæ*, were ſituated lower, towards the ocean; and, ſtill more to the ſouth, the *Volubiliani*. The *Maurenſii* and *Herpiditani* poſſeſſed the eaſtern part of this country, which was terminated by the *Mulucha*. The *Angaucani*, or *Jangacaucani*, *Nectiberes*, *Zagrenſii*, *Baniubæ*, and *Vacuntæ*, extended themſelves from the ſouthern foot of Ptolemy's Atlas Minor to his Atlas Major. Pliny mentions the *Baniuræ*, whom Father Hardouin takes to be Ptolemy's Baniubæ; and Mela the Atlantes, whom he repreſents as poſſeſſed of the weſtern parts of this diſtrict.

The earlieſt prince of Mauritania mentioned in hiſtory is Neptune; and next to him were Atlas and Antæus his two ſons, both famous in the Grecian fables on account of their wars with Hercules. Antæus, in his contention with that hero, ſeems to have behaved with great bravery and reſolution. Having received large reinforcements of Libyan troops, he cut off great numbers of Hercules's men. But that celebrated commander, having at laſt intercepted a ſtrong body of Libyans ſent to the relief of Antæus, gave him a total overthrow, wherein both he and the beſt part of his forces were put to the ſword. This deciſive action put Hercules in poſſeſſion of Libya and Mauritania, and conſequently of the riches of all theſe kingdoms. Hence came the fable, that Hercules, finding Antæus, a giant of an enormous ſize with whom he was engaged in ſingle combat, to receive freſh ſtrength as often as he touched his mother earth when thrown upon her, at laſt lifted him up in the air and ſqueezed him to death. Hence likewiſe may be deduced the fable intimating that Hercules took the globe from Atlas upon his own ſhoulders, overcame the dragon that guarded the orchards of the Heſperides, and made himſelf maſter of all the golden fruit there. Bochart thinks that the fable alluded chiefly to naval engagements, wherein Hercules, for the moſt part, was victorious; though Antæus from time to time received ſuccours by ſea. But at laſt Hercules, comming up with one of his ſquadrons which had a ſtrong reinforcement on board, made himſelf maſter of it, and thus rendered Antœus incapable for the future of making head againſt him. The ſame author likewiſe inſinuates, that the notion of Antæus's gigantic ſtature prevailing for ſo many centuries amongſt the Tingitanians, pointed out the ſize of the veſſels of which his fleets and ſquadrons were compoſed. As for the golden apples ſo frequently mentioned by the old mythologiſts, they were the treaſures that fell into Hercules's hands upon the defeat of Antæus; the Greeks giving the oriental word מאל, *riches*, the ſignification affixed to their own term μηλα, *apples*.

Mauritania.

With regard to the age in which Atlas and Antæus lived, the moſt probable ſuppoſition ſeems to be that of Sir Iſaac Newton. According to that illuſtrious author, Ammon the father of Seſac was the firſt king of Libya, or that vaſt tract extending from the borders of Egypt to the Atlantic ocean; the conqueſt of which country was effected by Seſac in his father's life-time. Neptune afterwards excited the Libyans to a rebellion againſt Seſac, and ſlew him; and then invaded Egypt under the command of Atlas or Antæus, the ſon of Neptune, Seſac's brother and admiral. Not long after, Hercules, the general of Thebais and Ethiopia for the gods or great men of Egypt, reduced a ſecond time the whole continent of Libya, having overthrown and ſlain Antæus near a town in Thebais, from that event called *Antæa* or *Antæopolis*: this, we ſay, is the notion advanced by Sir Iſaac Newton, who endeavours to prove, that the firſt reduction of Libya, by Seſac, happened a little above a thouſand years before the birth of Chriſt, as the laſt, by Hercules, did ſome few years after. Now, though we do not pretend to adopt every particular circumſtance of Sir Iſaac Newton's ſyſtem, yet we cannot forbear obſerving, that it appears undeniably plain from ſcripture, that neither the weſtern extremity of Libya, nor even the other parts of that region, could poſſibly have been ſo well peopled before the time of David or Solomon, as to have ſent a numerous army to invade Egypt. For Egypt and Phœnicia, from whence the greateſt part of the anceſtors of the Libyans

Mauritania. byans came, and which were much nearer the place from whence the firſt diſperſion of mankind was made, could not themſelves have been greatly overſtocked with inhabitants any conſiderable time before the reign of Saul. And that ſuch an invaſion happened in the reign of Neptune, or at leaſt of his ſon Antæus, has been moſt fully evinced by this moſt excellent chronologer.

From the defeat of Antæus, nothing remarkable occurs in the hiſtory of Mauritania till the times of the Romans, who at laſt brought the whole kingdom under their juriſdiction, for which ſee the article ROME. With regard to the cuſtoms, &c. of this people, it would ſeem, from what Hyginus inſinuates, that they fought only with clubs, till one Belus, the ſon of Neptune, as that author calls him, taught them the uſe of the ſword. Sir Iſaac Newton makes this Belus to have been the ſame perſon with Seſoſtris king of Egypt, who over-ran a great part of the then known world. 2. All perſons of diſtinction in Mauritania went richly attired, wearing much gold and ſilver in their clothes. They took great pains in cleanſing their teeth, and curled their hair in a curious and elegant manner. They combed their beards, which were very long, and always had their nails pared extremely cloſe. When they walked out in any numbers, they never touched one another, for fear of diſconcerting the curls into which their hair had been formed. 3. The Mauritanian infantry, in time of action, uſed ſhields made of elephants ſkins, being clad in thoſe of lions, leopards, and bears, which they kept on both night and day. 4. The cavalry of this nation was armed with broad ſhort lances, and carried targets or bucklers, made likewiſe of the ſkins of wild beaſts. They uſed no ſaddles. Their horſes were ſmall and ſwift, had wooden collars about their necks, and were ſo much under the command of their riders, that they would follow them like dogs. The habit of theſe horſemen was not much different from that of the foot above-mentioned, they conſtantly wearing a large tunic of the ſkins of wild beaſts. The Phutæi, of whom the Mauritanians were a branch, were eminent for their ſhields, and the excellent uſe they made of them, as we learn from Homer, Xenophon, Herodotus, and ſcripture. Nay, Herodotus ſeems to intimate, that the ſhield and helmet came from them to the Greeks. 5. Notwithſtanding the fertility of their ſoil, the poorer ſort of the Mauritanians never took care to manure the ground, being ſtrangers to the art of huſbandry; but roved about the country in a wild ſavage manner, like the ancient Scythians or Arabes Scenitæ. They had tents, or *mapalia*, ſo extremely ſmall, that they could ſcarce breathe in them. Their food was corn, herbage, &c. which they frequently did eat green, without any manner of preparation; being deſtitute of wine, oil, and all the elegancies as well as many neceſſaries of life. Their habit was the ſame both in ſummer and winter, conſiſting chiefly of an old tattered, though thick, garment, and over it a coarſe rough tunic; which anſwered probably to that of their neighbours the Numidians. Moſt of them lay every night upon the bare ground; though ſome of them ſtrewed their garments thereon, not unlike the preſent African Kabyles and Arabs, who, according to Dr Shaw, uſe their hykes for a bed and covering in the night. 6. If the moſt approved reading of Horace may be admitted, the Mauritanians ſhot poiſoned arrows; which clearly intimates, that they had ſome ſkill in the art of preparing poiſons, and were excellent dartmen. This laſt obſervation is countenanced by Herodian and Ælian, who entirely come into it, affirming them to have been in ſuch continual danger of being devoured by wild beaſts, that they durſt not ſtir out of their tents or mapalia without their darts. Such perpetual exerciſe muſt render them exceedingly ſkilful in hurling that weapon. 7. The Mauritanians ſacrificed human victims to their deities, as the Phœnicians, Carthaginians, &c. did.

The country people were extremely rude and barbarous; but thoſe inhabiting cities muſt undoubtedly have had at leaſt ſome ſmattering in the literature of the ſeveral nations they deduced their origin from. That the Mauritanians had ſome knowledge in naval affairs, ſeems probable, not only from the intercourſe they had with the Phœnicians and Carthaginians, as well as the ſituation of their country; but likewiſe from Orpheus, or Onomacritus, who aſſerts them to have made a ſettlement at the entrance into Colchis, to which place they came by ſea. Magic, ſorcery, divination, &c. they appear to have applied themſelves to in very early times. Cicero and Pliny ſay, that Atlas was the inventor of aſtrology and the doctrine of the ſphere, i. e. he firſt introduced them into Mauritania. This, according to Diodorus Siculus, gave riſe to the fable of Atlas's bearing the heavens upon his ſhoulders. The ſame author relates, that Atlas inſtructed Hercules in the doctrine of the ſphere and aſtrology, or rather aſtronomy, who afterwards brought thoſe ſciences into Greece.

MAUSOLEUM, a magnificent tomb or funeral monument. The word is derived from Mauſolus king of Caria, to whom Artemiſia his widow erected a moſt ſtately monument, eſteemed one of the wonders of the world, and called it, from his own name, *Mauſoleum*.

ST MAWES, a town of Cornwall in England, ſeated on the eaſt ſide of Falmouth haven, in W. Long. 5. 26. N. Lat. 50. 30. It ſends two members to parliament.

MAXILLA, the JAW. See ANATOMY, n° 19.—25.

MAXIM, an eſtabliſhed propoſition or principle; in which ſenſe it denotes much the ſame with axiom.

MAXIMILIAN I. emperor of Germany, ſignalized himſelf againſt the French while he was king of the Romans, and after he was emperor entered into the army of Henry VIII. of England as a volunteer againſt that nation: he was a protector of learned men, and aboliſhed an iniquitous tribunal, ſtyled *Judicium oculum Weſtphaliæ*: he compoſed ſome poems, and the memoirs of his own life. He died in 1519, aged 60.

MAXIMUM, in mathematics, denotes the greateſt quantity attainable in any given caſe.

If a quantity conceived to be generated by motion increaſes or decreaſes till it arrives at a certain magnitude or poſition, and then, on the contrary, grows greater or leſſer, and it be required to determine the ſaid magnitude or poſition, the queſtion is called a *problem de maximis et minimis*.

MAXIMUS *of* Tyre, a Platonic philoſopher, went to Rome in 146, and acquired ſuch reputation there, that the emperor Marcus Aurelius became his ſcholar, and gave him frequent proofs of his eſteem. This philoſopher is thought to have lived till the reign of the emperor Commodus. There are ſtill extant 41 of his diſſertations; a good edition of which was printed by Daniel Heinſius, in 1624, in Greek and Latin, with notes.

Maximus (St.), an abbot and confeſſor of the 7th century, was of a noble family of Conſtantinople, and diſtinguiſhed himſelf by his zeal againſt the Monothelites, for which he was thrown into priſon, and died there on the 13th of Auguſt 1662. He wrote a Commentary on the books attributed to Dionyſius the Areopagite, and ſeveral other works, of which an edition has been publiſhed by father Combeſis.

MAY, the fifth month of the year, conſiſting of 31 days.

May (Iſle of), a ſmall iſland at the mouth of the Frith of Forth in Scotland, about a mile and an half in circumference, and ſeven miles from the coaſt of Fife, almoſt oppoſite to the rock called the *Baſs*. It formerly belonged to the priory of Pittenweem; and was dedicated to St Adrian, ſuppoſed to have been martyred in this place by the Danes; and hither, in times of Popiſh ſuperſtition, barren women uſed to come and worſhip at his ſhrine, in hopes of being cured of their ſterility. Here is a tower and light-houſe built by Mr Cunningham of Barns, to whom king Charles I. granted the iſland in fee, with power to exact two pence per ton from every ſhip that paſſes, for the maintenance of a light-houſe. In the middle of it there is a freſh-water ſpring, and a ſmall lake. The ſoil produces paſturage for 100 ſheep and 20 black cattle. On the weſt ſide the ſteep rocks render it inacceſſible; but to the eaſt there are four landing-places and good riding. It was here that the French ſquadron, having the chevalier de St George on board, anchored in the year 1708, when the vigilance of Sir George Byng obliged him to relinquiſh his deſign, and bear away for Dunkirk. The ſhores all round the iſland abound with fiſh, and the cliffs with water-fowl.

MAY (Thomas), an eminent Engliſh poet and hiſtorian in the 17th century, was born of an ancient but decayed family in Suſſex, educated at Cambridge, and afterwards removed to London, where he contracted a friendſhip with ſeveral eminent perſons, and particularly with Endymion Porter, Eſq; one of the gentlemen of the bed-chamber to king Charles I. While he reſided at court he wrote the five plays now extant under his name. In 1622, he publiſhed a tranſlation of Virgil's Georgics, with annotations; and in 1635 a poem on king Edward III. and a tranſlation of Lucan's Pharſalia, which poem he continued down to the death of Julius Cæſar, both in Latin and Engliſh verſe. Upon the breaking out of the civil wars he adhered to the parliament; and in 1647, he publiſhed, "The hiſtory of the parliament of England, which began November the third MDCXL. With a ſhort and neceſſary view of ſome precedent years." In 1649, he publiſhed, *Hiſtoriæ parliamenti Angliæ Breviarium*, in three parts; which he afterwards tranſlated into Engliſh. He wrote the Hiſtory of Henry II. in Engliſh verſe. He died in 1652. He went well to reſt over-night, after a cheerful bottle as uſual, and died in his ſleep before morning: upon which his death was imputed to his tying his night-cap too cloſe under his fat cheeks and chin, which cauſed his ſuffocation; but the facetious Andrew Marvel has written a poem of 100 lines, to make him a martyr of Bacchus, and die by the force of good wine. He was interred near Camden in Weſtminſter-Abbey; which cauſed Dr Fuller to ſay, that "if he were a biaſſed and partial writer, yet he lieth buried near a good and true hiſtorian indeed." Soon after the reſtoration, his body, with thoſe of ſeveral others, was dug up, and buried in a pit in St Margaret's church-yard; and his monument, which was erected by the appointment of Parliament, was taken down and thrown aſide.

MAYERNE (Sir Theodore de), baron of Aulbone, was the ſon of Lewis de Mayerne the celebrated author of The general hiſtory of Spain, and of the *Monarchie ariſto-democratique*, dedicated to the ſtates-general. He was born in 1573, and had for his godfather Theodore Beza. He ſtudied phyſic at Montpelier, and was made phyſician in ordinary to Henry IV. who promiſed to do great things for him provided he would change his religion. James I. of England invited him over, and made him firſt phyſician to himſelf and his queen, in which office he ſerved the whole royal family to the time of his death in 1655. His works were printed at London in 1700, and make a large folio, divided into two books; the firſt containing his *Conſilia, Epiſtolæ, & Obſervationes*; the ſecond his *Pharmacopœia variæque medicamentorum formulæ*.

MAYHEM. See Maim.

MAYNE (Jaſper), an eminent Engliſh poet and divine in the 17th century, who was bred at Oxford, and entered into holy orders. While his majeſty reſided at Oxford, he was one of the divines appointed to preach before him. He publiſhed in 1647 a piece intitled, OXAOMAXIA, *or The people's war examined according to the principles of reaſon and ſcripture, by Jaſper Mayne*. In 1648, he was deprived of his ſtudentſhip at Chriſt-church, and two livings he had; but was reſtored with the king, who made him his chaplain, and archdeacon of Chicheſter: all which he held till he died. Dr Maine was held in very high eſteem both for his natural parts and his acquired accompliſhments. He was an orthodox preacher, and a man of ſevere virtue and exemplary behaviour; yet of a ready and facetious wit, and a very ſingular turn of humour. From ſome ſtories that are related of him, he ſeems to have borne ſome degree of reſemblance in his manner to the celebrated Dr Swift; but, if he did not poſſeſs thoſe very brilliant parts that diſtinguiſhed the Dean, he probably was leſs ſubject to that capricious and thoſe unaccountable whimſies which at times ſo greatly eclipſed the abilities of the latter. Yet there is one anecdote related of him, which, although it reflects no great honour on his memory, as it ſeems to carry ſome degree of cruelty with it, yet is it a ſtrong mark of his reſemblance to the Dean, and a proof that his propenſity for drollery and joke did not quit him even in his lateſt moments. The ſtory is this: The doctor had

Maynwaring, Mayo.

had an old ſervant, who had lived with him ſome years, to whom he had bequeathed an old trunk, in which he told him he would find *ſomething that would make him drink after his death*. The ſervant, full of expectation that his maſter, under this familiar expreſſion, had left him ſomewhat that would be a reward for the aſſiduity of his paſt ſervices, as ſoon as decency would permit flew to the trunk; when behold, to his great diſappointment, the boaſted legacy proved to be a red herring. The doctor, however, bequeathed many legacies by will to pious uſes; particularly fifty pounds towards the rebuilding of St Paul's cathedral, and 200 pounds to be diſtributed to the poor of the pariſhes of Caſſington and Pyrton near Wattington, of both which places he had been vicar. In his younger years he had an attachment to poetry; and wrote two plays, the latter of which may be ſeen in the tenth volume of Dodſley's collection, viz. 1. Amorous war, a tragi-comedy. 2. The city-match, a comedy. He publiſhed a poem upon the naval victory by the duke of York over the Dutch, printed in 1665. He alſo tranſlated into Engliſh from the Greek part of Lucian's Dialogues.

MAYNWARING (Arthur), an eminent political writer in the beginning of the 18th century, ſtaid ſeveral years at Oxford, and then went to Cheſhire, where he lived ſome time with his uncle Mr Francis Cholmondley, a very honeſt gentlemen, but extremely averſe to the government of king William III. to whom he refuſed the oaths. Here he proſecuted his ſtudies in polite literature with great vigour; and coming up to London, applied to the ſtudy of the law. He was hitherto very zealous in anti-revolutional principles, and wrote ſeveral pieces in favour of king James II.; but upon being introduced to the duke of Somerſet and the earls of Dorſet and Burlington, began to entertain very different notions in politics. His father left him an eſtate of near 800 l. a-year; but ſo incumbered, that the intereſt-money amounted to almoſt as much as the revenue. Upon the concluſion of the peace he went to Paris, where he became acquainted with Mr Boileau. After his return he was made one of the commiſſioners of the cuſtoms, in which poſt he diſtinguiſhed himſelf by his ſkill and induſtry. He was a member of the kit-cat-club, and was looked upon as one of the chief ſupports of it by his pleaſantry and wit. In the beginning of queen Anne's reign, the lord-treaſurer Godolphin engaged Mr Done to quit the office of auditor of the impreſts, and made Maynwaring a preſent of a patent for that office worth about 2000 l. a-year in a time of buſineſs. He had a conſiderable ſhare in the *Medley*, and was author of ſeveral other pieces. The *Examiner*, his antagoniſt in politics, allowed that he wrote with tolerable ſpirit and in a maſterly ſtile. Sir Richard Steele dedicated the firſt volume of the Tatler to him.

MAYO, one of the Cape de Verd iſlands, lying in the Atlantic Ocean, near 300 miles from Cape Verd in Africa, about 17 miles in circumference. The ſoil in general is very barren, and water ſcarce; however, they have ſome corn, yams, potatoes, and plantains, with plenty of beeves, goats, and aſſes. What trees there are, grow on the ſides of the hills, and they have ſome figs and water-melons. The ſea round about the iſland abounds with fiſh. The chief commodity is ſalt, with which many Engliſh ſhips are loaded in the ſummer-time. The principal town is Pinoſa, inhabited by negroes, who ſpeak the Portugueſe language, and are ſtout, luſty, and fleſhy. They are not above 200 in number, and many of them go quite naked. W. Long. 21. 25. N. Lat. 15. 5.

MAYO, a county of Ireland, in the province of Connaught, 62 miles in length, and 52 in breadth, bounded on the eaſt and north-eaſt by Roſcommon, by Sligo on the weſt, by the ſea on the north, and by Galway on the ſouth. The air is moiſt and cold, eſpecially upon the mountains, where alſo the ſoil is poor and coarſe; but in other parts the paſturage is good, with herds of cattle and deer, &c. In this county is a freſh-water lake called *Lough maſk*, about 11 miles long, and five broad, abounding with fiſh, particularly ſalmon. Hereabouts were formerly ſeated the Galloglaſſes, a people deſcended from the Scots of the weſtern iſles, who uſed to fight in coats of mail with two-edged battle-axes. The principal town is alſo called *Mayo*, which was formerly a biſhop's ſee; but the biſhopric has ſince been annexed to Tuam. It is now much decayed, but gives the title of viſcount to the family of Bourke. W. Long. 9. 39. N. Lat. 53. 40.

MAYOR, the chief magiſtrate of a city or town, choſen annually out of the aldermen. The word, anciently wrote *meyr*, comes from the Britiſh *miret*, i. e. *cuſtodire*, or from the old Engliſh *maier*, viz. *poteſtas*, and not from the Latin *major*. King Richard I. in 1189, changed the bailiff of London into a mayor, and from that example king John made the bailiff of King's Lynn a mayor anno 1204: Though the famous city of Norfolk obtained not this title for its chief magiſtrate till the ſeventh year of king Henry V. anno 1419; ſince which there are few towns of note but have had a mayor appointed for government.

Mayors of corporations are juſtices of peace *pro tempore*, and they are mentioned in ſeveral ſtatutes; but no perſon ſhall bear any office of magiſtracy concerning the government of any town, corporation, &c. who hath not received the ſacrament according to the church of England within one year before his election, and who ſhall not take the oaths of ſupremacy, &c.

If any perſon intrudes into the office of mayor, a *quo warranto* lies againſt him, upon which he ſhall not only be ouſted, but fined. And no mayor, or perſon holding an annual office in a corporation for one year, is to be elected into the ſame office for the next; in this caſe, perſons obſtructing the choice of a ſucceſſor are ſubject to 100 l. penalty. Where the mayor of a corporation is not choſen on the day appointed by charter, the next office in place ſhall the day after hold a court and elect one; and if there be a default or omiſſion that way, the electors may be compelled to chooſe a mayor, by a writ of mandamus out of the king's bench. Mayors, or other magiſtrates of a corporation, who ſhall voluntarily abſent themſelves on the day of election, are liable to be impriſoned and diſqualified from holding any office in the corporation.

MAZAGAN, a ſtrong place of Africa, in the kingdom of Morocco, and on the frontiers of the province of Duguela. It was fortified by the Portugueſe, and beſieged by the king of Morocco with 200,000 men in 1562, but to no purpoſe. It is ſituated near the ſea. W. Long. 7. 45. N. Lat. 33. 5.

MAZARA, an ancient town of Sicily, and capital of a conſiderable valley of the ſame name, which is very fertile, and watered with ſeveral rivers. The town is a biſhop's ſee, and has a good harbour; is ſeated on the ſea coaſt, in E. Long. 12. 39. N. Lat. 37. 42.

MAZARINE (Julius), a famous cardinal and prime miniſter of France, was born at Piſcina in the province of Abruzzo, in Naples, in 1602. After having finiſhed his ſtudies in Italy and Spain, he entered into the ſervice of cardinal Sachetts, and became well ſkilled in politics, and in the intereſts of the princes at war in Italy; by which means he was enabled to bring affairs to an accommodation, and the peace of Queiras was ſhortly concluded. Cardinal Richelieu being taken with his conduct, did from thenceforward highly eſteem him; as did alſo cardinal Antonio, and Lewis XIII. who procured him a cardinal's hat in 1641. Richlieu made him one of the executors of his will, and during the minority of Lewis XIV. he had the charge of affairs. At laſt he became the envy of the nobility, which occaſioned a civil war; whereupon Mazarine was forced to retire, a price was ſet on his head, and his library ſold. Notwithſtanding, he afterwards returned to the court in more glory than ever; concluded a peace with Spain, and a marriage treaty betwixt the king and the infanta. This treaty of peace paſſes for the maſter-piece of cardinal de Mazarine's politics, and procured him the French king's moſt intimate confidence: but at laſt his continual application to buſineſs threw him into a diſeaſe, of which he died at Vinciennes in 1661.—Cardinal Mazarine was of a mild and affable temper. One of his greateſt talents was his knowing mankind, and his being able to adapt himſelf and to aſſume a character conformable to the circumſtances of affairs. He poſſeſſed at one and the ſame time the biſhopric of Metz, and the abbeys of St Arnauld, St Clement, and St Vincent, in the ſame city; that of St Dennis, Clugny, and Victor, of Marſeilles; of St Michael at Soiſſons, and a great number of others. He founded Mazarine-college at Paris, which is alſo called the *college of the four nations*. There has been publiſhed a collection of his letters, the moſt copious edition of which is that of 1745, in 2 vols duodecimo.

MEAD, an agreeable liquor, made of honey and water.

There are many receipts for making mead, of which the following is one of the beſt. Take four gallons of water, and as much honey as will make it bear an egg; add to this the rhind of three lemons: boil it, and ſcum it well as it riſes. Then take it off the fire, and add the three lemons cut in pieces: pour it into a clean tub or open veſſel, and let it work for three days: then ſcum it well, and pour off the clear part into a caſk. Let it ſtand open till it ceaſe to make a hiſſing noiſe; then ſtop it up cloſe, and in three months time it will be fine and fit for bottling. —If you would give it a finer flavour, take cloves, mace, and nutmeg, of each four drams; beat them ſmall, tie the powder in a piece of cloth, and put it into the caſk.

Mead.

MEAD (Dr Richard), a celebrated Engliſh Phyſician, was born at Stepney near London, where his father, the Reverend Mr Matthew Mead, had been one of the two miniſters of that pariſh; but in 1662 was ejected for nonconformity, but continued to preach at Stepney till his death. As Mr Mead had a handſome fortune, he beſtowed a liberal education upon 13 children, of whom Richard was the eleventh; and for that purpoſe kept a private tutor in his houſe, who taught him the Latin tongue. At 16 years of age Richard was ſent to Utrecht, where he ſtudied three years under the famous Grævius; and then chooſing the profeſſion of phyſic, he went to Leyden, where he attended the lectures of the famous Pitcairn on the theory and practice of medicine, and Hermon's botanical courſes. Having alſo ſpent three years in theſe ſtudies, he went with his brother and two other gentlemen to viſit Italy, and at Padua took his degree of doctor of philoſophy and phyſic in 1695. Afterwards he ſpent ſome time at Naples and at Rome; and returning home the next year, ſettled at Stepney, where he married, and practiſed phyſic with a ſucceſs that laid the foundation of his future greatneſs.

In 1703, Dr Mead having communicated to the Royal Society an analyſis of Dr Bonomo's diſcoveries relating to the cutaneous worms that generate the itch, which they inſerted in the Philoſophical Tranſactions; this, with his account of poiſons, procured him a place in the Royal Society, of which Sir Iſaac Newton was then preſident. The ſame year he was elected phyſician of St Thomas's hoſpital, and was alſo employed by the ſurgeons to read anatomical lectures in their hall, which obliged him to remove into the city. In 1707 his Paduan diploma for doctor of phyſic was confirmed by the univerſity of Oxford; and being patronized by Dr Radcliffe, on the death of that famous phyſician he ſucceeded him in his houſe at Bloomſbury-ſquare, and in the greateſt part of his buſineſs. In 1727 he was made phyſician to king George II. whom he had alſo ſerved in that capacity while he was prince of Wales; and he had afterwards the pleaſure of ſeeing his two ſons-in-law, Dr Nichols and Dr Wilmot, his coadjutors in that eminent ſtation.

Dr Mead was not more to be admired for the qualities of the head than he was to be loved for thoſe of his heart. Though he was himſelf a hearty whig, yet, uninfluenced by party-principles, he was a friend to all men of merit, by whatever denomination they might happen to be diſtinguiſhed. Thus he was intimate with Garth, with Arbuthnot, and with Freind; and long kept up a conſtant correſpondence with the great Boerhaave, who had been his fellow-ſtudent at Leyden: they communicated to each other their obſervations and projects, and never loved each other the leſs for being of different ſentiments. In the mean time, intent as Dr Mead was on the duties of his profeſſion, he had a greatneſs of mind that extended itſelf to all kinds of literature, which he ſpared neither pains nor money to promote. He cauſed the beautiful and ſplendid edition of Thuanus's hiſtory to be publiſhed in 1713, in ſeven volumes folio: and by his interpoſition and aſſiduity, Mr Sutton's invention of drawing foul air from ſhips and other cloſe places was carried into execution, and all the ſhips in his majeſty's navy provided with this uſeful machine. Nothing pleaſed him more than to call hidden talents into light; to give encouragement to the greateſt projects, and to ſee them executed under his own eye. During almoſt half a century he was at the head of his buſineſs, which brought him one year above ſeven thouſand pounds, and for ſeveral years between five and ſix thouſand: Yet clergymen, and in general all men of learning, were welcome to his advice. His library conſiſted of 10,000 volnmes, of which his Latin, Greek, and oriental manuſcripts made no inconſiderable part. He had a gallery for his pictures and antiquities, which coſt him great ſums. His reputation, not only as a phyſician, but as a ſcholar, was ſo univerſally eſtabliſhed, that he correſponded with all the principal literati in Europe: even the king of Naples ſent to deſire a complete collection of his works; and in return, made him a preſent of the two firſt volumes of Signior Bajardi, which may be conſidered as an introduction to the collection of the antiquities of Herculaneum. At the ſame time that prince invited him to his palace, that he might have an opportunity of ſhowing him thoſe valuable monuments of antiquity; and nothing but his great age prevented his undertaking a journey ſo ſuited to his taſte. No foreigner of learning ever came to London without being introduced to Dr Mead; and on theſe occaſions his table was always open, and the magnificence of princes was united with the pleaſures of philoſophers. It was principally to him that the ſeveral counties of England and our colonies abroad applied for the choice of their phyſicians, and he was likewiſe conſulted by foreign phyſicians from Ruſſia, Pruſſia, Denmark, &c. He wrote, beſides the above works, 1. A Treatiſe on the Scurvy. 2. *De variolis et morbillis diſſertatio.* 3. *Medica ſacra: ſive de Morbis inſignioribus, qui in Bibliis memorantur, Commentarius.* 4. *Monita et Prœcepta medica.* 5. A Diſcourſe concerning peſtilential contagion, and the methods to be uſed to prevent it. The works he wrote and publiſhed in Latin were tranſlated into Engliſh, under the doctor's inſpection, by Thomas Stack, M. D. and F. R. S. This great phyſician, naturaliſt, and antiquarian, died on the 16th of February 1754.

MEADOW, in its general ſignification means paſture or graſs-land, annually mown for hay: but it is more particularly applied to lands that are ſo low as to be too moiſt for cattle to graze upon them in winter without ſpoiling the ſward. Too much, or too little water is almoſt equally prejudicial to meadows; but the beſt land for meadows is a rich ſoil, that has a moiſt bottom, eſpecially where a ſmall brook may be brought over it, and where there is ſuch a deſcent that the water will not lodge: Theſe are better than thoſe by great rivers, where the crops are often loſt. Thoſe that may be overflowed at pleaſure, are called *water-meadows*: theſe ſhould never be overflowed till the end of March, except once or twice in winter, when there are ſuch floods as bring down a great deal of ſoil from the upper lands; and if the ſeaſon ſhould prove dry, it will be of great ſervice to the graſs if the meadows are overflowed again; but then the cattle ſhould not be turned in till the ſward is dry enough to bear their weight. Miller recommends the weeding of meadows in April and October with a ſpaddle, and rolling them with a heavy roller in ſpring and autumn.

MEAN, in general, denotes the middle between two extremes: thus we ſay the mean diſtance, mean proportion, &c.

MEASLES, a cutaneous diſeaſe attended with a fever, in which there is an appearance of eruptions that do not tend to a ſuppuration. See (the *Index* ſubjoined to) MEDICINE.

MEASURE, in geometry, denotes any quantity aſſumed as one, or unity, to which the ratio of the other homogeneous or ſimilar quantities is expreſſed.

MEASURE, in a legal and commercial ſenſe, denotes a certain quantity of any thing bought, ſold, valued, or the like. Meaſures are then various, according to the various kinds and dimenſions of the things meaſured. Hence ariſe lineal, or longitudinal meaſures for lines or lengths; ſquare meaſures for areas or ſuperficies; and ſolid or cubic meaſures for bodies and their capacities: all which again are very different in different countries and in different ages, and even many of them for different commodities. Whence ariſe other diviſions of ancient and modern meaſures, domeſtic and foreign ones, dry meaſures, liquid meaſures, &c.

Long MEASURES, or MEASURES *of Application.* The Engliſh ſtandard long meaſure for commerce, or that whereby the quantities of things are ordinarily eſtimated in the way of trade, is the yard, containing three Engliſh feet. Its diviſions are the foot, ſpan, palm, inch, and barley-corn; its multiples the pace, fathom, pole, furlong, and miles. The proportions theſe ſeverally bear to each other, are expreſſed in the following table.

Engliſh MEASURES of Length.

	Barley-corns	Inch	Palm	Span	Foot	Cubit	Yard	Pace	Fathom	Pole	Furlong
Barley-corns											
Inch	3										
Palm	9	3									
Span	27	9	3								
Foot	36	12	4	1⅓							
Cubit	54	18	6	2	1½						
Yard	108	36	12	4	3	2					
Pace	180	60	20	6⅔	5	3⅓	1⅔				
Fathom	216	72	24	8	6	4	2	1⅕			
Pole	594	198	66	22	16½	11	5½	3 3/10	2¾		
Furlong	23760	7920	2640	880	660	440	220	132	110	40	
Mile.	190080	63360	21120	7040	5280	3520	1760	1056	880	320	8

Scripture MEASURES of Length reduced into Engliſh.

	Digit	Palm	Span	Cubit	Fathom	Ezechiel's reed	Arabian pole	Eng. feet.	Inch Dec.
Digit								0	0.912
Palm	4							0	3.648
Span	12	3						0	10.944
Cubit	24	6	2					1	9.888
Fathom	96	24	8	4				7	3.552
Ezechiel's reed	144	36	12	6	1½			10	11.328
Arabian pole	192	48	16	8	2	1⅓		14	7.104
Schœnus, or meaſuring line.	1920	480	160	80	20	13⅓	10	145	11.04

The longer Scripture MEASURES.

	Cubit	Stadium	Sab. day's journey	Eastern mile	Paraſang	English Miles.	English Paces.	English Feet.
Cubit						0	0	1.824
Stadium	400					0	145	4.6
Sab. day's journey	2000	5				0	729	3.000
Eaſtern mile	4000	10	2			1	403	1.000
Paraſang	12000	30	6	3		4	153	3.000
a day's journey	96000	240	48	24	8	33	172	4.000

Grecian Measures of Length reduced to Engliſh.

												English.		
												Paces.	feet.	dec.
Dactylus, digit												0	0	0.7554 11/16
4	Doron, dochme											0	0	3.0218 3/4
10	2 1/2	Lichas										0	0	7.5546 7/8
11	2 3/4	1 1/10	Orthodoron									0	0	8.3101 9/16
12	3	1 1/5	1 1/11	Spithame								0	0	9.0656 1/4
16	4	1 6/10	1 5/11	1 1/3	Foot							0	1	0.0875
18	4 1/2	1 4/5	1 7/11	1 1/2	1 1/8	Cubit						0	1	1.5984 3/8
20	5	2	1 9/11	1 2/3	1 1/4	1 1/9	Pygon					0	1	3.109 3/8
24	6	2 2/5	2 2/11	2	1 1/2	1 1/3	1 1/5	Cubit larger				0	1	6.13125
96	24	9 3/5	8 8/11	8	6	5 1/3	4 4/5	4	Pace			0	6	0.525
9600	2400	960	872 8/11	800	600	533 1/3	480	400	100	Furlong		100	4	4.5
76800	19200	7680	6981 9/11	6400	6800	4266 2/3	3840	3200	800	8	Mile	805	5	0

Roman Measures of Length reduced to Engliſh.

										English		
										Paces.	feet.	dec.
Digitus tranſverſus										0	0	0.725 1/4
1 1/3	Uncia									0	0	0.967
4	3	Palmus minor								0	0	2.901
16	12	4	Pes							0	0	11.604
20	15	5	1 1/4	Palmipes						0	1	2.505
24	18	6	1 1/2	1 1/5	Cubitus					0	1	5.406
40	30	10	2 1/2	2	1 2/3	Gradus				0	2	5.01
80	60	20	5	4	3 1/3	2	Paſſus			0	4	10.02
10000	7500	2500	625	500	416 2/3	250	125	Stadium		120	4	4.5
80000	60000	20000	5000	4000	3333 1/3	2000	1000	8	Milliare	967	0	0

Square or *Superficial* Measures. Engliſh ſquare or ſuperficial meaſures, are raiſed from the yard of 36 inches multiplied into itſelf, and thus producing 1296 ſquare inches in the ſquare yard: the diviſions of this are ſquare feet and inches; and the multiples, poles, roods, and acres, as in the following table.

Engliſh Square Measures.

Inches						
144	Feet					
1296	9	Yards				
3600	25	2 7/9	Paces			
39204	272 1/4	30 1/4	10.89	Poles		
1568160	10890	1210	435.6	40	Rood	
6272640	43560	4840	1743.6	160	4	Acre

Grecian ſquare meaſures were the plethron, or acre, by ſome ſaid to contain 1444, by others, 10,000 ſquare feet; and aroura, the half of the plethron. The aroura of the Egyptians was the ſquare 100 cubits.

Roman Square-Measure reduced to Engliſh.

The integer was the jugerum or acre, which the Romans divided like the libra, or as: thus the jugerum contained

	ſquare feet.	ſcruples.	Eng. roods.	ſq. poles.	Square feet.
As	28800	288	2	18	250.05
Deunx	26400	264	2	10	183.85
Dextans	24000	240	2	2	117.64
Dodrans	21600	216	1	34	51.42
Bes	19200	192	1	25	257.46
Septunx	16800	168	1	17	191.25
Semis	14400	144	1	9	125.03
Quincunx	12000	120	1	1	58.82
Triens	9600	96	0	32	264.85
Quadrans	7200	72	0	24	198.64
Sextans	4800	48	0	16	132.43
Uncia	2400	24	0	8	66.21

Note, Actus major was 14,400 ſquare feet, equal to a ſemis; clima, 3600 ſquare feet, equal to ſeſcuncia; and actus minimus equal to a ſextans.

Cubical Measures, or *Meaſures of Capacity for Liquids.*

The Engliſh meaſures were originally raiſed from troy-weight; it being enacted by ſeveral ſtatutes, that eight pounds troy of wheat, gathered from the middle of the ear, and well dried, ſhould weigh a gallon of wine-meaſure, the diviſions and multiples whereof were to form the other meaſures; at the ſame time it was alſo ordered, that there ſhould be but one liquid meaſure in the kingdom: yet cuſtom has prevailed, and there having been introduced a new weight, viz. the avoirdupois, we have now a ſecond ſtandard-gallon adjuſted thereto, and therefore exceeding the former in the proportion of the avoirdupois weight to troy weight. From this latter ſtandard are raiſed two ſeveral meaſures, the one for ale, the other for beer.

The ſealed gallon at Guildhall, which is the ſtandard for wines, ſpirits, oils, &c. is ſuppoſed to contain 231 cubic-inches; and on this ſuppoſition the other meaſures raiſed therefrom, will contain as in the table underneath: yet, by actual experiment, made in 1688, before the lord-mayor and the commiſſioners of exciſe, this gallon was found to contain only 224 cubic inches: it was however agreed to continue the common ſuppoſed contents of 231 cubic inches; ſo that all computations ſtand on their old footing. Hence as 12 is to 231, ſo is $14\frac{12}{20}$ to $281\frac{1}{2}$ the cubic inches in the ale-gallon: but in effect the ale-quart contains $70\frac{1}{2}$ cubic inches, on which principle the ale and beer-gallon will be 282 cubic inches. The ſeveral diviſions and multiples of theſe meaſures, and their proportions, are exhibited in the following tables.

English Measure of Capacity for Liquids.

Wine-Meaſure.

Solid inches									
$28\frac{7}{8}$	Pint								
231	8	Gallon							
4158	144	18	Rundlet						
$7276\frac{1}{2}$	252	$31\frac{1}{2}$	$1\frac{3}{4}$	Barrel					
9702	336	42	$2\frac{1}{3}$	$1\frac{1}{3}$	Tierce				
14553	504	63	$3\frac{1}{2}$	2	$1\frac{1}{2}$	Hogſhe.			
19279	672	84	$4\frac{2}{3}$	$2\frac{2}{3}$	2	$1\frac{1}{3}$	Punchi.		
29106	1008	126	7	4	3	2	$1\frac{1}{2}$	Butt	
58212	2016	252	14	8	6	4	3	2	Tun.

Ale-Meaſure.

Pints					
8	Gallon				
64	8	Firkin			
128	16	2	Kilderkin		
256	32	4	2	Barrel	
512	64	8	4	2	Hog.

Beer-Meaſure.

Pints					
8	Gallon				
72	9	Firkin			
144	18	2	Kilderkin		
288	36	4	2	Barrel	
576	72	8	4	2	Hog.

Jewiſh Measures of Capacity for Liquids, reduced to Engliſh Wine-meaſure.

							Gall.	Pints	Solid inches.
Caph							0	$0\frac{5}{8}$	0.177
$1\frac{1}{3}$	Log						0	$0\frac{5}{6}$	0.211
$5\frac{1}{3}$	4	Cab					0	$3\frac{1}{3}$	0.844
16	12	3	Hin				1	2	2.533
32	24	6	2	Seah			2	4	5.067
96	72	18	6	3	Bath, or Epha		7	4	15.2
960	720	180	60	30	10	Coron, or Chomer	75	5	7.625

Attic MEASURES of Capacity for Liquids, reduced to Engliſh Wine-meaſure.

										Gal.	Pints.	Sol. inch. Dec.
Cochliarion										0	$\frac{1}{120}$	0.0356$\frac{5}{12}$
2	Cheme									0	$\frac{1}{80}$	0.0712 $\frac{5}{6}$
2½	1¼	Myſtron								0	$\frac{1}{48}$	0.089$\frac{11}{48}$
5	2½	2	Conche							0	$\frac{1}{24}$	0.178$\frac{11}{24}$
10	5	4	2	Cyathos						0	$\frac{1}{12}$	0.356$\frac{11}{12}$
15	7½	6	3	1½	Oxybaphon					0	$\frac{1}{8}$	0.535 $\frac{3}{8}$
60	30	24	12	6	4	Cotyle				0	$\frac{1}{2}$	2.141 $\frac{1}{2}$
120	60	48	24	12	8	2	Xeſtes			0	1	4.283
720	360	288	144	72	48	12	6	Chous		0	6	25.698
8640	4320	3456	1728	864	576	144	72	12	Metretes	10	2	19.629

Roman MEASURES of Capacity for Liquids, reduced to Engliſh Wine-meaſure.

										Gal.	Pints.	Sol. inch. Dec.
Ligula										0	0$\frac{1}{48}$	0.117$\frac{5}{12}$
4	Cyathus									0	0$\frac{1}{12}$	0.469 $\frac{2}{3}$
6	1½	Acetabulum								0	0 $\frac{1}{8}$	0.704 $\frac{1}{2}$
12	3	2	Quartarius							0	0 $\frac{1}{4}$	1.409
24	6	4	2	Hemina						0	0 $\frac{1}{2}$	2.818
48	12	8	4	2	Sextarius					0	1	5.636
288	72	48	24	12	6	Congius				0	7	4.942
1152	288	192	96	48	24	4	Urna			3	4 $\frac{1}{2}$	5.33
2304	576	384	192	96	48	8	2	Amphora		7	1	10.66
46080	11520	7680	3840	1920	960	160	40	20	Culeus	143	3	11.095

In the modern liquid meaſures of foreign nations, it is to be obſerved, that their ſeveral veſſels for wine, vinegar, &c. have alſo various denominations according to their different ſizes and the places wherein they are uſed. The woeders of Germany, for holding Rheniſh and Moſelle wines, are different in their gauges; ſome containing 14 aumes of Amſterdam-meaſure, and others more or leſs. The aume is reckoned at Amſterdam for 8 ſteckans, or 20 verges, or for $\frac{1}{6}$ of a ton of 2 pipes; or 4 barrels of French or Bourdeaux, which $\frac{1}{6}$ at this latter place is called *tiercon* becauſe 3 of them make a pipe or 2 barrels, and 6 the ſaid ton. The ſteckan is 16 mingles, or 32 pints; and the verge is, in reſpect of the ſaid Rheniſh and Moſelle, and ſome other ſorts of wine, 6 mingles; but, in meaſuring brandy, it conſiſts of 6$\frac{1}{6}$ mingles. The aume is divided into 4 anckers, and the ancker into 2 ſteckans, or 32 mingles. The ancker is taken ſometimes for $\frac{1}{24}$ of a ton, or 4 barrels; on which footing the Bourdeaux-barrel ought to contain at Amſterdam (when the caſk is made according to the juſt gauge) 12½ ſteckans, or 200 mingles wine and lees; or 12 ſteckans, or a 192 mingles racked wine; ſo that the Bourdeaux-ton of wine contains 50 ſteckans, or 800 mingles, wine and lees; and 48 ſteckans, or 768 mingles of pure wine. The barrels or poinçons of Nantes and other places on the river Loire, contain only 12 ſteckans Amſterdam meaſure. The wine-ton of Rochelle, Cognac, Charente, and the Iſle of Rhé, differs very little from the ton of

Bourdeaux, and conſequently from the barrels and pipes. A ton of wine of Chaloſſe, Bayonne, and the neighbouring places, in reckoned 60 ſteckans, and the barrel 15, Amſterdam-meaſure.

The muid of Paris contains 150 quarts, or 300 pints, wine and lees; or 280 pints clear wine; of which muids 3 make a ton, and the fractions are

The muid	containing	36 ſetiers
The ſetier		4 quarts
The quart		2 pints
The pint		2 chopins
The chopin		2 demi-ſetiers
The demi-ſetier		2 poiſſons.

The muid is alſo compoſed of pipes, or poinçons, quarteaux, queves, and demiqueves: thoſe poinçons of Paris and Orleans contain about 15 ſteckans Amſterdam-meaſure, and ought to weigh with the caſk 666 ℔. a little more or leſs. In Provence they reckon by milleroles, and the millerole of Toulon contains 66 Paris pints, or 100 pints of Amſterdam, nearly; and the Paris pint is nearly equal to the Engliſh wine-quart.

The butts or pipes from Cadiz, Malaga, Alicant, Benecarlo, Saloe, and Mataro, and from the Canaries, from Liſbon, Oporto, and Fayal, are very different in their gauges, though in affreightments they are all reckoned two to the ton.

Vinegar is meaſured in the ſame manner as wine; but the meaſures for brandies are different: theſe ſpirits from France, Spain, Portugal, &c. are generally ſhipped in large caſks called *pipes*, *butts*, and *pieces*, according to the places from whence they are reported, &c. In France, brandy is ſhipped in caſks called *pieces* at Bourdeaux, and *pipes* at Rochelle, Cognac, the iſle of Rhé, and other neighbouring places, which contain ſome more and ſome leſs, even from 60 to 90 Amſterdam-verges or veertels, according to the capacity of the veſſels, and the places they come from, which being reduced into barrels will ſtand as follows, viz.

At Rochelle, Cognac, the Iſle of Rhé, and the country of Aunis	27 Veertels	per barrel.
At Nants, and ſeveral places of Bretagne and Anjou	29 Veertels	
At Bourdeaux, and differents parts of Guienne	32 Verges	
At Amſterdam, and other cities of Holland	30 Veertels	
At Hamburgh and Lubeck	30 Verges	
At Embden	27 Verges	

In Provence and Languedoc, brandy is ſold by the quintal, the caſks included; and at Bruges, in Flanders, the verges are called *ſeſters* of 16 ſtops each, and the ſpirit is ſold at ſo much per ſtop.

Olive-oil is alſo ſhipped in caſks of various ſizes, according to the cuſtom of the places where it is embarked, and the conveniency of ſtowage. In England it is ſold by the ton of 236 gallons; and at Amſterdam by the ton of 717 mingles, or 1434 pints. In Provence it is ſold by milleroles of 66 Paris-pints: from Spain and Portugal it is brought in pipes, or butts, of different gauges; at the firſt place it is ſold by roves, whereof 40 go to the butt; and at the latter place by almoudas, whereof 26 makes a pipe. Train-oil is ſold in England by the ton, at Amſterdam by the barrel.

Measures *of capacity for things dry.* Engliſh dry or corn meaſures are raiſed from the Wincheſter-gallon, which contains 272¼ ſolid inches, and ought to hold of pure running water 9 pounds 13 ounces. This ſeems to ſtand on the foot of the old wine-gallon of 224 cubic inches, 12 being to $14\frac{12}{20}$ as 224 to 272¼; but by an act of parliament made in 1697 it is decreed, that a round buſhel, 18½ inches wide and 8 deep, is a legal Wincheſter-buſhel. Now ſuch a buſhel will only hold 2150. 42 cubic inches, conſequently the gallon will hold 268. 8 cubic inches, the diviſions and multiples whereof are as in the following table.

Engliſh dry or corn-meaſure.

Solid inches					
33.6	Pint				
268.8	8	Gallon			
537.6	16	2	Peck		
2150.4	64	8	4	Buſhels	
17203.2	512	64	32	8	Quarter.

Scripture Measures of Capacity for things dry, reduced to Engliſh Corn-meaſure.

							Peck.	Gal.	Pint.	Sol. inch. Dec.
Gachal							0	0	0 $\frac{17}{120}$	0.031
20	Cab						0	0	2 $\frac{5}{6}$	0.073
36	$1\frac{4}{5}$	Gomor					0	0	5 $\frac{1}{10}$	1.211
120	6	$3\frac{1}{3}$	Seah				1	0	1	4.036
360	18	10	3	Epha			3	0	3	12.107
1800	90	50	15	5	Leteeh		16	0	0	26.500
3600	180	100	30	10	2	Chomer, or coron	32	0	1	18.969

Attic Measures of Capacity for things dry, reduced to Engliſh Corn meaſure.

							Peck.	Gal.	Pint.	Sol. inch. Dec.
Cochliarion							0	0	0	0.276 7/20
10	Cyathos						0	0	0	2.763 ½
15	1½	Oxybaphon					0	0	0	4.144 ¾
60	6	4	Cotyle				0	0	0	16.579
120	12	8	2	Xeſtes			0	0	0	33.158
180	18	12	3	1½	Choenix		0	0	1	15.705 ¼
8640	864	576	144	72	48	Medimnos	4	0	6	3.501

Roman Measures of Capacity for things dry, reduced to Engliſh Corn-meaſure.

							Peck.	Gal.	Pint.	Sol. inch. Dec.
Ligula							0	0	0 1/48	0.01
4	Cyathus						0	0	0 1/12	0.04
6	1½	Acetabulum					0	0	0 ⅛	0.06
24	6	4	Hemina				0	0	8 ½	0.24
48	12	8	2	Sextarius			0	0	1	0.48
384	96	64	16	8	Semimodius		0	1	0	3.84
768	192	128	32	16	2	Modius	1	0	0	7.68

In the ſeveral parts of Europe, ſalt, which is a more ſtaple and current commodity than any other, is bought and ſold by different meaſures, according to the ſeveral places of its diſpatch; at Amſterdam it is ſold by the cent of 404 meaſures or ſcheppels, which cent is reckoned to be 7 laſts or 14 tons, and the laſt is to weigh 4000℔. the 7 laſts making 28000℔. called the *cent of ſalt*, which alſo contains 208 ſacks; though ſome of this commodity is much heavier than others. In the cities of France, ſalt is ſold by the muid, whoſe ſize varies according to the different places of its manufacture and diſpatch. At Paris this meaſure is reckoned to contain 12 ſetiers, or 48 minots, which minot is alſo divided into other meaſures. The cent of ſalt from Marans, Brouage, Sude, and the iſle of Rhé, contain 28 ſtricken muids, and each muid 24 boiſeaux, which yields at Amſterdam 11½ laſts, or 23 tons, more or leſs. In Copenhagen the ſaid cent renders only 9½ laſts, the laſt being reckoned here equal to 18 tons, and 50 laſts to correſpond with 52 of Coningſberg, at which place the cent produces about 10 laſts, or 40,000℔. At Riga the ſaid cent yields the ſame meaſure as at Coningſberg; and about 6¼ laſts of Riga make the great cent of Amſterdam. The ſaid French cent produces at Dantzick from 11¼ to 12 laſts, of which laſts from 7¼ to 7½ make likewiſe the great cent of Amſterdam. At Stetin in Pomerania, the French cent yielded 10 laſts, making 40,000 meaſure and weight of the ſaid place. In Portugal it is bought by the muid, of which four make a laſt, and ſeven the cent of Amſterdam. At Alamat and Ivica it is ſold by the modin, which weighs from 27½ to 2800 cwt. Engliſh.

A TABLE, repreſenting the Conformity which the LONG MEASURES of the principal TRADING CITIES o kind, by the Sieur JEAN LARUE Merchant at Lyons, in his Treatiſe dedicated to the Count de MAUREP ENGLAND or London in the Front, as the Sieur LARUE has done PARIS for the uſe of the French nation n

☞ The ells of Amſterdam, Haerlem, Leyden, the Hague, Rotterdam, and other cities of Holland, as well as the ell of Nuremberg, are equal among themſelves. They are alſo comprehended under the ell of Amſterdam, as that of Oſnaburgh is under that of France and England, and the end of Bern and Baſil under that of Hamburgh, Frankfort, and Leipſic.

		A Yards of England, Scotl. and Irel.	B Ells of France and England.	C Ells of Holland and Amſterdam.	D Ells of Antwerp and Bruſſels.	E Ells of Hamb. Frankf. Leipſic and Cologn.	F Ells of Breſlaw in Sileſia.	G Ells of Dantzick.	H Ells of Bergen and Drontheim.	I Ells of Sweden or Stockholm.	K Ells of St Gall for linen.
A 100 Yards of Scotland, England, and Ireland	Make	100 —	78 —	133 1/3	131 2/3	160 —	166 3/5	150 —	146 2/3	154 —	114 2/3
B 100 Ells of France and England		128 1/4	100 —	173 1/2	166 2/3	205 1/4	213 3/4	192 4/5	188 —	195 3/4	147 —
C 100 Ells of Holland or Amſterdam		75 —	75 2/3	100 —	98 3/4	120 —	125 —	112 1/2	110 —	114 1/2	86 —
D 100 Ells of Antwerp and Bruſſels		76 —	60 —	101 1/4	100 —	151 1/2	126 3/4	114 —	111 4/5	116 —	87 —
E 100 Ells of Hamburgh, Frankfort, &c.		62 1/2	48 4/8	83 1/3	82 1/3	100 —	104 1/5	92 3/5	91 3/4	95 1/2	71 2/5
F 100 Ells of Breſlaw in Sileſia		60 —	46 3/5	80 —	79 —	96 —	100 —	89 4/5	88 —	91 1/2	68 3/4
G 100 Ells of Dantzick		66 3/4	52 —	89 —	87 3/4	96 3/4	111 1/4	100 —	98 —	102 —	76 3/4
H 100 Ells of Bergen and Drontheim		67 1/2	52 3/4	90 —	89 —	108 —	112 1/2	101 1/2	100 —	103 —	77 4/5
I 100 Ells of Sweden or Stockholm		65 3/4	51 1/4	87 1/2	86 1/2	105 —	109 1/4	97 3/4	96 1/4	100 —	75 1/4
K 100 Ells of St Gall for linen		87 —	67 3/4	116 —	114 1/2	139 1/5	145 —	130 1/2	127 3/5	133 —	100 —
L 100 Ells of St Gall for cloth		97 —	52 1/2	89 1/3	88 3/4	107 1/5	111 3/4	100 1/2	98 1/4	102 1/4	76 4/5
M 100 Ells of Geneva		124 3/4	97 1/2	166 2/3	164 3/5	200 —	208 1/3	187 1/2	183 1/4	191 —	143 1/3
N 100 Canes of Marſeilles and Montpelier		214 1/2	167 1/3	286 —	282 4/5	343 1/5	357 1/2	321 3/4	314 3/5	327 1/2	246 —
O 100 Canes of Toulouſe and Upper Languedoc		199 3/4	156 —	266 2/3	163 1/3	320 —	333 1/3	300 —	193 1/3	304 —	229 1/3
P 100 Canes of Genoa of 9 palmos		245 1/4	191 1/3	327 —	323 —	392 4/5	408 3/4	367 4/5	359 3/4	374 1/2	281 1/4
Q 100 Canes of Rome		227 1/4	177 1/4	303 —	299 1/5	363 3/5	378 3/4	340 4/5	333 1/3	347 —	260 3/5
R 100 Vares of Caſtile and Biſcay		93 3/4	73 1/5	125 —	123 2/5	150 —	156 1/4	140 2/3	137 1/2	143 1/4	107 1/2
S 100 Vares of Cadiz and Andaluſia		91 3/4	71 3/7	122 1/4	119 —	146 3/5	152 3/5	138 —	334 1/2	139 4/5	105 —
T 100 Vares of Portugal or Liſbon		123 —	96 —	164 —	162 —	96 4/5	205 —	184 1/2	180 4/5	187 3/4	141 —
V 100 Covedos of Portugal or Liſbon		74 —	58 1/2	100 —	98 3/4	120 —	125 —	112 1/2	110 —	114 1/2	86 —
W 100 Braſſes of Venice		73 1/2	57 1/3	98 —	96 3/4	117 3/5	122 1/2	104 1/4	107 3/4	112 1/4	84 1/4
X 100 Braſſes of Bergamo, &c.		72 1/4	55 3/5	95 —	93 4/5	114 —	118 3/4	106 3/4	104 1/2	108 3/4	81 3/4
Y 100 Braſſes of Florence, Leghorn, &c.		65 1/5	50 —	85 1/2	84 4/5	102 3/5	106 4/5	96 2/5	94 —	98 —	73 1/2
Z 100 Braſſes of Milan		58 1/2	45 3/5	78 —	77 —	93 3/5	97 1/2	87 3/4	85 4/5	89 1/4	67 —

N. B. By means of this Table, the reader may pleaſe to obſerve, that 100 ells of Paris and of England make 173½ of Holland; an

By the common rule of three, or proportion, you will eaſily make you

ties of Europe have with each other, publiſhed in 1747, as the moſt authentic of its
aurepas: with the difference only of tranſpoſing one of the Columns, in order to place
ation more particularly.

K	L	M	N	O	P	Q	R	S	T	V	W	X	Y	Z
Ells of St Gall for linen.	Ells of St Gall for cloth.	Ells of Geneva.	Canes of Marſeilles and Montpelier.	Canes of Toulouſe, Albi, and Caſtres.	Canes of Genoa of 9 palmos.	Canes of Rome.	Vares of Caſtile and Biſcay.	Vares of Cadiz and Andaluſia.	Vares of Portugal or Liſbon.	Covedos of Portugal or Liſbon.	Braſſes of Venice.	Braſſes of Berg. Boulog. Mod. and Mantua.	Braſſes of Florence, Legh. and Lucca.	Braſſes of Milan.
114 2/3	149 1/3	80 —	46 2/3	50 —	40 2/3	44 —	107 —	109 1/5	81 1/3	133 1/3	136 —	104 1/3	154 3/4	171 1/3
147 —	191 1/2	102 3/5	59 4/5	64 1/5	52 1/5	56 4/5	136 7/8	140 —	104 1/3	171 —	174 4/5	179 —	199 1/5	219 1/4
86 —	112 —	60 —	35 —	37 1/2	30 1/2	33 —	80 —	81 4/5	61 —	100 —	102 —	105 1/4	116 1/2	128 1/2
87 —	113 4/5	60 3/5	35 4/5	38 —	30 4/5	33 3/5	81 —	84 —	61 3/5	101 1/4	103 3/5	106 3/5	118 —	130 —
71 2/5	91 1/3	50 —	29 1/5	31 1/4	25 4/5	27 1/2	65 4/5	68 1/5	50 4/5	83 1/3	85 —	88 1/2	97 —	107 —
68 3/4	89 3/5	48 —	28 —	30 —	24 4/5	26 4/5	64 —	65 1/5	48 4/5	80 —	81 3/5	84 4/5	93 1/5	102 4/5
76 3/4	99 3/4	53 3/5	31 1/5	33 4/5	27 5/5	29 4/5	71 1/5	72 1/2	54 1/4	89 —	90 3/4	93 3/5	103 3/4	114 1/3
77 4/5	100 4/5	54 —	31 1/2	33 3/4	27 4/5	29 3/4	72 —	74 3/4	55 —	90 —	91 3/4	94 3/4	105 —	115 1/4
75 1/4	98 —	52 1/2	30 1/2	32 3/4	26 3/4	28 3/4	70 —	71 1/2	53 1/2	87 1/2	89 1/4	92 —	102 —	112 1/2
100 —	130 —	69 3/5	40 3/5	43 1/2	35 4/5	38 1/3	92 4/5	95 1/5	70 3/4	116 —	118 3/4	122 —	133 1/5	149 —
76 4/5	100 —	53 3/5	31 1/4	33 1/2	27 1/5	29 1/2	71 1/2	73 —	54 1/2	89 1/3	91 1/5	94 —	104 —	114 3/4
143 1/3	130 2/3	100 —	58 1/3	62 1/2	50 4/5	55 —	133 1/2	136 2/5	101 2/5	166 2/3	170 —	172 4/5	193 1/3	214 1/5
246 —	320 1/2	171 3/4	100 —	107 1/4	87 1/4	94 4/5	228 4/8	234 —	174 3/4	286 —	291 3/4	301 —	333 1/5	367 1/2
229 1/3	298 2/3	160 —	93 1/3	100 —	81 1/3	88 —	213 1/3	218 —	162 2/3	266 2/3	272 —	280 3/5	309 1/3	342 2/3
281 1/4	366 1/4	196 1/4	114 1/2	122 3/5	100 —	108 —	261 3/5	268 1/5	199 1/2	327 —	333 1/2	344 1/5	381 —	420 1/5
260 3/5	339 4/5	181 4/5	116 —	113 2/3	92 4/5	100 —	242 4/5	245 3/5	184 4/5	303 —	309 —	319 —	353 —	389 4/5
107 1/2	140 —	75 —	43 3/4	46 4/5	38 1/5	41 1/4	100 —	102 1/3	76 1/4	125 —	127 1/2	131 1/2	145 3/5	159 2/3
105 —	137 —	73 1/3	42 2/3	45 —	37 1/4	40 2/3	97 2/3	100 —	74 2/3	122 1/4	125 1/4	179 —	142 —	157 —
141 —	183 3/5	94 4/5	57 4/5	61 1/2	50 —	54 1/5	131 1/3	134 —	100 —	164 —	167 1/4	172 3/5	191 —	210 3/4
86 —	112 —	60 —	35 —	37 1/2	30 1/2	33 —	80 —	81 4/5	61 —	100 —	102 —	105 1/4	116 1/2	128 1/2
84 1/4	109 3/4	58 3/4	34 1/3	36 3/4	29 3/4	32 1/3	78 4/5	80 1/5	59 3/4	98 —	100 —	103 1/3	114 1/5	126 —
81 3/4	106 4/5	57 —	33 1/4	35 3/5	29 —	31 3/5	76 —	78 1/5	58 —	95 —	97 —	100 —	100 3/5	122 —
73 1/2	95 3/4	51 3/5	30 —	32 —	26 1/5	28 1/5	68 4/5	70 1/3	52 1/5	95 1/2	87 1/5	95 —	100 —	109 4/5
67 —	87 3/5	46 4/5	27 3/5	29 1/4	23 4/5	25 3/4	62 4/5	63 2/3	47 1/2	78 —	79 1/2	82 1/5	91 —	100 —

nd; and in like manner you will find how the meaſures of other places in the Table correſpond with each other,
ake your computations for any quantity required.

3 MA 53

Measure *for Wood.* See **Cord** *of Wood.*

Measure *for Horſes*, is the hand, which by ſtatute contains four inches.

Measure, among botaniſts. In deſcribing the parts of plants, Tournefort introduced a geometrical ſcale, which many of his followers have retained. They meaſured every part of the plant; and the eſſence of the deſcription conſiſted in an accurate menſuration of the whole.

As the parts of plants, however, are liable to variation in no circumſtance ſo much as that of dimenſion, Linnæus very rarely admits any other menſuration than that ariſing from the reſpective length and breadth of the parts compared together. In caſes that require actual menſuration, the ſame author recommends, in lieu of Tournefort's artificial ſcale, the following natural ſcale of the human body, which he thinks is much more convenient, and equally accurate.

The ſcale in queſtion conſiſts of 11 degrees, which are as follows: 1. A hair's-breadth, or the diameter of a hair, (*capillus.*) 2. A line, (*linea*), the breadth of the creſcent or white appearance at the root of the finger, (not thumb), meaſured from the ſkin towards the body of the nail; a line is equal to 12 hair-breadths, and is the 12th part of a Pariſian inch. 3. A nail, (*unguis*), the length of a finger-nail; equal to ſix lines, or half a Pariſian inch. 4. A thumb, (*pollex*), the length of the firſt or outermoſt joint of the thumb; equal to a Pariſian inch. 5. A palmus, (*palmus*), the breadth of the palm, excluſive of the thumb; equal to three Pariſian inches. 6. A ſpan, (*ſpithama,*) the diſtance between the extremity of the thumb and that of the firſt finger when extended; equal to ſeven Pariſian inches. 7. A great ſpan, (*dodrans*), the diſtance between the extremity of the thumb, and that of the little finger, when extended; equal to nine inches. 8. A foot, (*pes,*) meaſuring from the elbow to the baſis of the thumb; equal to 12 Pariſian inches. 9. A cubit, (*cubitus,*) from the elbow to the extremity of the middle finger; equal to 17 inches. 10. An arm-length, (*brachium,*) from the arm-pit to the extremity of the middle-finger; equal to 24 Pariſian inches, or two feet. 11. A fathom, (*orgya,*) the meaſure of the human ſtature; the diſtance between the extremities of the two middle fingers, when the arms are extended; equal, where greateſt, to ſix feet.

Measure, or *Bar*, in muſic. See **Time**.

MEAT. See **Food**, **Diet**, **Drink**, &c.

*Method of Preſerving Fleſh-*MEAT *without Spices, and with very little Salt.* Jones, in his *Miſcellanea Curioſa*, gives us the following deſcription of the Mooriſh *Elcholle*, which is made of beef, mutton, or camel's fleſh, but chiefly beef, and which they cut all in long ſlices, and let it lie for 24 hours in a pickle. They then remove it out of thoſe jars or tubs into others with water; and when it has lain a night, they take it out, and put it on ropes in the ſun and air to dry. When it is thoroughly dried and hard, they cut it into pieces of two or three inches long, and throw it into a pan or caldron, which is ready with boiling oil and ſuet ſufficient to hold it, where it boils till it be very clear and red when cut. After this they take it out, and ſet it to drain; and when all is thus done it ſtands to cool, and jars are prepared to put it up in, pouring upon it the liquor in which it was fried; and as ſoon as it is thoroughly cold, they ſtop it up cloſe. It will keep two years; will be hard, and the hardeſt they look upon to be the beſt done. This they diſh up cold, ſometimes fried with eggs and garlic, ſometimes ſtewed, and lemon ſqueezed on it. It is very good any way, either hot or cold.

East MEATH, a county of Ireland, bounded on the eaſt by the ocean and the county of Dublin, on the weſt by Weſt-Meath, on the ſouth-weſt by Kildare, and on the north and north-eaſt by Cavan and Louth. It is 32 miles long and 25 broad; contains 18 baronies; and ſends to parliament, beſides two knights of the ſhire, 12 members for the boroughs of Trim, Aboy, Navan, Kells, Duleek, and Ratoath. This country abounds in corn, paſture, and herds of cattle; the air and ſoil being good, and the inhabitants numerous. Several noble families have alſo titles of honour within it. Horns, prodigiouſly large, ſuppoſed to be thoſe of the mooſe-deer, have been found not only in this country, but in ſeveral other parts of Ireland. Trim is the county-town.

Weſt **Meath**, a county of Ireland, ſo named from its ſituation with regard to the former, by which it is bounded on the eaſt: the Shannon parts it from Roſcommon on the weſt; the king's county lies on the ſouth of it, and Longford on the north. It is between 30 and 40 miles in length, and 20 in breadth; containing many rivers, lakes, and bogs. The land, where it is free from theſe, is abundantly fertile, and well inhabited. The baronies in this county are 13, and the members ſent to parliament 10; viz. two for the ſhire, and two for each of the boroughs, Mullingar, Athlone, Fore, and Kilbeggan. Mullingar, by act of parliament, is the county-town.

MEATUS **auditorius**. See **Anatomy**, n° 403, b.

MEAUX, an ancient town of France, in Brie, with a biſhop's ſee, ſeated in a place abounding in corn and cattle, on the river Marne, which divides it into two parts, and its trade conſiſts in corn, wool, and cheeſe. E. Long. 2. 58. N. Lat. 48. 58.

MECCA, an ancient and very famous town of Aſia, in Arabia the Happy; ſeated on a barren ſpot, in a valley ſurrounded with little hills, about a day's journey from the Red-Sea. It is a place of no ſtrength, having neither walls nor gates, and the buildings are very mean. That which ſupports it is the reſort of a great many thouſand pilgrims annually, for the ſhops are ſcarcely open all the year beſides. The inhabitants are poor, very thin, lean, and ſwarthy. The hills about the town are very numerous, and all conſiſt of a blackiſh rock, and ſome of them are half a mile in circumference. On the top of one of them is a cave, where they pretend Mahomet uſually retired to perform his devotions, and hither they affirm the greateſt part of the Alcoran was brought him by the angel Gabriel. The town has plenty of water, and yet little garden-ſtuff; but there are ſeveral ſorts of good fruits to be had, ſuch as grapes, melons, water-melons, and cucumbers. There are alſo plenty of ſheep brought thither to be ſold to the pilgrims. It ſtands in a very hot climate; and the inhabitants uſually ſleep on the tops of their houſes, for the ſake of coolneſs. The temple of Mecca has 42 doors, and its form reſembles the royal

Mecca. royal exchange in London, but is near ten times as large. It is open in the middle, and the ground covered with gravel, except in two or three places that lead to the Beat-Allah through certain doors, and theſe are paved with ſhort ſtones. There are cloiſters all round, and in the ſides are little rooms or cells for thoſe that live a monaſtic life. The Beat-Allah ſtands in the middle of the temple, and is a ſquare ſtructure, each ſide about 20 paces long and 24 feet high; covered all over from top to bottom with a thick ſort of ſilk, and the middle embroidered with letters of gold, each letter being about two feet in length, and two inches broad. The door is covered with ſilver plate, and there is a curtain before it thick with gold embroidery. This Beat is the principal object of the pilgrims devotion, and is open but two days in the ſpace of ſix weeks; namely, one day for the men, and the next for the women. Within there is only two wooden pillars in the middle to ſupport the roof, with a bar of iron faſtened thereto, on which hang three or four ſilver lamps. The walls on the inſide are marble, and covered with ſilk, unleſs when the pilgrims enter. About 12 paces from the Beat is the ſepulchre of Abraham, as they pretend, and they affirm that he erected the Beat-Allah. The tomb is handſome enough, and not unlike thoſe of people of faſhion in England. When they have performed their devotions here, they repair to a gibel or hill, which however is not large enough to contain them all at once, for there are no leſs than 70,000 pilgrims every year. When certain ceremonies are over, they then receive the title of *hadgies* or *ſaints*, and the next morning they move to a place where they ſay Abraham went to offer up his ſon Iſaac, which is about two or three miles from Mecca; here they pitch their tents, and then throw ſeven ſmall ſtones againſt a little ſquare ſtone building. This, as they affirm, is performed in defiance of the devil. Every one then purchaſes a ſheep, which is brought for that purpoſe, eating ſome of it themſelves, and giving the reſt to the poor people who attend upon that occaſion. Indeed theſe are miſerable objects, and ſuch ſtarved creatures, that they ſeem ready to devour each other. After all, one would imagine that this was a very ſanctified place; and yet a renegado who went in pilgrimage thither, affirms there is as much debauchery practiſed here as in any part of the Turkiſh dominions. It is 25 miles from Jodda, the ſea-port town of Mecca, and 220 ſouth-eaſt of Medina. E. Long. 40. 55. N. Lat. 21. 45.

Mechanic

MECHANICAL, an epithet applied to whatever relates to mechanics: thus we ſay, mechanical powers, cauſes, &c. See the articles POWER, CAUSE, &c.

The mechanical philoſophy is the ſame with what is otherwiſe called *corpuſcular philoſophy*. See CORPUSCULAR.

This manner of reaſoning is much uſed in medicine; and, according to Dr Quincy, is the reſult of a thorough acquaintance with the ſtructure of animal bodies: for conſidering an animal body as a compoſition out of the ſame matter from which all other bodies are formed, and to have all thoſe properties which concern a phyſician's regard, only by virtue of its peculiar conſtruction; it naturally leads a perſon to conſider the ſeveral parts, according to their figures, contexture, and uſe, either as wheels, pullies, wedges, levers, ſcrews, cords, canals, ſtrainers, &c. For which purpoſe, continues he, it is frequently found helpful to deſign in diagrams, whatſoever of that kind is under conſideration, as is cuſtomary in geometrical demonſtrations.

For the application of this doctrine to the human body, ſee the article MEDICINE.

MECHANICAL, in mathematics, denotes a construction of ſome problem, by the aſſiſtance of inſtruments, as the duplicature of the cube and quadrature of the circle, in contradiſtinction to that which is done in an accurate and geometrical manner.

MECHANICAL *Curve*, is a curve, according to Deſcartes, which cannot be defined by any algebraic equation; and ſo ſtands contradiſtinguiſhed from algebraic or geometrical curves.

Leibnitz and others call theſe mechanical curves *tranſcendental*; and diſſent from Deſcartes, in excluding them out of geometry. Leibnitz found a new kind of tranſcendental equations, whereby theſe curves are defined: but they do not continue conſtantly the ſame in all points of the curve, as algebraic ones do. See the article TRANSCENDENTAL.

MECHANICS.

1 Definition. THIS term, in the common acceptation, implies no more than the nature of what is called the *mechanical powers*, together with the combination of theſe powers in the conſtruction of machines. But as the general properties of matter and central forces are neceſſary in order to a thorough knowledge of mechanics, we have joined all theſe ſubjects together under the general name of *Mechanics*.

CHAP. I. *Of Matter and its Properties.*

2 Matter, what. BY the word *matter* is here meant every thing that has length, breadth, and thickneſs, and reſiſts the touch.

3 Its properties. The inherent properties of matter are ſolidity, inactivity, mobility, and diviſibility.

4 Solidity. The *ſolidity* of matter ariſes from its having length, breadth, thickneſs; and hence it is, that all bodies are comprehended under ſome ſhape or other, and that every particular body hinders all others from occupying the ſame part of ſpace which it poſſeſſeth. Thus, if a piece of wood or metal be ſqueezed ever ſo hard between two plates, they cannot be brought into contact. And even water or air has this property; for if a ſmall quantity of it be fixed between any other bodies, they cannot be brought to touch one another. Dr Prieſtley and ſome others have indeed denied this property to matter; and ſuppoſed, that, if a ſufficient degree of force was applied to two bodies, they might actually exiſt in the ſame place at the ſame moment: but ſuch abſtruſe ſpeculations cannot be of any ſervice in mechanics, the very foundation of which is built on the oppoſite principle, and neceſſarily implies the impenetrability or ſolidity of matter.

5 Inactivi A ſecond property of matter is *inactivity*, or *paſſiveneſs*; by which it always endeavours to continue in the ſtate that it is in, whether of reſt or motion. And

therefore, if one body contains twice or thrice as much matter as another body does, it will have twice or thrice as much inactivity; that is, it will require twice or thrice as much force to give it an equal degree of motion, or to ſtop it after it hath been put into ſuch a motion. A great deal of this inactivity, however, we are aſſured, ariſes from gravity; for in thoſe caſes wherein gravity is not oppoſed, a very ſmall body will ſet a very large one in motion.

But that matter can never put itſelf into motion is allowed by all men. For they ſee that a ſtone, lying on the plain ſurface of the earth, never removes itſelf from that place, nor does any one imagine it ever can. But moſt people are apt to believe that all matter has a propenſity to fall from a ſtate of motion into a ſtate of reſt; becauſe they ſee, that if a ſtone or a cannon-ball be put into ever ſo violent a motion, it ſoon ſtops: not conſidering that this ſtoppage is cauſed, 1. By the gravity or weight of the body, which ſinks it to the ground in ſpite of the impulſe; and, 2. By the reſiſtance of the air thro' which it moves, and by which velocity it is retarded every moment till it falls.

A bowl moves but a ſhort way upon a bowling-green; becauſe the roughneſs and unevenneſs of the graſſy ſurface ſoon creates friction enough to ſtop it. But if the green were perfectly level, and covered with poliſhed glaſs, and the bowl were perfectly hard, round, and ſmooth, it would go a great way farther, as it would have nothing but the air to reſiſt it: if then the air were taken away, the bowl would go on without any friction, and conſequently without any diminution of the velocity it had at ſetting out; and therefore, if the green were extended quite around the earth, the bowl would go on, round and round the earth, for ever.

If the bowl were carried ſeveral miles above the earth, and there projected in a horizontal direction, with ſuch a velocity as would make it move more than a ſemidiameter of the earth in the time it would take to fall to the earth by gravity; in that caſe, and if there were no reſiſting medium in the way, the bowl would not fall to the earth at all; but would continue to circulate round it, keeping always in the ſame tract, and returning to the ſame point from which it was projected, with the ſame velocity as at firſt. In this manner the moon moves round the earth, altho' ſhe is as unactive and dead as any ſtone upon it.

6 bility. The third property of matter is *mobility;* for we find that all matter is capable of being moved, if a ſufficient degree of force be applied to overcome its inactivity or reſiſtance, or the force of gravity which acts upon all terreſtrial bodies.

7 iſibi- The fourth property of matter is *diviſibility*, of which there can be no end. For, ſince matter can never be annihilated by cutting or breaking, we can never imagine it to be cut into ſuch ſmall particles, but that if one of them is laid on a table, the uppermoſt ſide of it will be further from the table than the undermoſt ſide. Moreover, it would be abſurd to ſay that the greateſt mountain on earth has more halves, quarters, or tenth parts, than the ſmalleſt particle of matter has. 5 Inactiv

We have many ſurpriſing inſtances of the ſmallneſs to which matter can be divided by art: of which the two following are very remarkable.

1. If a pound of ſilver be fuſed with a ſingle grain of gold, the gold will be equally diffuſed thro' the whole ſilver; ſo that taking one grain from any part of the maſs (in which there can be no more than the 5760th part of a grain of gold) and diſſolving it in *aqua fortis,* the gold will fall to the bottom.

2. The gold-beaters can extend a grain of gold into a leaf containing 50 ſquare inches; and this leaf may be divided into 500000 parts. For an inch in length can be divided into 100 parts, every one of which will be viſible to the bare eye: conſequently a ſquare inch can be divided into 10000 parts, and 50 ſquare inches into 500000. And if one of theſe parts be viewed with a microſcope that magnifies the diameter of an object only 10 times, it will magnify the area 100 times; and then the 100th part of a 500000th part of a grain (that is, the 50 millionth part) will be viſible. Such leaves are commonly uſed in gilding; and they are ſo very thin, that if 124500 of them were laid upon one another, and preſſed together, they would not exceed one inch in thickneſs.

Yet all this is nothing in compariſon of the lengths that nature goes in the diviſion of matter. For Mr Leewenhoek tells us, that there are more animals in the milt of a ſingle cod fiſh, than there are men upon the whole earth: and that, by comparing theſe animals in a microſcope with grains of common ſand, it appeared that one ſingle grain is bigger than four millions of them. Now each animal muſt have a heart, arteries, veins, muſcles, and nerves, otherwiſe they could neither live nor move. How inconceivably ſmall then muſt the particles of their blood be, to circulate through the ſmalleſt ramifications and joinings of their arteries and veins! It has been found by calculation, that a particle of their blood muſt be as much ſmaller than a globe of the tenth part of an inch in diameter, as that globe is ſmaller than the whole earth; and yet, if theſe particles be compared with the particles of light, they will be found to exceed them as much in bulk as mountains do ſingle grains of ſand. For, the force of any body ſtriking againſt an obſtacle is directly in proportion to its quantity of matter multiplied into its velocity: and ſince the velocity of the particles of light is demonſtrated to be at leaſt a million times greater than the velocity of a cannon-ball, it is plain, that if a million of theſe particles were as big as a ſingle grain of ſand, we durſt no more open our eyes to the light, than we durſt expoſe them to ſand ſhot point-blank from a cannon.

Plate CLXIX. fig. 1. That matter is infinitely diviſible, in a mathematical ſenſe, is eaſy to be demonſtrated. For let AB be the length of a particle to be divided; and let it be touched at oppoſite ends by the parallel lines CD and EF, which ſuppoſe to be infinitely extended beyond D and F. Set off the equal diviſions BG, GH, HI, &c. on the line EF, towards the right-hand from B; and take a point, as at R, any where toward the left-hand from A, in the line CD: Then, from this point draw the right lines RG, RH, RI, &c. each of which will cut off a part from the particle AB. But after any finite number of ſuch lines are drawn, there will ſtill remain a part, as AP, at the top of the particle, which can never be cut off: becauſe the lines DR and EF being parallel, no line can ever be drawn from the point R to any point of the line EF that will coincide with the line RD. Therefore the particle AB contains more than any finite number of parts. 8 The infinite diviſibility of matter proved.

9 Attraction. A fifth property of matter is *attraction*, which ſeems rather to be infuſed than inherent. Of this there are four kinds, viz. *coheſion*, *gravitation*, *magnetiſm*, and *electricity*.

10 Coheſion. The *attraction of coheſion* is that by which the ſmall parts of matter are made to ſtick and cohere together. Of this we have ſeveral inſtances, ſome of which follow.

1. If a ſmall glaſs tube, open at both ends, is dipt in water, the water will riſe up in the tube to a conſiderable height above its level in the baſon: which muſt be owing to the attraction of a ring of particles of the glaſs all around in the tube, immediately above thoſe to which the water at any inſtant riſes. And when it has riſen ſo high, that the weight of the column balances the attraction of the tube, it riſes no higher. This can be noways owing to the preſſure of the air upon the water in the baſon; for, as the tube is open at top, it is full of air above the water, which will preſs as much upon the water in the tube as the neighbouring air does upon any column of an equal diameter in the baſon. Beſides, if the ſame experiment be made in an exhauſted receiver of the air-pump, there will be found no difference.

2. A piece of loaf-ſugar will draw up a fluid, and a ſpunge will ſuck in water: and on the ſame principle ſap aſcends in trees.

3. If two drops of quickſilver are placed near each other, they will run together and become one large drop.

4. If two pieces of lead be ſcraped clean, and preſſed together with a twiſt, they will attract each other ſo ſtrongly, as to require a force much greater than their own weight to ſeparate them. And this cannot be owing to the preſſure of the air, for the ſame thing will hold in an exhauſted receiver.

5. If two poliſhed plates of marble or braſs be put together, with a little oil between them to fill up the pores in their ſurfaces and prevent the lodgment of any air; they will cohere ſo ſtrongly, even if ſuſpended in an exhauſted receiver, that the weight of the lower plate will not be able to ſeparate it from the upper one. In putting theſe plates together, the one ſhould be rubbed upon the other, as a joiner does two pieces of wood when he glues them.

6. If two pieces of cork, equal in weight, are put near each other in a baſon of water, they will move equally faſt toward each other with an accelerated motion, until they meet: and then, if either of them is moved, it will draw the other after it. If two corks of unequal weights are placed near each other, they will approach with accelerated velocities inverſely proportionate to their weights: that is, the lighter cork will move as much faſter than the heavier, as the heavier exceeds the lighter in weight. This ſhews, that the attraction of each cork is in direct proportion to its weight or quantity of matter.

This kind of attraction reaches but to a very ſmall diſtance; for if two drops of quickſilver are rolled in duſt, they will not run together, becauſe the particles of duſt keep them out of the ſphere of each other's attraction.

11 Repulſion. When the ſphere of attraction ends, a *repulſive force* begins: thus, water repels moſt bodies till they are wet; and hence it is that a ſmall needle, if dry, ſwims upon water; and flies walk upon it without wetting their feet.

The repelling force of the particles of a fluid is but ſmall; and therefore, a fluid when divided eaſily unites again. But if glaſs, or any other hard ſubſtance, is broke into ſmall parts, they cannot be made to ſtick together again without being firſt wetted: the repulſion being too great to admit of a re-union.

The repelling force between water and oil is ſo great, that we find it almoſt impoſſible to mix them in ſuch a manner as not to ſeparate again. If a ball of light wood is dipt in oil, and then put into water, the water will recede ſo as to form a channel of ſome depth all around the ball.

The repulſive force of the particles of air is ſo great, that they can never be brought ſo near together by condenſation as to make them ſtick or cohere. Hence it is, that when the weight of the incumbent atmoſphere is taken off from any ſmall quantity of air, that quantity will diffuſe itſelf in ſuch a manner as to occupy (in compariſon) an infinitely greater portion of ſpace than it did before.

12 Gravitation. *Attraction of gravitation* is that power by which diſtant bodies tend towards one another. Of this we have daily inſtances in the falling of bodies to the earth. By this power in the earth it is, that bodies, on whatever ſide, fall in lines perpendicular to its ſurface; and conſequently, on oppoſite ſides, they fall in oppoſite directions, towards the centre: and by this power it is, that bodies on the earth's ſurface are kept to it on all ſides, ſo that they cannot fall from it. And as it acts upon all bodies in proportion to their reſpective quantities of matter, without any regard to their bulks or figures, it accordingly conſtitutes their weight.

As the attraction of any large body, this earth, for inſtance, conſiſts of the united attractions of all its parts, it thence follows, that if a body deſcends from the ſurface towards the ceutre of the earth, it would continually become lighter and lighter, the parts above attracting it, as well as thoſe below; in which caſe it is demonſtrated by mathematicians, that the gravity would decreaſe in the ſame proportion with the diſtance from the centre. Thus, let there be a body, as P, placed any where within a concave ſphere AB; and let us ſuppoſe it divided into an infinite number of thin concentric ſurfaces; the body P will be attracted equally each way by any one of theſe; for inſtance, the interior circle HIKLM. Let there be lines, as ILHK, &c. drawn through any point of the body P, in ſuch a manner as to form the ſurface of two ſimilar figures, ſuppoſe cones; the diameters of whoſe baſes may be IH, KL, which let us ſuppoſe infinitely ſmall. Theſe baſes being as the ſquares of the lines IH, KL, (2 *El.* 12.) will be directly as the ſquares of their diſtances from P; for the triangles IPH, KPL, being infinitely ſmall, are ſimilar. But thoſe baſes include all the particles of matter in the interior ſurface that are oppoſite to each other: the oppoſite attractions are therefore in the ſame ratio with thoſe baſes; that is, as the ſquares of the diſtances KP, PI. But the attraction is inverſely as the ſquares of the diſtances of the attracting bodies; that is, inverſely as the ſquares of the ſame diſtances PK, PI: theſe two ratios therefore deſtroying each other,

Plate CLXVI fig. 1.

other, it is evident, that if the concavity of the ſphere was filled with matter, that alone which lies nearer the centre than the body can affect it; the reſpective actions of all the parts that are more diſtant being equal, and in contrary directions; ſince the ſame is demonſtrable of any of the remaining concentric ſurfaces. Let us ſee then what effect that which lies nearer the centre than the body will have upon it, which may be conſidered as a ſphere on whoſe ſurface the body is placed. The diſtances of each particle of matter from the body, (taken collectively,) will be as the diameter of the ſphere, or as the radius, i. e. as the diſtance of the body from the centre: their action therefore upon the body will be inverſely as the ſquare of that diſtance; but the quantity of matter will be as the cube of that diſtance, (18 *El.* 12.): the attraction therefore will be inverſely as that proportion. Now, theſe two ratios being compounded, the attraction will be only as the diſtance from the centre.

If two bodies which contain equal quantities of matter, were placed at ever ſo great a diſtance from one another, and then left at liberty in free ſpace; if there were no other bodies in the univerſe to affect them, they would fall equally ſwift towards one another by the power of gravity, with velocities accelerated as they approached each other; and would meet in a point which was half way between them at firſt. Or, if two bodies containing unequal quantities of matter were placed at any diſtance, and left in the ſame manner at liberty, they would fall towards one another with velocities which would be in an inverſe proportion to their reſpective quantities of matter; and moving faſter and faſter in their mutual approach, would at laſt meet in a point as much nearer to the place from which the heavier body began to fall, than to the place from which the lighter body began to fall, as the quantity of matter in the former exceeded that in the latter.

All bodies that we know of have gravity or weight. For, that there is no ſuch thing as poſitive levity, even in ſmoke, vapours, and fumes, is demonſtrable by experiments on the air-pump; which ſhews, that altho' the ſmoke of a candle aſcends to the top of a tall receiver when full of air, yet, upon the air's being exhauſted out of the receiver, the ſmoke falls down to the bottom of it. So, if a piece of wood is immerſed in a jar of water, the wood will riſe to the top of the water, becauſe it has a leſs degree of weight than its bulk of water has: but if the jar is emptied of water, the wood falls to the bottom.

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As every particle of matter has its proper gravity, the effect of the whole muſt be in proportion to the number of the attracting particles; that is, as the quantity of matter in the whole body. This is demonſtrable by experiments on pendulums; for, if they are of equal lengths, whatever their weights be, they vibrate in equal times. Now it is plain, that if one be double or triple the weight of another, it muſt require a double or triple power of gravity to make it move with the ſame celerity: juſt as it would require a double or triple force to project a bullet of 20 or 30 pounds weight with the ſame degree of ſwiftneſs that a bullet of 10 pounds would require. Hence it is evident, that the power or force of gravity is always proportional to the quantity of matter in bodies, whatever their bulks or figures are.

14
It decreaſes as the ſquare of the diſtance increaſes.

Gravity alſo, like all other virtues or emanations which proceed or iſſue from a centre, decreaſes as the diſtance multiplied by itſelf increaſes: that is, a body at twice the diſtance of another attracts with only a fourth part of the force; at thrice the diſtance, with a ninth part; at four times the diſtance, with a 16th part; and ſo on. This too is confirmed by comparing the diſtance which the moon falls in a minute from a right line touching her orbit, with the diſtance thro' which heavy bodies near the earth fall in that time; and alſo by comparing the forces which retain Jupiter's moons in their orbits, with their reſpective diſtances from Jupiter.

The velocity which bodies near the earth acquire in deſcending freely by the force of gravity, is proportional to the times of their deſcent. For, as the power of gravity does not conſiſt in a ſingle impulſe, but is always operating in a conſtant and uniform manner, it muſt produce equal effects in equal times; and conſequently in a double or triple time, a double or triple effect. And ſo, by acting uniformly on the body, muſt accelerate its motion proportionably to the time of its deſcent.

To be a little more particular on this ſubject, let us ſuppoſe that a body begins to move with a celerity conſtantly and gradually increaſing in ſuch a manner as would carry it through a mile in a minute; at the end of this ſpace it will have acquired ſuch a degree of celerity as is ſufficient to carry it two miles the next minute, though it ſhould then receive no new impulſe from the cauſe by which its motion had been accelerated: but if the ſame accelerating cauſe continues, it will carry the body a mile farther; on which account it will have run through four miles at the end of two minutes; and then it will have acquired ſuch a degree of celerity as is ſufficient to carry it through a double ſpace in as much more time, or eight miles in two minutes, even though the accelerating force ſhould act upon it no more. But this force ſtill continuing to operate in an uniform manner, will again, in an equal time, produce an equal effect; and ſo, by carrying it a mile further, cauſe it to move through five miles the third minute: for, the celerity already acquired, and the celerity ſtill acquiring, will have each its complete effect. Hence we learn, that if the body ſhould move one mile the firſt minute, it would move three the ſecond, five the third, ſeven the fourth, nine the fifth, and ſo on in proportion.

And thus it appears, that the ſpaces deſcribed, in ſucceſſive equal parts of time, by an uniformly accelerated motion, are always as the odd numbers 1, 3, 5, 7, 9, &c. and conſequently, the whole ſpaces are as the ſquares of the times, or of the laſt acquired velocities. For the continued addition of the odd numbers yields the ſquares of all numbers from unity upwards. Thus, 1 is the firſt odd number, and the ſquare of 1 is 1; 3 is the ſecond odd number, and this added to 1 makes 4, the ſquare of 2; 5 is the third odd number, which added to 4 makes 9, the ſquare of 3; and ſo on for ever. Since, therefore, the times and velocities proceed evenly and conſtantly as 1, 2, 3, 4, &c. but the ſpaces deſcribed in each equal time are as 1, 3, 5, 7, &c. it is evident that the ſpace deſcribed

In 1 minute will be . . . 1 = ſquare of 1
In 2 minutes 1+3 = 4 = ſquare of 2
In 3 minutes 1+3+5 = 9 = ſquare of 3
In 4 minutes 1+3+5+7 = 16 = ſquare of 4, &c.

15 The deſcending velocity will give a power of equal aſcent.

Of this propoſition Mr Rowning gives a mathematical demonſtration from the following theorem, viz. That the ſpace paſſed over by a body with an uniform motion, is in a ratio compounded of the time and velocity. For the longer a body continues to move uniformly, the more ſpace it paſſes over; and the faſter it moves during any interval of time, the farther it goes: therefore the ſpace is in a ratio compounded of both; that is, it is had by multiplying the one into the other.

Hence may be deduced the following corollary, namely, That the area of a rectangle, one of whoſe ſides repreſents the celerity with which a body moves, and the other the time of its motion, will expreſs the ſpace it moves through.

Plate CLXVII. fig. 2.

Let now the line AB repreſent the time a body takes up in falling, and let BC expreſs the celerity acquired by its fall: farther, let the line AB be divided into an indefinite number of ſmall portions, *ei*, *im*, *mp*, and let *ef*, *ik*, *mn*, *pq*, &c. be drawn parallel to the baſe. Now, as the height from which bodies can be let fall is ſo ſmall, in proportion to their diſtance from the centre of the earth, that it cannot ſenſibly alter their gravity, which therefore may be conceived as acting conſtantly and uniformly upon them during the whole time of their fall; it follows, that they muſt acquire at every inſtant an equal degree of velocity. Hence, the velocities being as the times in which they are acquired, it is plain, that the lines *ef*, *ik*, *mn*, *pq*, &c. being to each other (4 *El*. 6.) as the lines A*e*, A*i*, A*m*, A*p*, &c. will repreſent the celerities in the times repreſented by theſe: that is, *ef* will be as the velocity of the body in the ſmall portion of time *ei*, and *ik* will be as the velocity in the portion of time *im*; in like manner *pq* will be as the velocity in the portion of time *po*; which portions of time being taken infinitely ſmall, the velocity of the body may be ſuppoſed the ſame during any whole portion; and conſequently the ſpace run over in the time *ei*, with the velocity *ef*, may be repreſented by the rectangle *if*. In like manner the ſpace run over in the time *im*, with the celerity *ik*, may be repreſented by the rectangle *mk*; and that run over with the celerity *mr*, in the time *mp*, by the rectangle *pn*; and ſo of the reſt. Therefore the ſpace run over in all thoſe times will be repreſented by the ſum of all the rectangles; that is, by the triangle ABC; for thoſe little triangular deficiencies at the end of each rectangle would have vaniſhed, had the lines *ei*, *im*, *mp*, &c. been infinitely ſhort, as the times they were ſuppoſed to repreſent. Now, as the ſpace the body deſcribes in the time AB is repreſented by the triangle ABC, for the ſame reaſon the ſpace paſſed over in the time A*o* may be repreſented by the triangle A*or*; but theſe triangles being ſimilar, are to each other as the ſquares of their homologous ſides AB, and A*o*, (20 *El*. 6.) that is, the ſpaces repreſented by the triangles are to each other as the ſquares of the times repreſented by the ſides Q E D.

As heavy bodies are uniformly accelerated by the power of gravity in their deſcent, it is plain that they muſt be uniformly retarded by the ſame power in their aſcent. Therefore, the velocity which a body acquires by falling, is ſufficient to carry it up again to the ſame height from whence it fell; allowance being made for the reſiſtance of the air, or other medium in which the body is moved. Thus the body D in rolling down the inclined plane AB, will acquire ſuch a velocity by the time it arrives at B, as will carry it up the inclined plane BC, almoſt to C; and would carry it quite up to C, if the body and plane were perfectly ſmooth, and the air gave no reſiſtance. So, if a pendulum were put into motion in a ſpace quite void of air and all other reſiſtances, and had no friction on the point of ſuſpenſion, it would move for ever; for the velocity it had acquired in falling through the deſcending part of the arc, would be ſtill ſufficient to carry it equally high in the aſcending part thereof.

Plate CLXIX. fig. 2.

16 The cen of gravi

The *centre of gravity* is that point of a body in which the whole force of its gravity or weight is united. Therefore whatever ſupports that point bears the weight of the whole body: and whilſt it is ſupported the body cannot fall, becauſe all its parts are in a perfect equilibrium about that point.

17 and lin directio

An imaginary line drawn from the centre of gravity of any body towards the centre of the earth, is called the *line of direction*. In this line all heavy bodies deſcend, if not obſtructed.

Since the whole weight of a body is united in its centre of gravity, as that centre aſcends or deſcends we muſt look upon the whole body to do ſo too. But as it is contrary to the nature of heavy bodies to aſcend of their own accord, or not to deſcend when they are permitted; we may be ſure that, unleſs the centre of gravity be ſupported, the whole body will tumble or fall. Hence it is, that bodies ſtand upon their baſes when the line of direction falls within the baſe; for in this caſe the body cannot be made to fall without firſt raiſing the centre of gravity higher than it was before. Thus, the inclining body ABCD, whoſe centre of gravity is E, ſtands firmly on its baſe CDIK, becauſe the line of direction EF falls within the baſe. But if a weight, as ABGH, be laid upon the top of the body, the centre of gravity of the whole body and weight together is raiſed up to I; and then, as the line of direction ID falls without the baſe at D, the centre of gravity I is not ſupported, and the whole body and weight tumble down together.

Fig. 3.

Hence appears the abſurdity of people's riſing haſtily in a coach or boat when it is likely to overſet: for by that means they raiſe the centre of gravity ſo far as to endanger throwing it quite out of the baſe; which, if they do, they overſet the vehicle effectually: whereas, had they clapt down to the bottom, they would have brought the line of direction, and conſequently the centre of gravity, farther within the baſe, and by that means might have ſaved themſelves.

The broader the baſe is, and the nearer the line of direction is to the middle or centre of it, the more firmly does the body ſtand. On the contrary, the narrower the baſe, and the nearer the line of direction is to the ſide of it, the more eaſily may the body be overthrown; a leſs charge of poſition being ſufficient to remove the line of direction out of the baſe in the latter caſe than in the former. And hence it is, that a ſphere is ſo eaſily rolled upon a horizontal plane; and that it is ſo difficult, if not impoſſible, to make things which are ſharp pointed to ſtand upright on the point. From what hath been ſaid, it plainly appears, that if the plane is inclined on which the heavy body is placed, that body will ſlide down upon the plane whilſt the line of direction falls within the baſe; but it will tumble or roll down when the line falls without the baſe. Thus, the body A will only ſlide down the inclined plane CD, whilſt the body B rolls down upon it.

When the line of direction falls within the baſe of our feet, we ſtand; and moſt firmly when it is in the middle: but when it is out of that baſe, we immediately fall. And it is not only pleaſing, but even ſurpriſing, to reflect upon the various and unthought of methods and poſtures which we uſe to retain this poſition, or to recover it when it is loſt. For this purpoſe we bend our body forward when we riſe from a chair, or when we go up ſtairs: and for this purpoſe a man leans forward when he carries a burden on his back, and backward when he carries it on his breaſt; and to the right or left ſide as he carries it on the oppoſite ſide. A thouſand more inſtances might be added.

The quantity of matter in all bodies is in exact proportion to their weight, bulk for bulk. Therefore, heavy bodies are as much more denſe or compact than light bodies of the ſame bulk, as they exceed them in weight.

All bodies are full of pores, or ſpaces void of matter: and in gold, which is the heavieſt of all known bodies, there is perhaps a greater quantity of ſpace than of matter. For the particles of heat and magnetiſm find an eaſy paſſage through the pores of gold; and even water itſelf has been forced through them. Beſides, if we conſider how eaſily the rays of light paſs through ſo ſolid a body as glaſs in all manner of directions, we ſhall find reaſon to believe that bodies are much more porous than is generally imagined.

All bodies are ſome way or other affected by heat; and all metallic bodies are expanded in length, breadth, and thickneſs, thereby.—The proportion of the expanſion of ſeveral metals, according to the beſt experiments, is nearly thus: Iron and glaſs as 3, ſteel 4, copper $4\frac{1}{8}$, braſs 5, tin 6, lead $6\frac{1}{8}$. An iron rod 3 feet long is about one 70th part of an inch longer in ſummer than in winter.

The expanſion of metals by heat is demonſtrated by the following machine called Pyrometer.

AA is a flat piece of mahogony, in which are fixed four braſs ſtuds B,C,D,L; and two pins, one at F and the other at H. On the pin F turns the crooked index E I, and upon the pin H the ſtraight index G K, againſt which a piece of watch-ſpring R bears gently, and ſo preſſes it towards the beginning of the ſcale M N, over which the point of that index moves. This ſcale is divided into inches and tenth parts of an inch: the firſt inch is marked 1000, the ſecond 2000, and ſo on. A bar of metal O is laid into notches in the top of the ſtuds C and D; one end of the bar bearing againſt the adjuſting ſcrew P, and the other end againſt the crooked index E I, at a 20th part of its length from its centre of motion F. —Now it is plain, that however much the bar O lengthens, it will move that part of the index E I againſt which it bears juſt as far: but the crooked end of the ſame index, near H, being 20 times as far from the centre of motion F as the point is againſt which the bar bears, it will move 20 times as far as the bar lengthens. And as this crooked end bears againſt the index G K at only a 20th part of the whole length G S from its centre of motion H, the point S will move through 20 times the ſpace that the point of bearing near H does. Hence, as 20 multiplied by 20 produces 400, it is evident that if the bar lengthens but a 400th part of an inch, the point S will move a whole inch on the ſcale; and as every inch is divided into 10 equal parts, if the bar lengthens but the 10th part of the 400th part of an inch, which is only the 4000th part of an inch, the point S will move the 10th part of an inch, which is very perceptible.

To find how much a bar lengthens by heat, firſt lay it cold into the notches of the ſtuds, and turn the adjuſting ſcrew P until the ſpring R brings the point S of the index GK to the beginning of the diviſions of the ſcale at M: then, without altering the ſcrew any farther, take off the bar, and rub it with a dry woollen cloth till it feels warm; and then, laying it on where it was, obſerve how far it puſhes the point S upon the ſcale by means of the crooked index EI, and the point S will ſhew exactly how much the bar has lengthened by the heat of rubbing. As the bar cools, the ſpring R bearing againſt the index K G, will cauſe its point S to move gradually back towards M in the ſcale: and where the bar is quite cold, the index will reſt at M, when it was before the bar was made warm by rubbing. The indexes have ſmall rollers under them at I and K; which, by turning round on the ſmooth wood as the indexes move, make their motions the eaſier, by taking off a great part of the friction, which would otherwiſe be on the pins F and H, and of the points of the indexes themſelves on the wood.

21 Magnetiſm.

Beſides the univerſal properties above-mentioned, there are bodies which have properties peculiar to themſelves; ſuch as the loadſtone, in which the moſt remarkable are theſe: 1. It attracts iron and ſteel only. 2. It conſtantly turns one of its ſides to the north and another to the ſouth, when ſuſpended by a thread that does not twiſt. 3. It communicates all its properties to a piece of ſteel when rubbed upon it, without loſing any itſelf. See Magnetism.

22 Electricity.

Several bodies, particularly amber, glaſs, jet, ſealing wax, agate, and almoſt all precious ſtones, have a peculiar property of attracting and repelling light bodies when heated by rubbing. This is called *electrical attraction*. See Electricity.

Chap. II. *Of Central Forces.*

23 Motion or reſt equally indifferent to all bodies.

We have already mentioned it as a neceſſary conſequence ariſing from the deadneſs or inactivity of matter, that all bodies endeavour to continue in the ſtate they are in, whether of reſt or motion. If the body A were placed in any part of free ſpace, where nothing either draws or impels it any way, it would for ever remain in that part of ſpace, becauſe it could have no tendency of itſelf to remove any way from thence. If it receives a ſingle impulſe any way, as ſuppoſe from A towards B, it will go on in that direction; for, of itſelf it could never ſwerve from a right line, nor ſtop its courſe. When it has gone through the ſpace AB, and met with no reſiſtance, its velocity will be the ſame at B as it was at A: and this velocity, in as much more time, will carry it through as much more ſpace, from B to C; and ſo on for ever. Therefore, when we ſee a body in motion, we conclude that ſome other ſubſtance muſt have given it that motion; and when we ſee a body fall from motion to reſt, we conclude that ſome other body or cauſe ſtopt it.

Plate CLXIX. fig. 6.

24
All motion naturally rectilineal.

As all motion is naturally rectilineal, it appears, that a bullet projected by the hand, or ſhot from a cannon, would for ever continue to move in the ſame direction it received at firſt, if no other power diverted its courſe. Therefore, when we ſee a body move in a curve of any kind whatever, we conclude it muſt be acted upon by two powers at leaſt; one putting it in motion, and another drawing it off from the rectilineal courſe it would otherwiſe have continued to move in: and whenever that power, which bent the motion of the body from a ſtraight line into a curve, ceaſes to act, the body will again move on in a ſtraight line touching that point of the curve in which it was when the action of that power ceaſed. For example, a pebble moved round in a ſling ever ſo long a time, will fly off the moment it is ſet at liberty by ſlipping one end of the ſling-cord, and will go on in a line touching the circle it deſcribed before; which line would actually be a ſtraight one, if the earth's attraction did not affect the pebble and bring it down to the ground. This ſhews that the natural tendency of the pebble, when put into motion, is to continue moving in a ſtraight line, although by the force that moves the ſling it be made to revolve in a circle.

25
The effects of combined forces.

The change of motion produced is in proportion to the force impreſſed: for the effects of natural cauſes are always proportionate to the force or power of thoſe cauſes.

Fig. 7.

By theſe laws it is eaſy to prove, that a body will deſcribe the diagonal of a ſquare or parallelogram by two forces conjoined, in the ſame time that it would deſcribe either of the ſides by one force ſingly. Thus, ſuppoſe the body A to repreſent a ſhip at ſea; and that it is drove by the wind, in the right line AB, with ſuch a force as would carry it uniformly from A to B in a minute: then, ſuppoſe a ſtream or current of water running in the direction AD, with ſuch a force as would carry the ſhip through an equal ſpace from A to D in a minute. By theſe two forces, acting together at right angles to each other, the ſhip will deſcribe the line AEC in a minute: which line (becauſe the forces are equal and perpendicular to each other) will be the diagonal of an exact ſquare. To confirm this law by an experiment, let there be a wooden ſquare ABCD ſo contrived, as to have the part BEFC made to draw out or puſh into the ſquare at pleaſure. To this part let the pulley H be joined, ſo as to turn freely on an axis, which will be at H when the piece is puſhed in, and at *h* when it is drawn out. To this part let the ends of a ſtraight wire *k* be fixed, ſo as to move along with it, under the pulley; and let the ball G be made to ſlide eaſily on the wire. A thread *m* is fixed to this ball, and goes over the pulley to I; by this thread the ball may be drawn up on the wire, parallel to the ſide AD, when the part BEFC is puſhed as far as it will go into the ſquare. But, if this part be drawn out, it will carry the ball along with it, parallel to the bottom of the ſquare DC. By this means the ball G may either be drawn perpendicularly upward by pulling the thread *m*, or moved horizontally along by pulling out the part BEFC, in equal times, and through equal ſpaces; each power acting equally and ſeparately upon it. But if, when the ball is at G, the upper end of the thread be tied to the pin I, in the corner A of the fixed ſquare, and the moveable part BEFG be drawn out, the ball will then be acted upon by both the powers together: for it will be drawn up by the thread towards the top of the ſquare, and at the ſame time carried with its wire *k* towards the right hand BC, moving all the while in the diagonal line L; and will be found at *g* when the ſliding part is drawn out as far as it was before; which then will have cauſed the thread to draw up the ball to the top of the inſide of the ſquare, juſt as high as it was before, when drawn up ſingly by the thread without moving the ſliding part.

Fig. 8.

Fig. 9.

If the acting forces are equal, but at oblique angles to each other, ſo will the ſides of the parallelogram be: and the diagonal run through by the moving body will be longer or ſhorter, according as the obliquity is greater or ſmaller. Thus, if two equal forces act conjointly upon the body A, one having a tendency to move it through the ſpace AB in the ſame time that the other has a tendency to move it through an equal ſpace AD; it will deſcribe the diagonal AGC in the ſame time that either of the ſingle forces would have cauſed it to deſcribe either of the ſides. If one of the forces be greater than the other, then one ſide of the parallelogram will be ſo much longer than the other. For, if one force ſingly would carry the body through the ſpace AE, in the ſame time that the other would have carried it through the ſpace AD, the joint action of both will carry it in the ſame time thro' the ſpace AHF, which is the diagonal of the oblique parallelogram ADEF.

If both forces act upon the body in ſuch a manner as to move it uniformly, the diagonal deſcribed will be a ſtraight line; but if one of the forces acts in ſuch a manner as to make the body move faſter and faſter as it goes forward, then the line deſcribed will be a curve. And this is the caſe of all bodies which are projected in rectilineal directions, and at the ſame time acted upon by the power of gravity; which has a conſtant tendency to accelerate their motions in the direction wherein it acts.

The l of the netary tions.

Fig. 1

From the uniform projectile motion of bodies in ſtraight lines, and the univerſal power of gravity or attraction, ariſes the curvilineal motion of all the heavenly bodies. If the body A be projected along the ſtraight line AFH in open ſpace, where it meets with no reſiſtance, and is not drawn aſide by any power, it will go on for ever with the ſame velocity, and in the ſame direction. But if, at the ſame moment the projectile

Plate CLXVII.
MECHANICS.

Fig. 1.

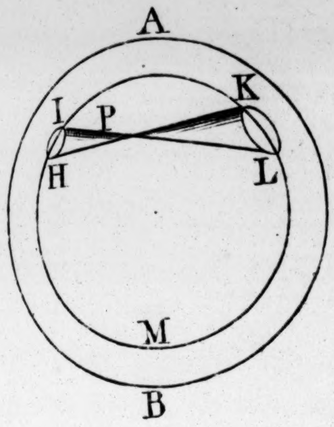

Fig. 2.

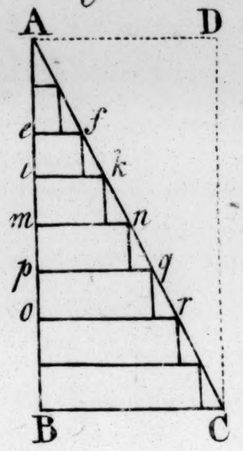
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Fig. 3.

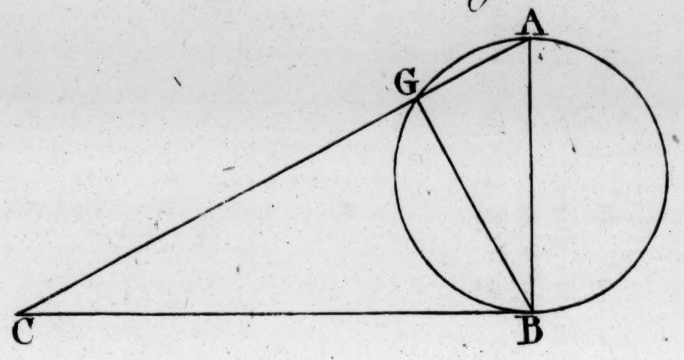

Fig. 4.

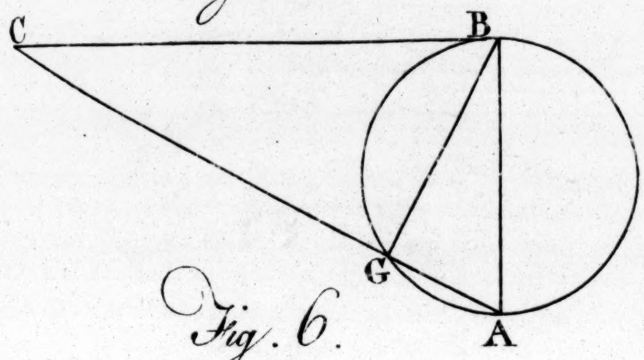

Fig. 5.

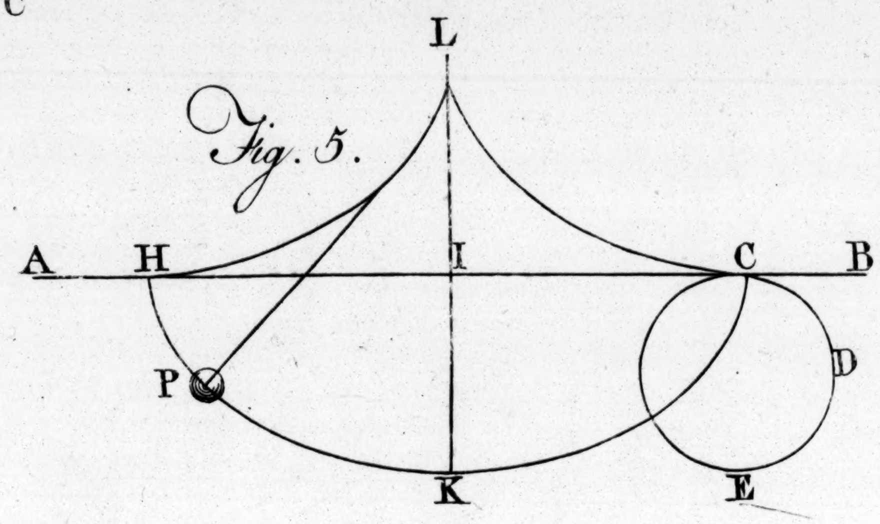
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Fig. 6.

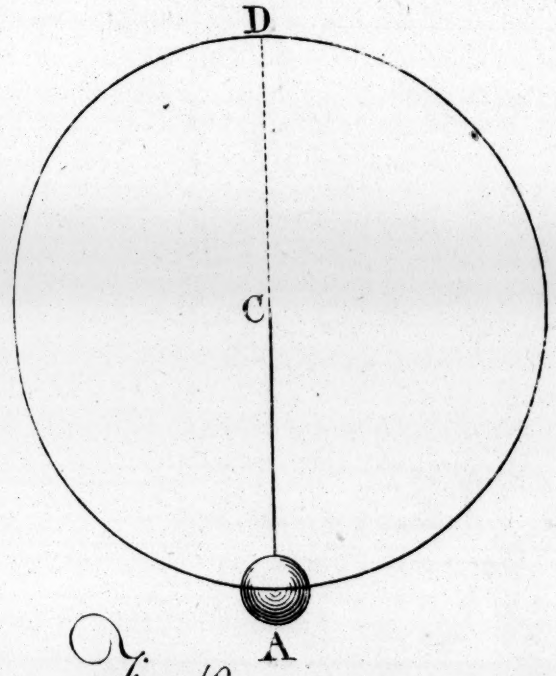


Fig. 7.

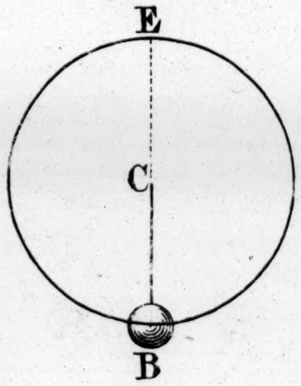


Fig. 8.

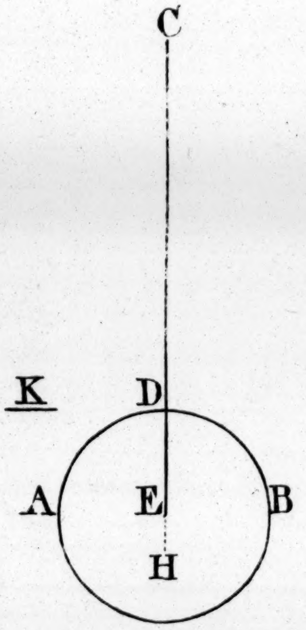


Fig. 9.

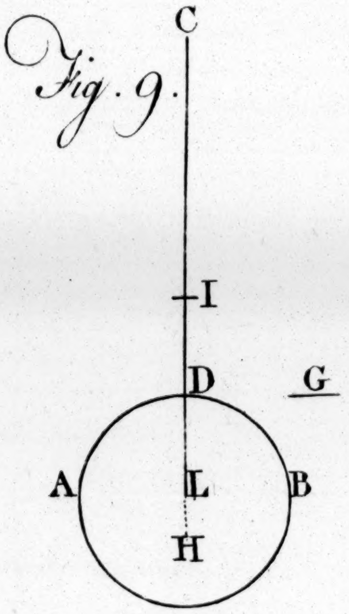


Fig. 10.

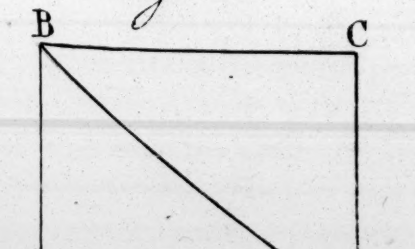


Fig. 11.

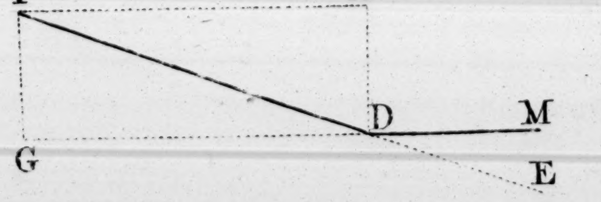
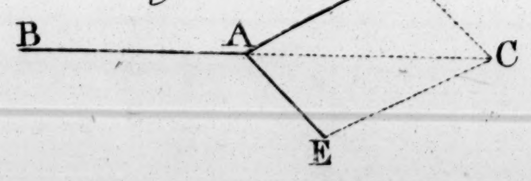


Fig. 12.



A. Bell Sculp.t

3 MA 53

Plate CLXVIII.

MECHANICS.

Fig. 1.

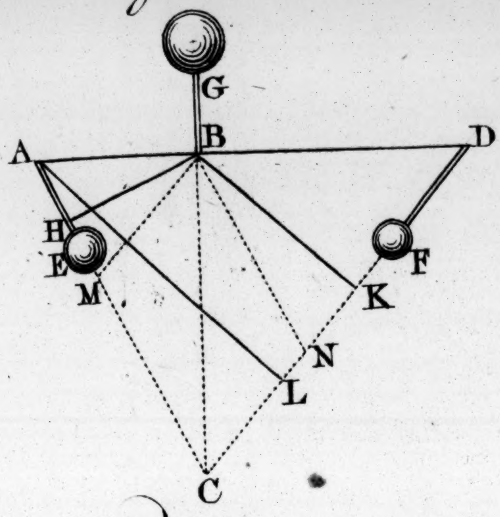

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Fig. 2.

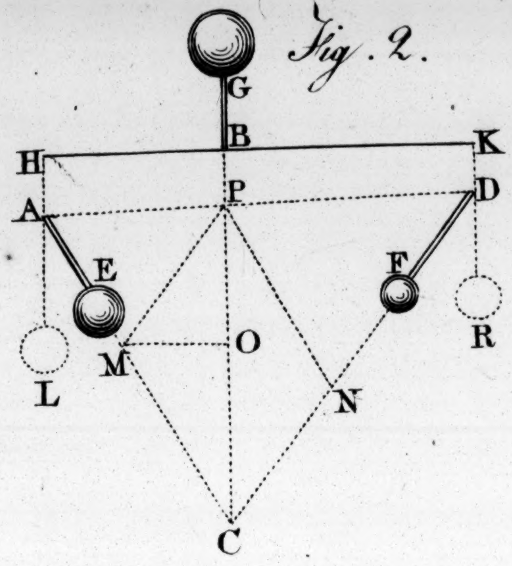
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Fig. 3.

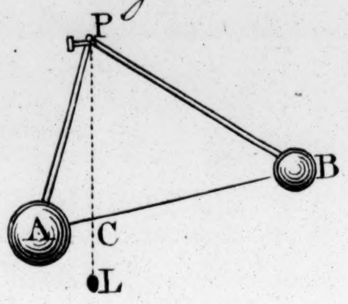

Fig. 4.

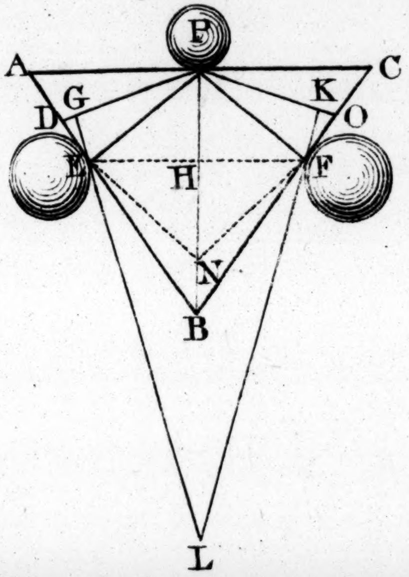
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Fig. 6.

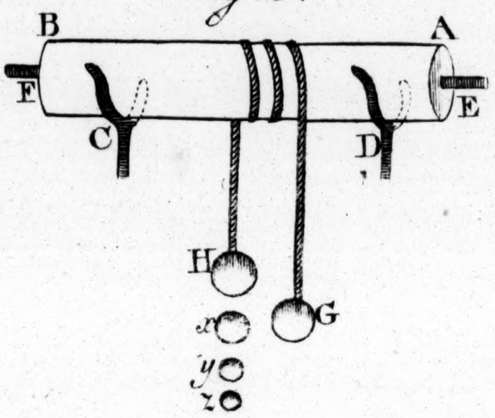
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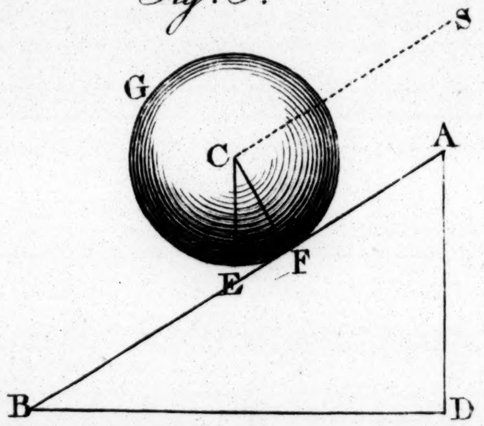
Fig. 5.



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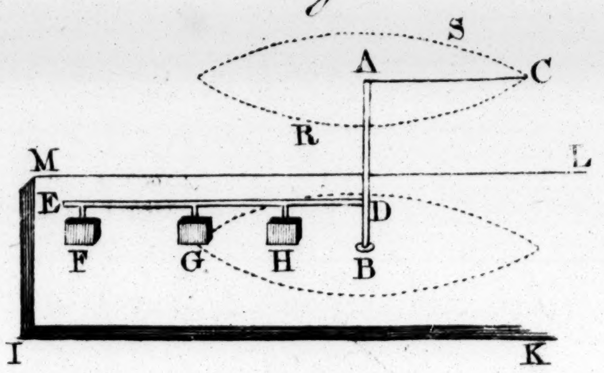
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Fig. 7.

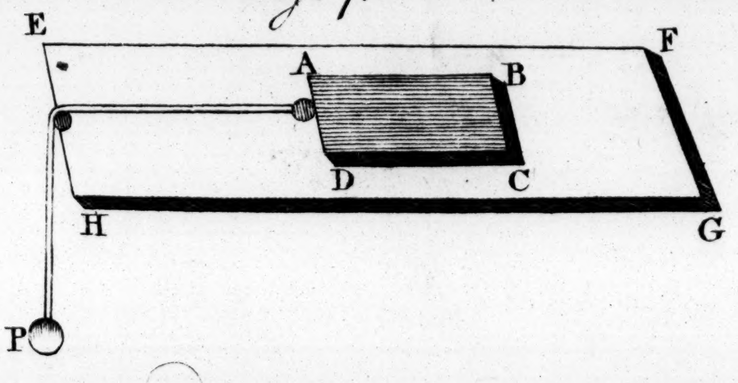

Fig. 10.

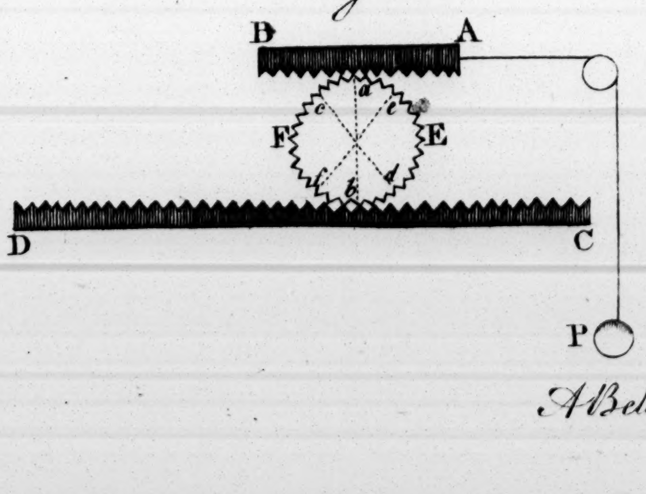
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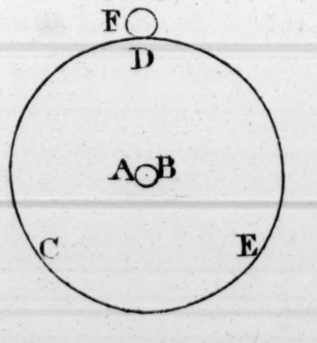
Fig. 9.



A Bell Sculp^t.

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MECHANICS.

Plate CLXIX.

Fig. 1.

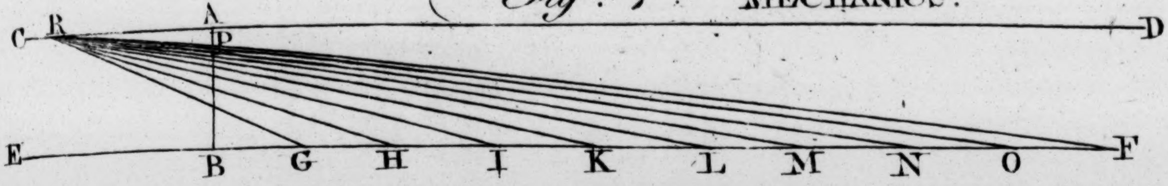
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Fig. 2.

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Fig. 5.

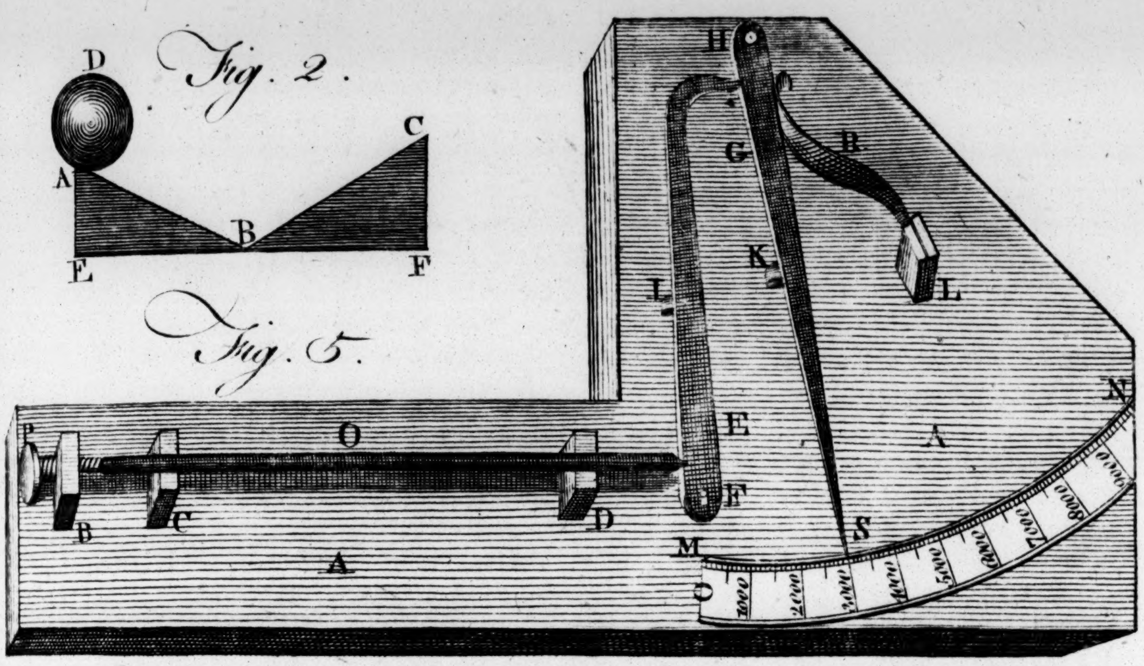
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Fig. 3.

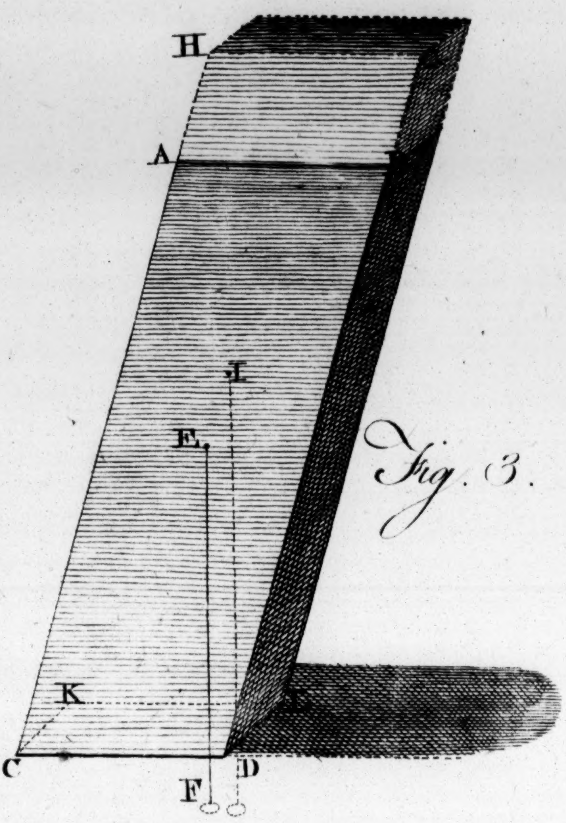

Fig. 9.

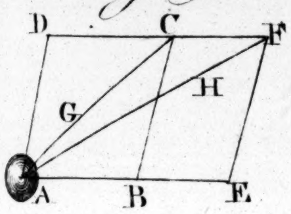

Fig. 6.

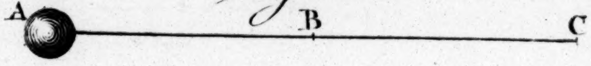

Fig. 4.

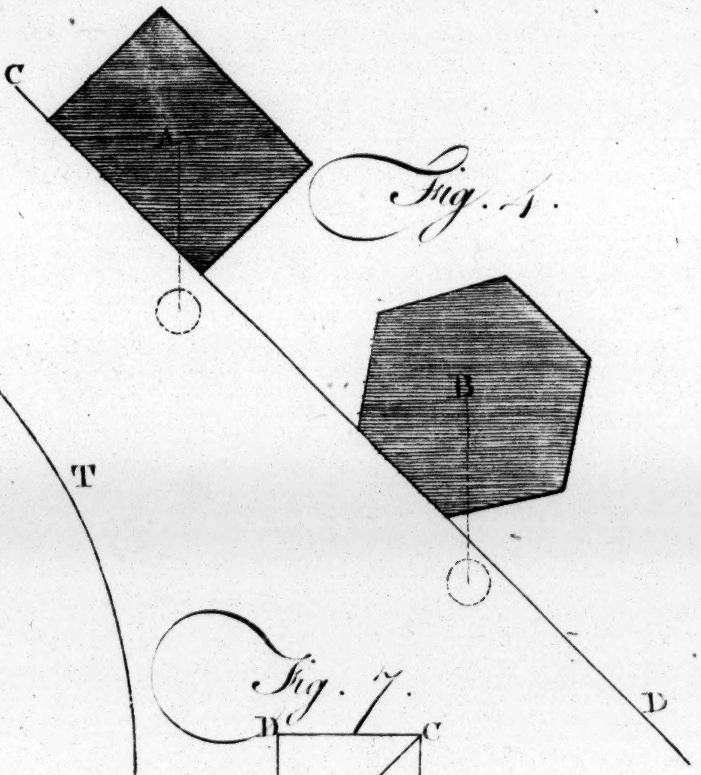

Fig. 10.

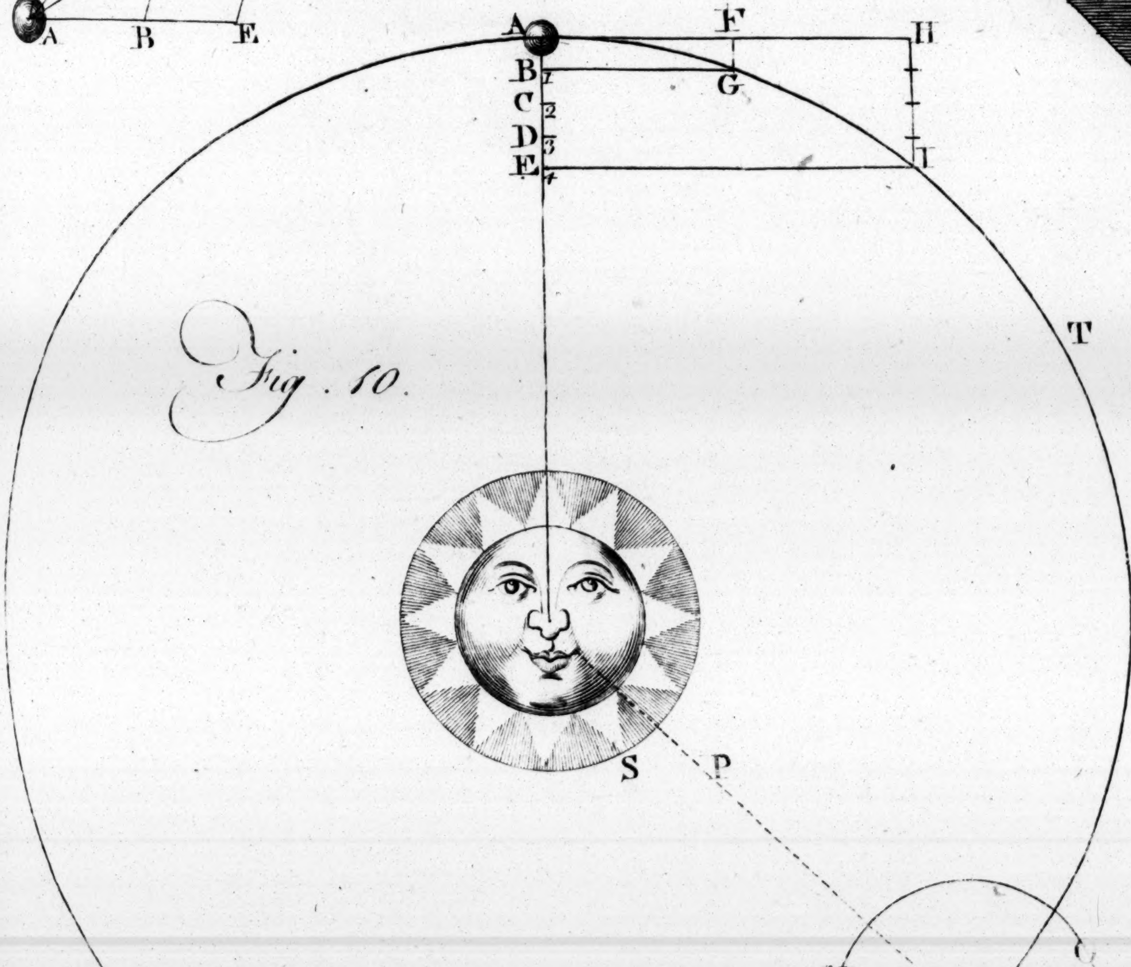
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Fig. 7.

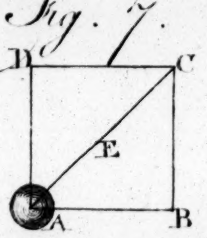
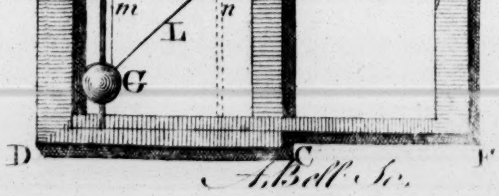


Fig. 8.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A. Bell Sc.

3 MA 58

jectile force is given it at A, the body S begins to attract it with a force duly adjuſted (A), and perpendicular to its motion at A, it will then be drawn from the ſtraight line AFH, and forced to revolve about S in the circle ATW; in the ſame manner, and by the ſame law, that a pebble is moved round in a ſling. And if, when the body is in any part of its orbit (as ſuppoſe at K), a ſmaller body as L, within the ſphere of attraction of the body K, be projected in the right line LM, with a force duly adjuſted, and perpendicular to the line of attraction LK; then the ſmall body L will revolve about the large body K in the orbit NO, and accompany it in its whole courſe round the yet larger body S. But then, the body K will no longer move in the circle ATW: for that circle will now be deſcribed by the common centre of gravity between K and L; nay, even the greateſt body S will not keep in the centre, for it will be the common centre of gravity between all the three bodies S, K, and L, that will remain immoveable there. So, if we ſuppoſe S and K connected by a wire P that has no weight, and K and L connected by a wire *q* that has no weight, the common centre of gravity of all theſe three bodies will be a point in the wire P near S; which point being ſupported, the bodies will be all *in æquilibrio* as they move round it: Though indeed, ſtrictly ſpeaking, the common centre of gravity of all the three bodies will not be in the wire P but when theſe bodies are all in a right line. Here, S may repreſent the ſun, K the earth, and L the moon.

te XX. 1.

27 e curves ribed bodies lving t their mon re of ity.

In order to form an idea of the curves deſcribed by two bodies revolving about their common centre of gravity, whilſt they themſelves with a third body are in motion round the common centre of gravity of all the three; let us firſt ſuppoſe E to be the ſun, and *e* the earth going round him without any moon; and their moving forces regulated as above. In this caſe, whilſt the earth goes round the ſun in the dotted circle RTUWX, &c. the ſun will go round the circle ABD, whoſe centre C is the common centre of gravity between the ſun and earth; the right line β δ repreſenting the mutual attraction between them, by which they are as firmly connected as if they were fixed at the two ends of an iron bar ſtrong enough to hold them. So, when the earth is at *e*, the ſun will be at E; when the earth is at T, the ſun will be at F; and when the earth is at *g*, the ſun will be at G, &c.

Now, let us take in the moon *q* (at the top of the figure), and ſuppoſe the earth to have no progreſſive motion about the ſun; in which caſe, whilſt the moon revolves about the earth in her orbit *æ æ æ æ*, the earth will revolve in the circle S 13, whoſe centre R is the common centre of gravity of the earth and moon; they being connected by the mutual attraction between them in the ſame manner as the earth and ſun are.

But the truth is, that whilſt the moon revolves about the earth, the earth is in motion about the ſun: and now, the moon will cauſe the earth to deſcribe an irregular curve, and not a true circle, round the ſun; it being the common centre of gravity of the earth and moon that will then deſcribe the ſame circle which the earth would have moved in if it had not been attended by a moon. For, ſuppoſing the moon to deſcribe a qnarter of her progreſſive orbit about the earth in the time that the earth moves from *e* to *f*; it is plain, that when the earth comes to *f*, the moon will be found at *r*; in which time, their common centre of gravity will have deſcribed the dotted arc R 1 T, the earth the curve R 5 *f*, and the moon the curve *q* 14 *r*. In the time that the moon deſcribes another quarter of her orbit, the centre of gravity of the earth and moon will deſcribe the dotted arc T 2 U, and the earth the curve *f* 6 *g*, and the moon the curve *r* 15 *s*, and ſo on.—And thus, whilſt the moon goes once round the earth in her progreſſive orbit, their common centre of gravity deſcribes the regular portion of a circle R 1 T 2 U 3 V 4 W, the earth the irregular curve R 5 *f* 6 *g* 7 *h* 8 *i*, and the moon the yet more irregular curve *q* 14 *r* 15 *s* 16 *t* 17 *u*; and then, the ſame kind of tracks over again.

The centre of gravity of the earth and moon is 6000 miles from the earth's centre towards the moon; therefore the circle S 13 which the earth deſcribes round that centre of gravity (in every courſe of the moon round her orbit) is 12,000 miles in diameter. Conſequently the earth is 12,000 miles nearer the ſun at the time of full moon than at the time of new. See the Earth at *f* and at *h*.

To avoid confuſion in ſo ſmall a figure, we have ſuppoſed the moon to go only twice and a half round the earth, in the time that the earth goes once round the ſun: it being impoſſible to take in all the revolutions which ſhe makes in a year, and to give a true figure of her path, unleſs we ſhould make the ſemidiameter of the earth's orbit at leaſt 84 inches; and then, the proportional ſemidiameter of the moon's orbit would be only a quarter of an inch.

If the moon made any complete number of revolutions about the earth in the time that the earth makes one revolution about the ſun, the paths of the ſun and moon would return into themſelves at the end of every year, and ſo be the ſame over again: but they return not into themſelves in leſs than 19 years nearly; in which time the earth makes nearly 19 revolutions about the ſun, and the moon 235 about the earth.

Plate CLXIX. fig. 10.

28 A double projectile force balances a quadruple power of gravity.

If the planet A be attracted towards the ſun, with ſuch a force as would make it fall from A to B, in the time that the projectile impulſe would have carried it from A to F, it will deſcribe the arc AG by the combined action of theſe forces, in the ſame time that the former would have cauſed it to fall from A to B, or the latter have carried it from A to F. But, if the projectile force had been twice as great, that is, ſuch as would have carried the planet from A to H, in the ſame time that now, by the ſuppoſition, it carries it only from A to F; the ſun's attraction muſt then have been four times as ſtrong as formerly, to have kept the planet in the circle A T W; that is, it muſt have been ſuch as would have cauſed the planet to fall from A to E, which is four times the diſtance of A from B, in the time that the projectile force ſingly would have carried it from A to H, which is only twice

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(A) To make the projectile force a juſt balance to the gravitating power, ſo as to keep the planet moving in a circle, it muſt give ſuch a velocity as the planet would acquire by gravity when it had fallen through half the ſemidiameter of that circle.

twice the diſtance of A from F (B). Thus, a double projectile force will balance a quadruple power of gravity in the ſame circle; as appears plain by the figure, and ſhall ſoon be confirmed by an experiment.

Plate CLXX. fig. 2.

29 The whirling table deſcribed.

The whirling-table is a machine contrived for ſhewing experiments of this nature. A A is a ſtrong frame of wood, B a winch or handle fixed on the axis C of the wheel D, round which is the catgut ſtring F, which alſo goes round the ſmall wheels G and K, croſſing between them and the great wheel D. On the upper end of the axis of the wheel G, above the frame, is fixed the round board *d*, to which the bearer M S X may be faſtened occaſionally, and removed when it is not wanted. On the axis of the wheel H is fixed the bearer N T Z: and it is eaſy to ſee, that when the winch B is turned, the wheels and bearers are put into a whirling motion.

Each bearer has two wires W X, and Y Z, fixed and ſcrewed tight into them at the ends by nuts on the outſide. And when theſe nuts are unſcrewed, the wires may be drawn out in order to change the balls U and V, which ſlide upon the wires by means of braſs loops fixed into the balls, which keep the balls up from touching the wood below them. A ſtrong ſilk line goes through each ball, and is fixed to it at any length from the centre of the bearer to its end, as occaſion requires, by a nut-ſcrew at the top of the ball; the ſhank of the ſcrew goes into the centre of the ball, and preſſing the line againſt the under ſide of the hole that it goes through.—The line goes from the ball, and under a ſmall pulley fixed in the middle of the bearer; then up through a ſocket in the round plate (ſee S and T) in the middle of each bearer; then through a ſlit in the middle of the ſquare top (O and P) of each tower, and going over a ſmall pulley on the top comes down again the ſame way, and is at laſt faſtened to the upper end of the ſocket fixt in the middle of the above-mentioned round plate. Theſe plates S and T have each four round holes near their edges for letting them ſlide up and down upon the wires which make the corner of each tower. The balls and plates being thus connected each by its particular line, it is plain that if the balls be drawn outward, or towards the ends M and N of their reſpective bearers, the round plates S and T will be drawn up to the top of their reſpective towers O and P.

There are ſeveral braſs weights, ſome of two ounces, ſome of three, and ſome of four, to be occaſionally put within the towers O and P, upon the round plates S and T: each weight having a round hole in the middle of it, for going upon the ſockets or axis of the plates; and is ſlit from the edge to the hole, for allowing it to be ſlipt over the foreſaid line which comes from each ball to its reſpective plate.

The experiments to be made by this machine are,

30 The propenſity of matter to keep the ſtate it is in.

1. Take away the bearer M X, and take the ivory ball *a*, to which the line or ſilk cord *b* is faſtened at one end; and having made a loop on the other end of the cord, put the loop over a pin fixt in the centre of the board *d*. Then, turning the winch B to give the board a whirling motion, you will ſee that the ball does not immediately begin to move with the board, but, on account of its inactivity, it endeavours to continue in the ſtate of reſt which it was in before. —Continue turning, until the board communicates an equal degree of motion with its own to the ball; and then turning on, you will perceive that the ball will remain upon one part of the board, keeping the ſame velocity with it, and having no relative motion upon it, as is the caſe with every thing that lies looſe upon the plane ſurface of the earth, which, having the motion of the earth communicated to it, never endeavours to remove from that place. But ſtop the board ſuddenly by the hand, and the ball will go on, and continue to revolve upon the board, until the friction thereof ſtops its motion: which ſhews, that matter being once put into motion, would continue to move for ever, if it met with no reſiſtance. In like manner, if a perſon ſtands upright in a boat before it begins to move, he can ſtand firm; but the moment the boat ſets off, he is in danger of falling towards that place which the boat departs from: becauſe, as matter, he has no natural propenſity to move. But when he acquires the motion of the boat, let it be ever ſo ſwift, if it be ſmooth and uniform, he will ſtand as upright and firm as if he was on the plain ſhore; and if the boat ſtrikes againſt any obſtacle, he will fall towards that obſtacle; on account of the propenſity he has, as matter, to keep the motion which the boat has put him into.

2. Take away this ball, and put a longer cord to it, which may be put down through the hollow axis of the bearer MX, and wheel G, and fix a weight to the end of the cord below the machine; which weight, if left at liberty, will draw the ball from the edge of the whirling-board to its centre.

31 Bodies ving in bits have tendency fly out theſe orb

Draw off the ball a little from the centre, and turn the winch; then the ball will go round and round with the board, and will gradually fly off farther and farther from the centre, and raiſe up the weight below the machine: which ſhows that all bodies revolving in circles have a tendency to fly off from theſe circles, and muſt have ſome power acting upon them from the centre of motion, to keep them from flying off. Stop the machine, and the ball will continue to revolve for ſome time upon the board; but as the friction gradually ſtops its motion, the weight acting upon it will bring it nearer and nearer to the centre in every revolution, until it brings it quite thither. This ſhews, that if the planets met with any reſiſtance in going round the ſun, its attractive power would bring them nearer and nearer to it in every revolution, until they fell into it.

32 Bodies move f in ſmall bits tha large o

3. Take hold of the cord below the machine with one hand, and with the other throw the ball upon the round board as it were at right angles to the cord, by which means it will go round and round upon the board. Then obſerving with what velocity it moves, pull the cord below the machine, which will bring the ball nearer to the centre of the board, and you will ſee that the nearer the ball is drawn to the centre, the faſter it will revolve; as thoſe planets which are neareſt the ſun revolve faſter than thoſe which are more remote; and not only go round ſooner, becauſe they deſcribe ſmaller circles, but even move faſter in every part

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(B) Here the arcs AG, AI, muſt be ſuppoſed to be very ſmall; otherwiſe AE, which is equal to HI, will be more than quadruple to AB, which is equal to FG.

part of their reſpective circles.

33 Their centrifugal forces ſhewn.

4. Take away this ball, and apply the bearer MX, whoſe centre of motion is in its middle at *w*, directly over the centre of the whirling-board *d*. Then put two balls (V and U) of equal weights upon their bearing wires, and having fixed them at equal diſtances from their reſpective centres of motion *w* and *x* upon their ſilk cords, by the ſcrew-nuts, put equal weights in the towers O and P. Laſtly, put the catgut ſtrings E and F upon the grooves G and H of the ſmall wheels; which being of equal diameters, will give equal velocities to the bearers above, when the winch B is turned: and the balls U and V will fly off towards M and N, and will raiſe the weights in the towers at the ſame inſtant. This ſhews, that when bodies of equal quantities of matter revolve in equal circles with equal velocities, their centrifugal forces are equal.

5. Take away theſe equal balls, and inſtead of them put a ball of ſix ounces into the bearer MX, at a ſixth part of the diſtance *wz* from the centre, and put a ball of one ounce into the oppoſite bearer, at the whole diſtance *xy*, which is equal to *wz* from the centre of the bearer; and fix the balls at theſe diſtances on their cords, by the ſcrew-nuts at top; and then the ball U, which is ſix times as heavy as the ball V, will be at only a ſixth part of the diſtance from its centre of motion; and conſequently will revolve in a circle of only a ſixth part of the circumference of the circle in which V revolves. Now, let any equal weights be put into the towers, and the machine be turned by the winch; which (as the catgut ſtring is on equal wheels below) will cauſe the balls to revolve in equal times; but V will move ſix times as faſt as U, becauſe it revolves in a circle of ſix times its radius; and both the weights in the towers will riſe at once. This ſhews, that the centrifugal forces of revolving bodies (or their tendencies to fly off from the circles they deſcribe) are in direct proportion to their quantities of matter multiplied into their reſpective velocities, or into their diſtances from the centres of their reſpective circles. For, ſuppoſing U, which weighs ſix ounces, to be two inches from its centre of motion *w*, the weight multiplied by the diſtance is 12: and ſupppſing V, which weighs only one ounce, to be 12 inches diſtant from the centre of motion *x*, the weight once multiplied by the diſtance 12 inches is 12. And as they revolve in equal times, their velocities are as their diſtances from the centre, namely, as 1 to 6.

If theſe two balls be fixed at equal diſtances from their reſpective centres of motion, they will move with equal velocities; and if the tower O has ſix times as much weight put into it as the tower P has, the balls will raiſe their weight exactly at the ſame moment. This ſhews, that the ball U being ſix times as heavy as the ball V, has ſix times as much centrifugal force, in deſcribing an equal circle with an equal velocity.

34 A double velocity in the ſame circle, is a balance to a quadruple power of gravity.

9. If bodies of equal weights revolve in equal circles with unequal velocities, their centrifugal forces are as the ſquares of the velocities. To prove this law by an experiment, let two balls U and V of equal weights be fixed on their cords at equal diſtances from their reſpective centres of motion *w* and *x*; and then let the catgut ſtring E be put round the wheel K (whoſe circumference is only one half of the circumference of the wheel H or G) and over the pulley *s* to keep it tight; and let four times as much weight be put into the tower P as in the tower O. Then turn the winch B, and the ball V will revolve twice as faſt as the ball U in a circle of the ſame diameter, becauſe they are equidiſtant from the centres of the circles in which they revolve; and the weights in the towers will both riſe at the ſame inſtant, which ſhews that a double velocity in the ſame circle will exactly balance a quadruple power of attraction in the centre of the circle. For the weights in the towers may be conſidered as the attractive forces in the centres, acting upon the revolving balls: which, moving in equal circles, is the ſame thing as if they both moved in one and the ſame circle.

35 Kepler's problems.

7. If bodies of equal weights revolve in unequal circles, in ſuch a manner that the ſquares of the times of their going round are as the cubes of their diſtances from the centres of the circles they deſcribe; their centrifugal forces are inverſely as the ſquares of their diſtances from thoſe centres. For, the catgut ſtring remaining as in the laſt experiment, let the diſtance of the ball V from the centre *x* be made equal to two of the croſs diviſions on its bearer; and the diſtance of the ball U from the centre *w* be three and a ſixth part; the balls themſelves being of equal weights, and V making two revolutions by turning the winch, in the time that U makes one: ſo that if we ſuppoſe the ball V to revolve in one moment, the ball U will revolve in two moments, the ſquares of which are one and four: for the ſquare of 1 is only 1, and the ſquare of 2 is 4; therefore the ſquare of the period or revolution of the ball V, is contained four times in the ſquare of the period of the ball U. But the diſtance of V is 2, the cube of which is 8, and the diſtance of U is $3\frac{1}{6}$, the cube of which is 32 very nearly; in which 8 is contained four times; and therefore, the ſquares of the periods of V and U are to one another as the cubes of their diſtances from *x* and *w*, which are the centres of their reſpective circles. And if the weight in the tower O be four ounces, equal to the ſquare of 2, the diſtance of V from the centre *x*; and the weight in the tower P be 10 ounces, nearly equal to the ſquare of $3\frac{1}{6}$, the diſtance of U from *w*; it will be found, upon turning the machine by the winch, that the balls U and V will raiſe their reſpective weights at very nearly the ſame inſtant of time. Which confirms that famous propoſition of Kepler (A), viz. that the ſquares of

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(A) This law is of infinite uſe to aſtronomers; for if they know the periodical time, that is, the time of the circular revolution of two planets, and the diſtance of one of them from the centre, they can by this find out the diſtance of the other, which before was not known. For inſtance, we know the periodical time of the moon to be 27 days, and the periodical time of the earth to be 365 days. The diſtance of the moon from the centre of its motion we alſo know to be 60 ſemi-diameters of the earth. Now we deſire to know the diſtance of the earth from the centre of its motion, namely, the ſun? We know by rule, that the proportion of the ſquares of the periodical times will give the proportion of the cubes of the diſtances. Then we find out the ſquares of the periodical times of the two planets. The periodical time of the moon is 27, and the ſquare of that number 729; the periodical time of the earth is 365, and the ſquare 133225. Then we find the diſtance of the planet, already known, 60, and cube it, which makes 216000.

of the periodical times of the planets round the ſun are in proportion to the cubes of their diſtances from him; and that the ſun's attraction is inverſely as the ſquare of the diſtance from his centre: that is, at twice the diſtance, his attraction is four times leſs; and thrice the diſtance, nine times leſs; at four times the diſtance, ſixteen times leſs; and ſo on, to the remoteſt part of the ſyſtem.

Plate CLXX. Fig. 4.

36 The abſurdity of the Carteſian vortex.

8. Take off the catgut ſtring E from the great wheel D and the ſmall wheel H, and let the ſtring F remain upon the wheels D and G. Take away alſo the bearer MX from the whirling-board *d*, and inſtead thereof put the machine AB fig. 4. upon it, fixing this machine to the centre of the board by the pins *c* and *d*, in ſuch a manner, that the end *ef* may riſe above the board to an angle of 30 or 40 degrees. In the upper ſide of this machine there are two glaſs tubes *a* and *b*, cloſe ſtopt at both ends; and each tube is about three quarters full of water. In the tube *a* is a little quickſilver, which naturally falls down to the end *a* in the water, becauſe it is heavier than its bulk of water; and on the tube *b* is a ſmall cork which floats on the top of the water at *e*, becauſe it is lighter; and it is ſmall enough to have liberty to riſe or fall in the tube. While the board *b* with this machine upon it continues to reſt, the quickſilver lies at the bottom of the tube *a*, and the cork floats on the water near the top of the tube *b*. But, upon turning the winch, and putting the machine in motion, the contents of each tube will fly off towards the uppermoſt ends (which are fartheſt from the centre of motion) the heavieſt with the greateſt force. Therefore the quickſilver in the tube *a* will fly off quite to the end *f*, and occupy its bulk of ſpace there, excluding the water from that place, becauſe it is lighter than quickſilver; but the water in the tube *b* flying off to its higher end *e*, will exclude the cork from that place, and cauſe the cork to deſcend towards the lowermoſt end of the tube, where it will remain upon the loweſt end of the water near *b*; for the heavier body having the greater centrifugal force will therefore poſſeſs the uppermoſt part of the tube, and the lighter body will keep between the heavier and the lowermoſt part.

This demonſtrates the abſurdity of the Carteſian doctrine of the planets moving round the ſun in vortexes: for, if the planet be more denſe or heavy than its bulk of the vortex, it will fly off therein farther and farther from the ſun; if leſs denſe, it will come down to the loweſt part of the vortex, at the ſun: and the whole vortex itſelf muſt be ſurrounded with ſomething like a great wall, otherwiſe it would fly quite off, planets and all together. But while gravity exiſts, there is no occaſion for ſuch vortexes; and when it ceaſes to exiſt, a ſtone thrown upwards will never return to the earth again.

37 If one body moves round another, both of them muſt move round their common centre of gravity.

9. If a body be ſo placed on the whirling-board of the machine (fig. 2.) that the centre of gravity of the body be directly over the centre of the board, and the board be put into ever ſo rapid a motion by the winch B, the body will turn round with the board, but will not remove from the middle of it; for, as all parts of the body are *in æquilibrio* round its centre of gravity, and the centre of gravity is at reſt in the centre of motion, the centrifugal force of all parts of the body will be equal at equal diſtances from its centre of motion, and therefore the body will remain in its place. But if the centre of gravity be placed ever ſo little out of the centre of motion, and the machine be turned ſwiftly round, the body will fly off towards that ſide of the board on which its centre of gravity lies. Thus, if the wire C with its ball B be taken away from the demi-globe A, and the flat ſide *ef* of this demi-globe be laid upon the whirling-board of the machine, ſo that their centres may coincide; if then the board be turned ever ſo quick by the winch, the demi-globe will remain where it was placed. But if the wire C be ſcrewed into the demi-globe at *d*, the whole becomes one body, whoſe centre of gravity is now at or near *d*. Let the pin *c* be fixed in the centre of the whirling-board, and the deep groove *b* cut in the flat ſide of the demi-globe be put upon the pin, ſo as the pin may be in the centre of *A*, (ſee fig. 6. where this groove is repreſented at *b*,) and let the whirling-board be turned by the winch, which will carry the little ball B with its wire C, and the demi-globe A, all round the centre-pin *ci*; and then the centrifugal force of the little ball B, which weighs only one ounce, will be ſo great, as to draw off the demi-globe A, which weighs two pounds, until the end of the groove at *e* ſtrikes againſt the pin *c*, and ſo prevents the demi-globe A from going any farther: otherwiſe, the centrifugal force of B would have been great enough to have carried A quite off the whirling-board. Which ſhews, that if the ſun were placed in the very centre of the orbits of the planets, it could not poſſibly remain there: for the centrifugal forces of the planets would carry them quite off, and the ſun with them; eſpecially when ſeveral of them happened to be in any one quarter of the heavens. For the ſun and planets are as much connected by the mutual attraction that ſubſiſts between them, as the bodies A and B are by the wire C which is fixed into them both. And even if there were but one ſingle planet in the whole heavens to go round ever ſo large a ſun in the centre of its orbit, its centrifugal force would ſoon carry off both itſelf and the ſun. For, the greateſt body placed in any part of free ſpace could be eaſily moved: becauſe if there were no other body to attract it, it could have no weight or gravity of itſelf; and conſequently, tho' it could have no tendency of itſelf to remove from that part of ſpace, yet it might be very eaſily moved by any other ſubſtance. And perhaps it was this conſideration which made the celebrated Archimedes ſay, that if he had a proper place at ſome diſtance from the earth whereon to fix his machinery, he could move the whole earth.

Fig. 5.

10. As the centrifugal force of the light body B will not allow the heavy body A to remain in the centre of motion, even though it be 24 times as heavy as B; let us now take the ball A (fig. 7.) which weighs ſix ounces, and connect it by the wire C with the ball B, which weighs only one ounce; and let the fork E hang

Fig. 7.

216000. Now by a rule in arithmetic, we find out a certain number which will bear the ſame proportion to this, that the ſquares 729, and 133225 bear to each other; that proportional number is 39460336, and the cube root of this laſt number, which is 340, will expreſs the diſtance of the ſun from the earth, which was what we wanted to know, ſo that the earth is diſtant from the ſun 3400 of its own ſemi-diameters.

be fixed into the centre of the whirling-board: then hang the balls upon the fork by the wire C in ſuch a manner, that they may exactly balance each other; which will be when the centre of gravity between them, in the wire at *d*, is ſupported by the fork. And this centre of gravity is as much nearer to the centre of the ball A, than to the centre of the ball B, as A is heavier than B, allowing for the weight of the wire on each ſide of the fork. This done, let the machine be put into motion by the winch; and the balls A and B will go round their common centre of gravity *d*, keeping their balance, becauſe either will not allow the other to fly off with it. For, ſuppoſing the ball B to be only one ounce in weight, and the ball A to be ſix ounces; then, if the wire C were equally heavy on each ſide of the fork, the centre of gravity *d* would be ſix times as far from the centte of the ball B as from the ball A, and conſequently B will revolve with a velocity ſix times as great as A does; which will give B ſix times as much centrifugal force as any ſingle ounce of A has: but then, as B is only one ounce, and A ſix ounces, the whole centrifugal force of A will exactly balance the whole centrifugal force of B: and therefore, each body will detain the other ſo as to make it keep in its circle. This ſhews, that the ſun and planets muſt all move round the common centre of gravity of the whole ſyſtem, in order to preſerve that juſt balance which takes place among them. For, the planets being as unactive and dead as the above balls, they could no more have put themſelves into motion than theſe balls can; nor have kept in their orbits without being balanced at firſt with the greateſt degree of exactneſs upon their common centre of gravity, by the Almighty hand that made them and put them in motion.

Plate LXX. g. 7.

Perhaps it may be here aſked, that ſince the centre of gravity between theſe balls muſt be ſupported by the fork E in this experiment, What prop it is that ſupports the centre of gravity of the ſolar ſyſtem, and conſequently bears the weight of all the bodies in it; and by what is the prop itſelf ſupported? The anſwer is eaſy and plain; for the centre of gravity of our balls muſt be ſupported, becauſe they gravitate towards the earth, and would therefore fall to it: but as the ſun and planets gravitate only towards one another, they have nothing elſe to fall to, and therefore have no occaſion for any thing to ſupport their common centre of gravity: and if they did not move round that centre, and conſequently acquire a tendency to fly off from it by their motions, their mutual attractions would ſoon bring them together; and ſo the whole would become one maſs in the ſun: which would alſo be the caſe if their velocities round the ſun were not quick enough to create a centrifugal force equal to the ſun's attraction.

But after all this nice adjuſtment, it appears evident that the Deity cannot withdraw his regulating hand from his works, and leave them to be ſolely governed by the laws which he has impreſſed upon them at firſt. For if he ſhould once leave them ſo, their order would in time come to an end; becauſe the planets muſt neceſſarily diſturb one another's motions by their mutual attractions, when ſeveral of them are in the ſame quarter of the heavens; as is often the caſe: and then, as they attract the ſun more towards that quarter than when they are in a manner diſperſed equably around him, if he was not at that time made to deſcribe a portion of a larger circle round the common centre of gravity, the balance would then be immediately deſtroyed; and as it could never reſtore itſelf again, the whole ſyſtem would begin to fall together, and would in time unite in a maſs at the ſun. Of this diſturbance we have a very remarkable inſtance in the comet which appeared lately; and which, in going laſt up before from the ſun, went ſo near to Jupiter, and was ſo affected by his attraction, as to have the figure of its orbit much changed; and not only ſo, but to have its period altered, and its courſe to be different in the heavens from what it was laſt before.

Fig. 8.

11. Take away the fork and balls from the whirling-board, and place the trough AB thereon, fixing its centre to the centre of the whirling-board by the pin H. In this trough are two balls D and E, of unequal weights, connected by a wire *f*; and made to ſlide eaſily upon the wire C, ſtretched from end to end of the trough, and made faſt by nut-ſcrews on the outſide of the ends. Let theſe balls be ſo placed upon the wire C, that their common centre of gravity *g* may be directly over the centre of the whirling-board. Then, turn the machine by the winch ever ſo ſwiftly, and the trough and balls will go round their centre of gravity, ſo as neither of them will fly off; becauſe on account of the equilibrium, each ball detains the other with an equal force acting againſt it. But if the ball E be drawn a little more towards the end of the trough at A, it will remove the centre of gravity towards that end from the centre of motion; and then, upon turning the machine, the little ball E will fly off, and ſtrike with a conſiderable force againſt the end A, and draw the great ball B into the middle of the trough. Or, if the great ball D be drawn towards the end B of the trough, ſo that the centre of gravity may be a little towards that end from the centre of motion, and the machine be turned by the winch, the great ball D will fly off, and ſtrike violently againſt the end B of the trough, and will bring the little ball E into the middle of it. If the trough be not made very ſtrong, the ball D will break through it.

38 Of the tides.

12. The reaſon why the tides riſe at the ſame abſolute time on oppoſite ſides of the earth, and conſequently in oppoſite directions, is made abundantly plain by a new experiment on the whirling-table. The cauſe of their riſing on the ſide next the moon every one underſtands to be owing to the moon's attraction: but why they ſhould riſe on the oppoſite ſide at the ſame time, where there is no moon to attract them, is perhaps not ſo generally underſtood. For it would ſeem that the moon ſhould rather draw the waters (as it were) cloſer to that ſide, than raiſe them upon it, directly contrary to her attractive force. Let the circle *a b c d* repreſent the earth, with its ſide *c* turned toward the moon, which will then attract the waters ſo as to raiſe them from *c* to *g*. But the queſtion is, Why ſhould they riſe as high at that very time on the oppoſite ſide, from *a* to *e*? In order to explain this, let there be a plate AB fixed upon one end of the flat bar DC, with ſuch a circle drawn upon it as *a b c d* (in fig. 9.) to repreſent the round figure of the earth and ſea; and ſuch an ellipſis as *e f g h* to repreſent the ſwelling of the tide at *e* and *g*, occaſioned by the influence of the moon. Over this plate AB let

Fig. 9.

Fig. 10.

Plate CLXX. fig. 10. let the three ivory balls *e*, *f*, *g*, be hung by the ſilk lines *h*, *i*, *k*, faſtened to the tops of the crooked wires H, I, K, in ſuch a manner, that the ball at *e* may hang freely over the ſide of the circle *e*, which is fartheſt from the moon M (at the other end of the bar;) the ball at *f* may hang freely over the centre, and the ball at *g* hang over the ſide of the circle *g*, which is neareſt the moon. The ball *f* may repreſent the centre of the earth, the ball *g* ſome water on the ſide next the moon, and the ball *e* ſome water on the oppoſite ſide. On the back of the moon M is fixed the ſhort bar N parallel to the horizon, and there are three holes in it above the little weights *p*, *q*, *r*. A ſilk thread *o* is tied to the line *k* cloſe above the ball *g*, and paſſing by one ſide of the moon M, goes through a hole in the bar N, and has the weight *p* hung to it. Such another thread *n* is tied to the line *i*, cloſe above the ball *f*, and paſſing through the centre of the moon M, and middle of the bar N, has the weight *q* hung to it, which is lighter than the weight *p*. A third thread *m* is tied to the line *h*, cloſe above the ball *e*, and paſſing by the other ſide of the moon M, through the bar N, has the weight *r* hung to it, which is lighter than the weight *q*.

The uſe of theſe three unequal weights is to repreſent the moon's unequal attraction at different diſtances from her. With whatever force ſhe attracts the centre of the earth, ſhe attracts the ſide next her with a greater degree of force, and the ſide fartheſt from her with a leſs. So, if the weights are left at liberty, they will draw all the three balls towards the moon with different degrees of force, and cauſe them to make the Fig. 11. appearance ſhewn in fig. 11.; by which means they are evidently farther from each other than they would be if they hung at liberty by the lines *h*, *i*, *k*; becauſe the lines would then hang perpendicularly. This ſhews, that as the moon attracts the ſide of the earth which is neareſt her with a greater degree of force than ſhe does the centre of the earth, ſhe will draw the water on that ſide more than ſhe draws the centre, and ſo cauſe it to riſe on that ſide: and as ſhe draws the centre more than ſhe draws the oppoſite ſide, the centre will recede farther from the ſurface of the water to that oppoſite ſide, and ſo leave it as high there as ſhe raiſed it on the ſide next to her. For, as the centre will be in the middle between the tops of the oppoſite elevations, they muſt of courſe be equally high on both ſides at the ſame time.

But upon this ſuppoſition the earth and moon would ſoon come together: and to be ſure they would, if they had not a motion round their common centre of gravity, to create a degree of centrifugal force ſufficient to balance their mutual attraction. This motion they have: for as the moon goes round her orbit every month at the diſtance of 240,000 miles from the earth's centre, and of 234,000 miles from the centre of gravity of the earth and moon, ſo does the earth go round the ſame centre of gravity every month at the diſtance of 6000 miles from it; that is, from it to the centre of the earth. Now as the earth is (in round numbers) 8000 miles in diameter, it is plain that its ſide next the moon is only 2000 miles from the common centre of gravity of the earth and moon, its centre 6000 miles diſtant therefrom, and its farther ſide from the moon 10,000. Therefore the centrifugal forces of theſe parts are as 2000, 6000, and 10,000; that is, the centrifugal force of any ſide of the earth, when it is turned from the moon, is five times as great as when it is turned towards the moon. And as the moon's attraction (expreſſed by the number 6000) at the earth's centre keeps the earth from flying out of this monthly circle, it muſt be greater than the centrifugal force of the waters on the ſide next her; and conſequently, her greater degree of attraction on that ſide is ſufficient to raiſe them: but as her attraction on the oppoſite ſides is leſs than the centrifugal force of the water there, the exceſs of this force is ſufficient to raiſe the water juſt as high on the oppoſite ſide. To prove this experimentally, let the bar DC with its furniture Fig. 10. be fixed upon the whirling-board of the machine (fig. 2.), by puſhing the pin P into the centre of the board; which pin is in the centre of gravity of the whole bar with its three balls *e*, *f*, *g*, and moon M. Now if the whirling-board and bar be turned ſlowly round by the winch, until the ball *f* hangs over the centre of the circle, as in fig. 12. the ball *g* will be kept towards the moon by the heavieſt weight *p* (fig. 10.); and the ball *e*, on account of its greater centrifugal force, and the leſſer weight *r*, will fly off as far to the other ſide, as in fig. 12. And ſo, whilſt the machine is kept turning, the balls *e* and *g* will hang over the ends of the ellipſis *l f k*. So that the centrifugal force of the ball *e* will exceed the moon's attraction juſt as much as her attraction exceeds the centrifugal force of the ball *g*, whilſt her attraction juſt balances the centrifugal force of the ball *f*, and makes it keep in its circle. And hence it is evident that the tides muſt riſe to equal heights at the ſame time on oppoſite ſides of the earth. This experiment was invented by Mr Ferguſon.

From the principles thus eſtabliſhed, it is evident, that the earth moves round the ſun, and not the ſun round the earth: for the centrifugal law will never allow a great body to move round a ſmall one in any orbit whatever; eſpecially when we find, that if a ſmall body moves round a great one, the great one muſt alſo move round the common centre of gravity between them two. And it is well known, that the quantity of matter in the ſun is 227,000 times as great as the quantity of matter in the earth. Now, as the ſun's diſtance from the earth is at leaſt 81,000,000 of miles, if we divide that diſtance by 227,000, we ſhall have only 357 for the number of miles that the centre of gravity between the ſun and earth is diſtant from the ſun's centre. And as the ſun's ſemidiameter is $\frac{1}{4}$ of a degree, which, at ſo great a diſtance as that of the ſun, muſt be no leſs than 381,500 miles; if this be divided by 357, the quotient will be $1068\frac{2}{3}$: which ſhews that the common centre of gravity is within the body of the ſun, and is only the $1068\frac{2}{3}$ part of his ſemidiameter from his centre toward his ſurface.

All globular bodies, whoſe parts can yield, and which do not turn on their axes, muſt be perfect ſpheres, becauſe all parts of their ſurfaces are equally attracted toward their centres. But all ſuch globes which do turn on their axes will be oblate ſpheroids; that is, their ſurfaces will be higher, or farther from the centre, in the equatoreal than in the polar regions.

Fig. 1.

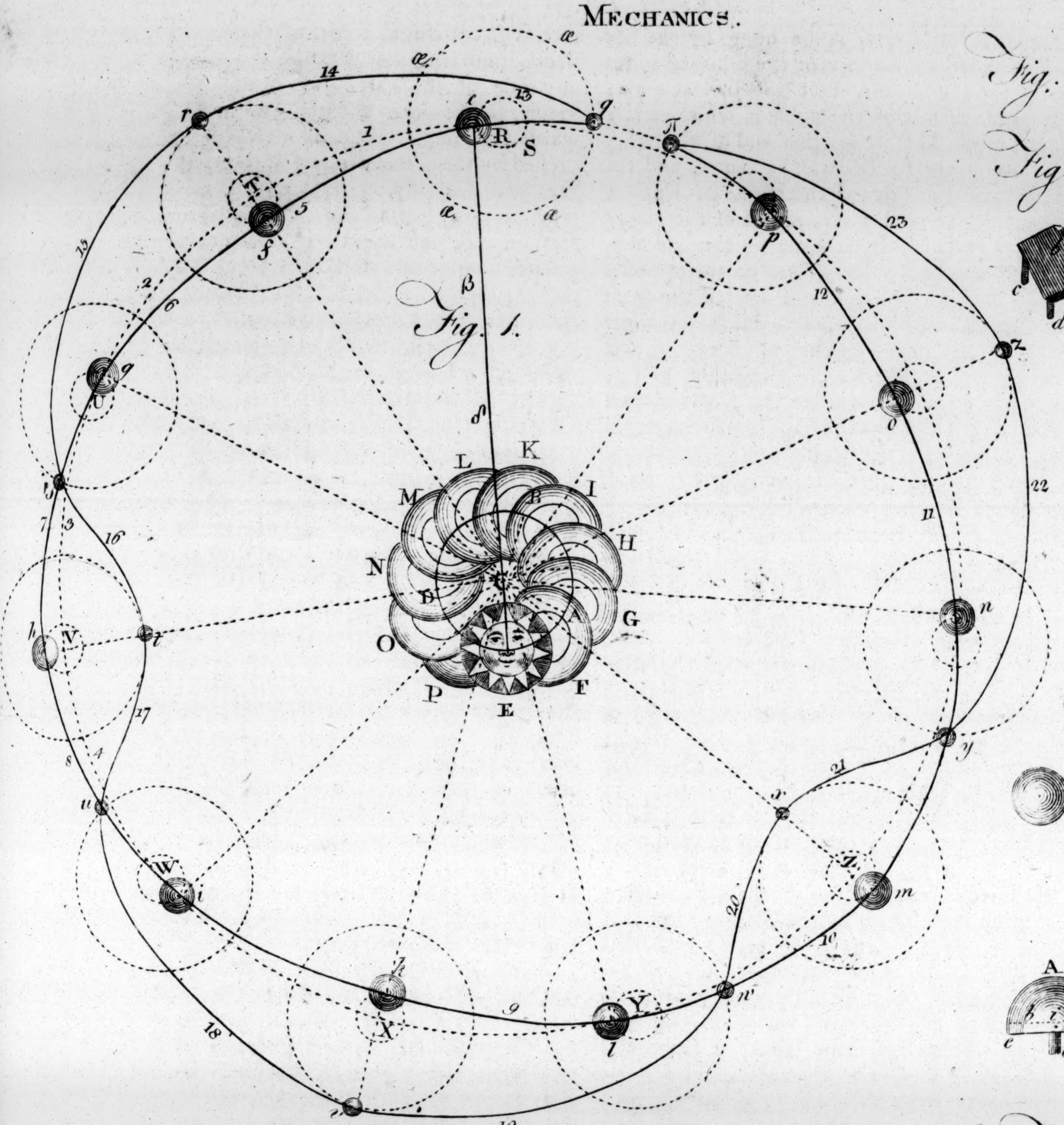
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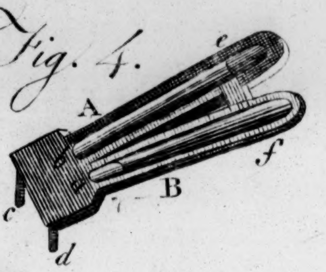
Fig. 3.

Fig. 4.



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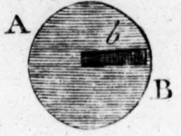

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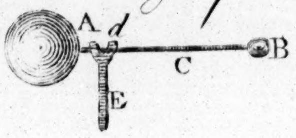

Fig. 5.

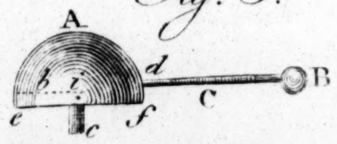

Fig. 2.

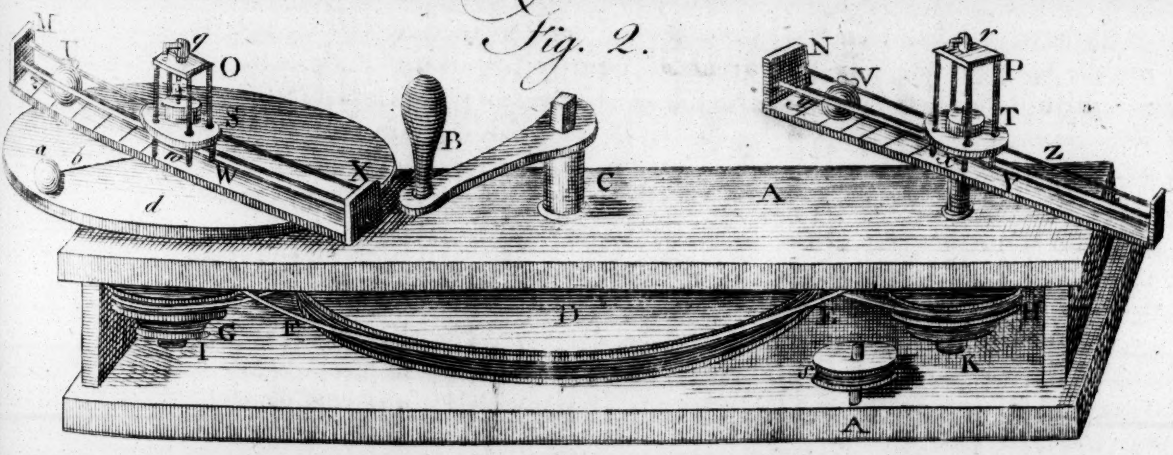
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Fig. 8.

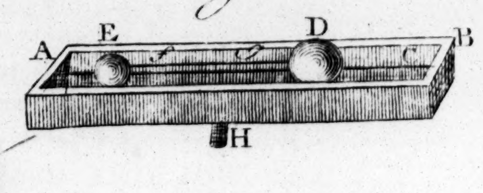

Fig. 9.

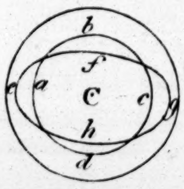

Fig. 10.

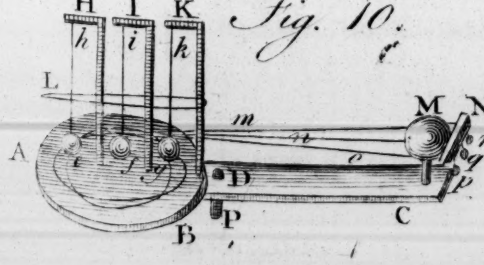
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Fig. 11.

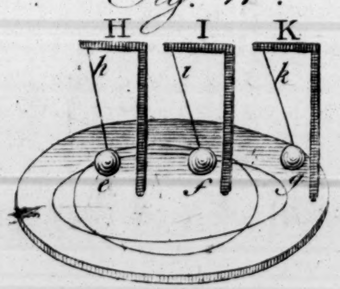
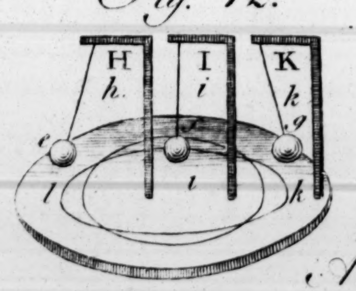


Fig. 12.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For, as the equatorial parts move quickeſt, they muſt have the greateſt centrifugal force; and will therefore recede fartheſt from the axis of motion. Thus, if two circular hoops AB and CD, made thin and flexible, and croſſing one another at right angles, be turned round their axis EF by means of the winch *m*, the wheel *n*, and the pinion *o*, and the axis be looſe in the pole or interſection *e*, the middle parts A, B, C, D will ſwell out ſo as to ſtrike againſt the ſides of the frame at F and G, if the pole *e*, in ſinking to the pin E, be not ſtopped by it from ſinking farther: ſo that the whole will appear of an oval figure, the equatorial diameter being conſiderably longer than the polar. That our earth is of this figure, is demonſtrable from actual meaſurement of ſome degrees on its ſurface, which are found to be longer in the frigid zones than in the torrid: and the difference is found to be ſuch as proves the earth's equatorial diameter to be 35 miles longer than its axis.—Since then the earth is higher at the equator than at the poles, the ſea, which, like all other fluids, naturally runs downwards (or towards the places which are neareſt the earth's centre), would run towards the polar regions, and leave the equatorial parts dry, if the centrifugal force of the water, which carried it to thoſe parts, and ſo raiſed them, did not detain and keep it from running back again towards the poles of the earth.

Plate CLXXI. fig. 1.

Chap. III. *Of the Mechanical Powers.*

40
e foun-
tion of all
chanics.

If we conſider bodies in motion, and compare them together, we may do this either with reſpect to the quantities of matter they contain, or the velocities with which they are moved. The heavier any body is, the greater is the power required either to move it or to ſtop its motion: and again, the ſwifter it moves, the greater is its force. So that the whole *momentum* or quantity of force of a moving body is the reſult of its quantity of matter multiplied by the velocity with which it is moved. And when the products ariſing from the multiplication of the particular quantities of matter in any two bodies by their reſpective velocities are equal, the *momenta* or entire forces are ſo too. Thus, ſuppoſe a body, which we ſhall call *A*, to weigh 40 pounds, and to move at the rate of two miles in a minute; and another body, which we ſhall call *B*, to weigh only four pounds, and to move 20 miles in a minute; the entire forces with which theſe two bodies would ſtrike againſt any obſtacle would be equal to each other, and therefore it would require equal powers to ſtop them. For 40 multiplied by 2 gives 80, the force of the body A; and 20 multiplied by 4 gives 80, the force of the body B.

Upon this eaſy principle depends the whole of mechanics: and it holds univerſally true, that when two bodies are ſuſpended by any machine, ſo as to act contrary to each other; if the machine be put into motion, and the perpendicular aſcent of one body multiplied into its weight be equal to the perpendicular deſcent of the other body multiplied into its weight, theſe bodies, how unequal ſoever in their weights, will balance one another in all ſituations: for, as the whole aſcent of one is performed in the ſame time with the whole deſcent of the other, their reſpective velocities muſt be directly as the ſpaces they move through; and the exceſs of weight in one body is compenſated by the exceſs of velocity in the other. Upon this principle it is eaſy to compute the power of any mechanical engine, whether ſimple or compound; for it is but only inquiring how much ſwifter the power moves than the weight does (*i. e.* how much farther in the ſame time), and juſt ſo much is the power increaſed by the help of the engine.

41 How to compute the power of any mechanical engine.

In the theory of this ſcience, we ſuppoſe all planes perfectly even, all bodies perfectly ſmooth, levers to have no weight, cords to be extremely pliable, machines to have no friction; and in ſhort, all imperfections muſt be ſet aſide until the theory be eſtabliſhed, and then proper allowances are to be made.

42 The mechanic powers, what.

The ſimple machines, uſually called *mechanical powers*, are ſix in number, *viz.* the *lever*, the *wheel and axle*, the *pulley*, the *inclined plane*, the *wedge*, and the *ſcrew*. They are called *mechanical powers*, becauſe they help us to raiſe weights, move heavy bodies, and overcome reſiſtances, which we could not effect without them.

43 The lever.

1. A *lever* is a bar of iron or wood, one part of which being ſupported by a prop, all the other parts turn upon that prop as their centre of motion: and the velocity of every part or point is directly as its diſtance from the prop. Therefore, when the weight to be raiſed at one end is to the power applied at the other to raiſe it, as the diſtance of the power from the prop is to the diſtance of the weight from the prop, the power and weight will exactly balance or counterpoiſe each other: and as a common lever has but very little friction on its prop, a very little additional power will be ſufficient to raiſe the weight.

There are four kinds of levers. 1. The common ſort, where the prop is placed between the weight and the power; but much nearer to the weight than the power. 2. When the prop is at one end of the lever, the power at the other, and the weight between them. 3. When the prop is at one end, the weight at the other, and the power applied between them. 4. The bended lever, which differs only in form from the firſt ſort, but not in property. Thoſe of the firſt and ſecond kind are often uſed in mechanical engines; but there are few inſtances in which the third ſort is uſed.

44 The balance.

A *common balance* is a lever of the firſt kind; but as both its ends are at equal diſtances from its centre of motion, they move with equal velocities; and therefore, as it gives no mechanical advantage, it cannot properly be reckoned among the mechanical powers.

45 The firſt kind of lever. Fig. 2.

A lever of the firſt kind is repreſented by the bar ABC, ſupported by the prop D. Its principal uſe is to looſen large ſtones in the ground, or raiſe great weights to ſmall heights, in order to have ropes put under them for raiſing them higher by other machines. The parts AB and BC, on different ſides of the prop D, are called the *arms* of the lever: the end A of the ſhorter arm AB being applied to the weight intended to be raiſed, or to the reſiſtance to be overcome; and the power applied to the end C of the longer arm BC.

In making experiments with this machine, the ſhorter arm AB muſt be as much thicker than the longer arm BC, as will be ſufficient to balance it on the prop. This ſuppoſed, let P repreſent a power whoſe intenſity is equal to 1 ounce, and W a weight whoſe intenſity is equal to 12 ounces. Then, if the power be

12 times as far from the prop as the weight is, they will exactly counterpoiſe; and a ſmall addition to the power P will cauſe it to deſcend, and raiſe the weight W; and the velocity with which the power deſcends will be to the velocity with which the weight riſes, as 12 to 1: that is, directly as their diſtances from the prop; and conſequently, as the ſpaces through which they move. Hence, it is plain, that a man who by his natural ſtrength, without the help of any machine, could ſupport 100 weight, will by the help of this lever be enabled to ſupport 1200. If the weight be leſs, or the power greater, the prop may be placed ſo much farther from the weight; and then it can be raiſed to a proportionably greater height. For univerſally, if the intenſity of the weight multiplied into its diſtance from the prop be equal to the intenſity of the power multiplied into its diſtance from the prop, the power and weight will exactly balance each other; and a little addition to the power will raiſe the weight. Thus, in the preſent inſtance, the weight W is 12 ounces, and its diſtance from the prop is 1 inch; and 12 multiplied by 1 is 12; the power P is equal to 1 ounce, and its diſtance from the prop is 12 inches, which multiplied by 1 is 12 again; and therefore there is an equilibrium between them. So, if a power equal to 2 ounces be applied at the diſtance of 6 inches from the prop, it will juſt balance the weight W; for 6 multiplied by 2 is 12, as before. And a power equal to 3 ounces placed at 4 inches diſtance from the prop would be the ſame; for 3 times 4 is 12; and ſo on, in proportion.

46 The ſteelyard.

The *ſtatera* or Roman *ſteelyard* is a lever of this kind, contrived for finding the weights of different bodies by one ſingle weight placed at different diſtances from the prop or centre of motion D. For, if a ſcale hangs at A, the extremity of the ſhorter arm AB, and is of ſuch a weight as will exactly counterpoiſe the longer arm BC; if this arm be divided into as many equal parts as it will contain, each equal to AB, the ſingle weight P (which we may ſuppoſe to be 1 pound) will ſerve for weighing any thing as heavy as itſelf, or as many times heavier as there are diviſions in the arm BC, or any quantity between its own weight and that quantity. As for example, if P be 1 pound, and placed at the firſt diviſion 1 in the arm BC, it will balance 1 pound in the ſcale at A: if it be removed to the ſecond diviſion at 2, it will balance 2 pounds in the ſcale: if to the third, 3 pounds; and ſo on to the end of the arm BC. If each of theſe integral diviſions be ſubdivided into as many equal parts as a pound contains ounces, and the weight P placed at any of theſe ſubdiviſions, ſo as to counterpoiſe what is in the ſcale, the pounds and odd ounces therein are by that means aſcertained.

To this kind of lever may be reduced ſeveral ſorts of inſtruments, ſuch as ſciſſars, pinchers, ſnuffers; which are made of levers acting contrary to one another: their prop or centre of motion being the pin which keeps them together.

In common practice, the longer arm of this lever greatly exceeds the weight of the ſhorter; which gains great advantage, becauſe it adds ſo much to the power.

47 The ſecond kind of lever.

A lever of the ſecond kind has the weight between the prop and the power. In this, as well as the former, the advantage gained is as the diſtance of the power from the prop to the diſtance of the weight from the prop: for the reſpective velocities of the power and weight are in that proportion; and they will balance each other when the intenſity of the power multiplied by its diſtance from the prop is equal to the intenſity of the weight multiplied by its diſtance from the prop. Thus, if AB be a lever on which the weight W of 6 ounces hangs at the diſtance of 1 inch from the prop G, and a power P equal to the weight of 1 ounce hangs at the end B, 6 inches from the prop, by the cord CD going over the fixed pulley E, the power will juſt ſupport the weight: and a ſmall addition to the power will raiſe the weight 1 inch for every 6 inches that the power deſcends.

Plate CLXXI. fig. 3.

This lever ſhews the reaſon why two men carrying a burden upon a ſtick between them, bear unequal ſhares of the burden in the inverſe proportion of their diſtances from it. For it is well known, that the nearer any of them is to the burden, the greater ſhare he bears of it: and if he goes directly under it, he bears the whole. So, if one man be at G, and the other at P, having the pole or ſtick AB reſting on their ſhoulders; if the burden or weight W be placed five times as near the man at G, as it is to the man at P, the former will bear five times as much weight as the latter. This is likewiſe applicable to the caſe of two horſes of unequal ſtrength, to be ſo yoked, as that each horſe may draw a part proportionable to his ſtrength; which is done by dividing the beam ſo, that the point of traction may be as much nearer to the ſtronger horſe than to the weaker, as the ſtrength of the former exceeds that of the latter.

To this kind of lever may be reduced oars, rudders of ſhips, doors turning upon hinges, cutting-knives which are fixed at the point of the blade, and the like.

48 The third kind of lever.

If in this lever we ſuppoſe the power and weight to change places, ſo that the power may be between the weight and the prop, it will become a lever of the third kind: in which, that there may be a balance between the power and the weight, the intenſity of the power muſt exceed the intenſity of the weight juſt as much as the diſtance of the weight from the prop exceeds the diſtance of the power from it. Thus, let E be the prop of the lever AB, and W a weight of 1 pound, placed three times as far from the prop, as the power P acts at F, by the cord C going over the fixed pulley D; in this caſe, the power muſt be equal to three pounds, in order to ſupport the weight.

Fig.

To this ſort of lever are generally referred the bones of a man's arm: for when we lift a weight by the hand, the muſcle that exerts its force to raiſe that weight, is fixed to the bone about one tenth part as far below the elbow as the hand is. And the elbow being the centre round which the lower part of the arm turns, the muſcle muſt therefore exert a force ten times as great as the weight that is raiſed.

As this kind of lever is a diſadvantage to the moving power, it is never uſed but in caſes of neceſſity; ſuch as that of a ladder, which, being fixed at one end, is by the ſtrength of a man's arms reared againſt a wall. And in clock-work, where all the wheels may be reckoned levers of this kind, becauſe the power that moves every wheel, except the firſt, acts upon it near the centre of motion by means of a ſmall pinion, and the reſiſtance it has to overcome acts againſt the teeth round its circumference.

49 The fourth kind of lever. Plate CLXXI. fig. 5.

The fourth kind of lever differs nothing from the firſt, but in being bended for the ſake of convenience. ABC is a lever of this ſort, bended at C, which is its prop, or centre of motion. P is a power acting upon the longer arm AC at F, by means of the cord DE going over the pully G; and W is a weight of reſiſtance acting upon the end B of the ſhorter arm BC. If the power be to the weight, as BC is to CF, they are *in æquilibrio*. Thus, ſuppoſe W to be 5 pounds acting at the diſtance of one foot from the centre of motion C, and P to be 1 pound acting at F, five feet from the centre C, the power and weight will juſt balance each other. A hammer drawing a nail is a lever of this ſort.

50 The wheel and axle.

2. The ſecond mechanical power is the *wheel and axle*, in which the power is applied to the circumference of the wheel, and the weight is raiſed by a rope which coils about the axle as the wheel is turned round. Here it is plain that the velocity of the power muſt be to the velocity of the weight, as the circumference of the wheel is to the circumference of the axle: and conſequently, the power and weight will balance each other, when the intenſity of the power is to the intenſity of the weight as the circumference of the axle is to the circumference of the wheel.

Fig. 6.

Let AB be a wheel, CD its axle, and ſuppoſe the circumference of the wheel to be 8 times as great as the circumference of the axle; then, a power P equal to 1 pound hanging by the cord I, which goes round the wheel, will balance a weight W of 8 pounds hanging by the rope K, which goes round the axle. And as the friction on the pivots or gudgeons of the axle is but ſmall, a ſmall addition to the power will cauſe it to deſcend, and raiſe the weight: but the weight will riſe with only an eighth part of the velocity wherewith the power deſcends, and conſequently through no more than an eighth part of an equal ſpace, in the ſame time. If the wheel be pulled round by the handles S, S, the power will be increaſed in proportion to their length. And by this means, any weight may be raiſed as high as the operator pleaſes.

To this ſort of engine belong all cranes for raiſing great weights; and in this caſe, the wheel may have cogs all round it inſtead of handles, and a ſmall lantern or trundle may be made to work in the cogs, and be turned by a winch; which will make the power of the engine to exceed the power of the man who works it, as much as the number of revolutions of the winch exceed thoſe of the axle D, when multiplied by the exceſs of the length of the winch above the length of the ſemidiameter of the axle, added to the ſemidiameter or half thickneſs of the rope K, by which the weight is drawn up. Thus, ſuppoſe the diameter of the rope and axle taken together to be 12 inches, and conſequently half their diameters to be 6 inches; ſo that the weight W will hang at 6 inches perpendicular diſtance from below the centre of the axle. Now, let us ſuppoſe the wheel AB, which is fixt on the axle, to have 80 cogs, and to be turned by means of a winch 6 inches long, fixt on the axis of a trundle of 8 ſtaves or rounds, working in the cogs of the wheel. Here it is plain, that the winch and trundle would make 10 revolutions for one of the wheel AB, and its axis D, on which the rope K winds in raiſing the weight W; and the winch being no longer than the ſum of the ſemidiameters of the great axle and rope, the trundle could have no more power on the wheel, than a man could have by pulling it round by the edge, becauſe the winch would have no greater velocity than the edge of the wheel has, which we here ſuppoſe to be ten times as great as the velocity of the riſing weight: ſo that in this caſe the power gained would be as 10 to 1. But if the length of the winch be 12 inches, the power gained will be as 20 to 1: if 18 inches (which is long enough for any man to work by), the power gained would be as 30 to 1; that is, a man could raiſe 30 times as much by ſuch an engine, as he could do by his natural ſtrength without it, becauſe the velocity of the handle of the winch would be 30 times as great as the velocity of the riſing weight; the abſolute force of any engine being in proportion of the velocity of the power to the velocity of the weight raiſed by it. But then, juſt as much power or advantage is gained by the engine, ſo much time is loſt in working it. In this ſort of machines it is requiſite to have a racket-wheel G on one end of the axle, with a catch H to fall into its teeth; which will at any time ſupport the weight, and keep it from deſcending, if the workman ſhould, through inadvertency or careleſsneſs, quit his hold whilſt the weight is raiſing. And by this means, the danger is prevented which might otherwiſe happen by the running down of the weight when left at liberty.

51 The pulley.

3. The third mechanical power or engine conſiſts either of one *moveable pulley*, or a *ſyſtem of pulleys*; ſome in a block or caſe which is fixed, and others in a block which is moveable and riſes with the weight. For though a ſingle pulley that only turns on its axis, and riſes not without the weight, may ſerve to change the direction of the power, yet it can give no mechanical advantage thereto; but is only as the beam of a balance, whoſe arms are of equal length and weight.

Fig. 7.

Thus, if the equal weights W and P hang by the cord BB upon the pulley A, whoſe block *b* is fixed to the beam HI, they will counterpoiſe each other, juſt in the ſame manner as if the cord were cut in the middle, and its two ends hung upon the hooks fixed in the pulley at A and A, equally diſtant from its centre.

But if a weight W hangs at the lower end of the moveable block *p* of the pulley D, and the cord GF goes under the pulley, it is plain that the half G of the cord bears one half of the weight W, and the half F the other; for they bear the whole between them. Therefore, whatever holds the upper end of either rope, ſuſtains one half of the weight: and if the cord at F be drawn up ſo as to raiſe the pulley D to C, the cord will then be extended to its whole length, all but that part which goes under the pulley: and conſequently, the power that draws the cord will have moved twice as far as the pulley D with its weight W riſes; on which account, a power whoſe intenſity is equal to one half of the weight will be able to ſupport it, becauſe if the power moves (by means of a ſmall addition) its velocity will be double the velocity of the weight; as may be ſeen by putting the cord over the fixed pulley C (which only changes the direction of the power, without giving any advantage to it), and hanging on the weight P, which is equal only to one half of the weight W; in which caſe there will be an equilibrium, and a little addition to P will cauſe it to deſcend, and raiſe W through a ſpace equal to one half of that thro' which P deſcends. Hence, the advantage gained will be always equal to twice the number of pulleys in the moveable or undermoſt block. So that, when the upper or fixed block *u* contains two pulleys, which only turn on their axes, and the lower or moveable block U contains two pulleys, which not only turn upon their axes, but alſo riſe with the block and weight; the advantage gained by this is as 4 to the working power. Thus, if one end of the rope KMOQ be fixed to a hook at I, and the rope paſſes over the pulleys N and R, and under the pulleys L and P, and has a weight T, of one pound, hung to its other end at T, this weight will balance and ſupport a weight W of four pounds hanging by a hook at the moveable block U, allowing the ſaid block as a part of the weight. And if as much more power be added, as is ſufficient to overcome the friction of the pulleys, the power will deſcend with four times as much velocity as the weight riſes, and conſequently thro' four times as much ſpace.

The two pulleys in the fixed block X, and the two in the moveable block Y, are in the ſame caſe with thoſe laſt mentioned; and thoſe in the lower block give the ſame advantage to the power.

As a ſyſtem of pulleys has no great weight, and lies in a ſmall compaſs, it is eaſily carried about; and can be applied, in a great many caſes, for raiſing weights, where other engines cannot. But they have a great deal of friction on three accounts: 1. Becauſe the diameters of their axes bear a very conſiderable proportion to their own diameters; 2. Becauſe in working they are apt to rub againſt one another, or againſt the ſides of the block; 3. Becauſe of the ſtiffneſs of the rope that goes over and under them.

52
The inclined plane.
Plate CLXXI.
fig. 8.

4. The fourth mechanical power is the *inclined plane;* and the advantage gained by it is as great as its length exceeds its perpendicular height. Let AB be a plane parallel to the horizon, and CD a plane inclined to it; and ſuppoſe the whole length CD to be three times as great as the perpendicular height G*f*F: in this caſe, the cylinder E will be ſupported upon the plane CD, and kept from rolling down upon it, by a power equal to a third part of the weight of the cylinder. Therefore, a weight may be rolled up this inclined plane with a third part of the power which would be ſufficient to draw it up by the ſide of an upright wall. If the plane was four times as long as high, a fourth part of the power would be ſufficient; and ſo on in proportion. Or, if a pillar was to be raiſed from a floor to the height GF, by means of the engine ABDC, (which would then act as a half wedge, where the reſiſtance gives way only on one ſide) the engine and pillar would be *in æquilibrio* when the power applied at GF was to the weight of the pillar as GF to GD; and if the power be increaſed, ſo as to overcome the friction of the engine againſt the floor and pillar, the engine will be driven, and the pillar raiſed: and when the engine has moved its whole length upon the floor, the pillar will be raiſed the whole height of the engine from G to F,

The force wherewith a rolling body deſcends upon an inclined plane, is to the force of its abſolute gravity, by which it would deſcend perpendicularly in a free ſpace, as the height of its plane is to its length. For, ſuppoſe the plane AB to be parallel to the horizon, the cylinder C will keep at reſt upon any part of the plane where it is laid. If the plane be ſo elevated, that its perpendicular height D is equal to half its length AB, the cylinder will roll down upon the plane with a force equal to half its weight; for it would require a power (acting in the direction of AB) equal to half its weight, to keep it from rolling. If the plane AB be elevated, ſo as to be perpendicular to the horizon, the cylinder C will deſcend with its whole force of gravity, becauſe the plane contributes nothing to its ſupport or hindrance; and therefore, it would require a power equal to its whole weight to keep it from deſcending.

Fig. 9.
Fig. 10.
Fig. 11.

Fig. 12.

Let the cylinder C be made to turn upon ſlender pivots in the frame D, in which there is a hook *e*, with a line G tied to it: let this line go over the fixed pulley H, and have its other end tied to the hook in the weight I. If the weight of the body I, be to the weight of the cylinder C, added to that of its frame D, as the perpendicular height of the plane LM is to its length AB, the weight will juſt ſupport the cylinder upon the plane, and a ſmall touch of a finger will either cauſe it to aſcend or deſcend with equal eaſe: then, if a little addition be made to the weight I, it will deſcend, and draw the cylinder up the plane. In the time that the cylinder moves from A to B, it will riſe thro' the whole height of the plane ML; and the weight will deſcend from H to K, thro' a ſpace equal to the whole length of the plane AB.

Fig. 1

If the plane be made to move upon rollers or friction-wheels, and the cylinder he ſupported upon it; the ſame power will draw the plane under the cylinder, which before drew the cylinder up the plane, provided the pivots of the axes of the friction-wheels be ſmall, and the wheels themſelves be pretty large. For, let the machine ABC (equal in length and height to ABM, fig. 12.) be provided with four wheels, whereof two appear at D and E, and the third under C, whilſt the fourth is hid from ſight by the horizontal board *a*. Let the cylinder F be laid upon the lower end of the inclined plane CB, and the line G be extended from the frame of the cylinder, about ſix feet parallel to the plane CB; and, in that direction, fixed to a hook in the wall; which will ſupport the cylinder, and keep it from rolling off the plane. Let one end of the line H be tied to a hook at C in the machine, and the other end to a weight K, the ſame as drew the cylinder up the plane before. If this line be put over the fixed pulley I, the weight K will draw the machine along the horizontal plane L, and under the cylinder F: and when the machine has been drawn the whole length CB, the cylinder will be raiſed to *d*, equal to the perpendicular height AB above the horizontal part at A.

To the inclined plane may be reduced all hatchets, chiſſels, and other edge-tools which are chamfered only on one ſide.

From the theory of the inclined plane alſo may be deduced the doctrine of pendulums; the foundation of which is as follows. A body acquires the ſame velocity in falling down the oblique ſide of a plane that it would do if it fell freely through the perpendicular height of it. For, the ſquare of the velocity which

MECHANICS.

Plate CLXXI.

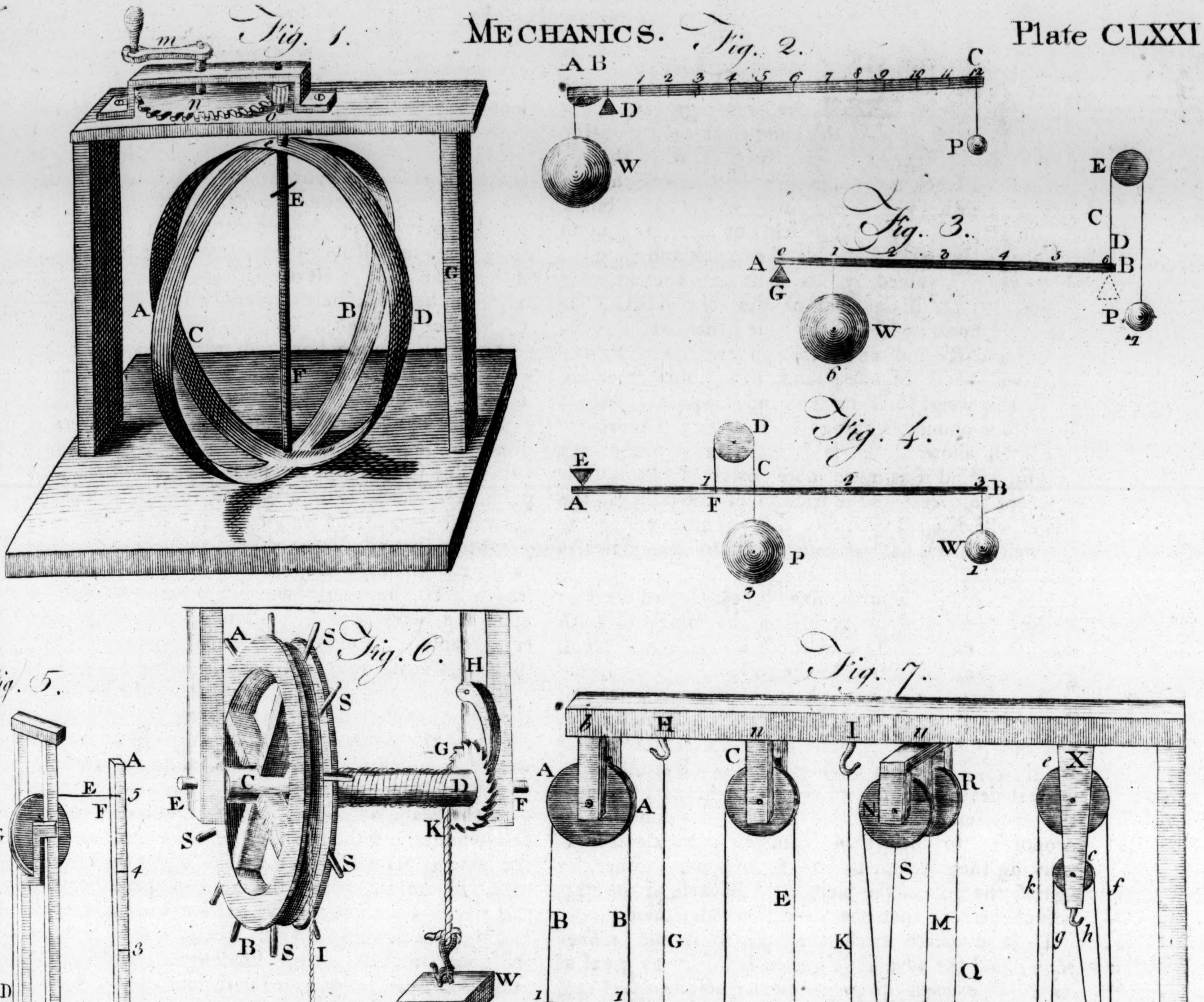
Fig. 1.
m
n
o
E
A
C
B
D
G
F
Fig. 2.
A B
1 2 3 4 5 6 7 8 9 10 11 12
C
D
W
P
Fig. 3.
E
C
D
A
0 1 2 3 4 5 6
B
G
W
6
P.
1
Fig. 4.
D
E
C
A
1
F
2
3
B
W
P
3
1
Fig. 5.
A
E
F
5
G
4
3
D
2
1
C
B
P
W
Fig. 6.
A
S
H
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K
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P
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Fig. 7.
i
H
n
I
n
A
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X
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e
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k
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h
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Y
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2
W
T
1
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P
1
W
W
4
Fig. 8.
E
F
C
f
G
A
D
D
G
Fig. 13.
d
B
F
I
H
C
a
L
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D
E
K
Fig. 11.
Fig. 12.
A
a
b
B
C
H
G
C
B
D
B
L
Fig. 14.
L
C
e
c
f
D
A
A
M
K
g
d
B
Fig. 9.
C
A
B
Fig. 10.
A

A Bell Sc.

3 MA 53

Plate CLXVII. fig. 3. a body acquires by falling to C as the ſpace AG is to the ſpace AC, as hath been already ſhown n° 14; that is, (by 8 *El.* 6. and *Def.* 10. *El.* 5.) as AG*q* to AB*q*; conſequently the velocity itſelf at G is to the velocity itſelf at C, as AG to AB: But ſince AG is run over in the ſame time as AB, the velocity in G is alſo to the velocity in B as AG to AB; and conſequently, ſince the velocities both in C and B bear the ſame proportion to that in G, they muſt be equal to each other.

Again: A body takes up the ſame time in falling through the chord of a circle, whether long or ſhort, that it does in falling perpendicularly thro' the diameter of the ſame circle. For, ſeeing a body will fall from A to G, on the inclined plane ABC, in the ſame time another would fall freely to B provided AGB is a right angle, in which caſe AG (by 31 *El.* 3.) is a chord of that circle of which AB is the diameter; therefore, a body falls thro' the chord of a circle in the ſame time that it falls thro' the diameter; for the ſame demonſtration will ſerve for any other chord.

Hence it follows, that if a pendulum could be made to vibrate in the chord of a circle inſtead of an arch, all its vibrations would be performed in the ſame time whether they were large or ſmall.

Fig. 4. This may be illuſtrated by conceiving the laſt figure inverted (as in fig. 4.) where ſuppoſing the ball ſuſpended in ſuch a manner as to ſwing in the right line GA inſtead of the arch GA, it would always fall through it in the ſame time, however long or ſhort it was; for the inclination of the line GA to the horizontal line BC, is not altered by inverting the figure.

From hence we ſee the reaſon, why the ſhorter arches a pendulum deſcribes, the nearer its vibrations come to an equality, for ſmall arches differ leſs from their chords than large ones. But if the pendulum is made to vibrate in a curve, which mathematicians call a *cycloid;* each ſwing will then be performed in the ſame time, whether the pendulum moves through a larger or leſſer ſpace. For the nature of this curve is ſuch, that the tendency of a pendulum towards the loweſt point of it is always in proportion to its diſtance from thence; and conſequently let that diſtance be more or leſs, it will always be run over by the pendulum in the ſame time.

Fig. 5. Upon the right line AB, let the circle CDE be ſo placed as to touch the line in the point C; then let this circle roll along upon it from C to H, as a wheel upon the ground; then will the point C in one revolution of the circle deſcribe the curve CKH, which is called a *cycloid*. Now ſuppoſe two plates of metal bent into the form HK and KC, and placed in the ſituation LH and LC, in ſuch manner, that the points H and C may be applied to L, and the points anſwering to K be applied to H and C. This done, if a pendulum as LP, in length equal to LH, be made to vibrate between the plates or cheeks of the cycloid LC and LH, it will ſwing in the line CKH; and the time of each vibration, whether the pendulum ſwings through a ſmall or a great part of the cycloid, will be to the time a body takes up in falling perpendicularly through a ſpace equal to IK (half the length of the pendulum), as the circumference of a circle to its diameter, and conſequently it will always be the ſame.

The time of the deſcent and aſcent of a pendulum, ſuppoſing it to vibrate in the chord of a circle, is equal to the time in which a body falling freely would deſcend through eight times the length of the pendulum.

For the time of the deſcent alone upon the chord is equal to that in which a body would fall through the diameter of the circle; that is, twice the length of the pendulum: but in twice that time (viz. during a whole vibration) the body would fall four times as far; that is, through eight times the length of the pendulum.

The times, that pendulums of different lengths perform their vibrations in, are as the ſquare roots of their lengths.

Dem. Let there be two pendulums A and B of different lengths, the time the firſt vibrates in (ſuppoſe through a chord) is equal to the time in which a body would fall freely through DA, the diameter of the circle: in like manner the time B vibrates in is that in which a body would fall through FB. Now the times in which bodies fall through different ſpaces are as the ſquare roots of thoſe ſpaces, that is, of DA and FB, or of their halves CA and CB, i. e. of the lengths of the pendulums. Fig. 6. 7.

The centre of *oſcillation*, is a point in which if the whole gravity of a pendulum was collected, the time of its vibration would not be altered thereby.

The rule for finding the centre of oſcillation.

If the ball AB be hung by the ſtring CD, whoſe weight is inconſiderable, the centre of oſcillation is found thus: ſuppoſe E the centre of the globe; take the line K of ſuch a length, that it ſhall bear the ſame proportion to ED as ED to EC; then EH being made equal to $\frac{2}{5}$ of K, the point H ſhall be the centre of oſcillation. Fig. 8.

If the weight of the rod CD be too conſiderable to be neglected, divide CD in I, ſo that DI may be equal to $\frac{1}{3}$ of CD; and make a line as G, in the ſame proportion to CI, that the weight of the rod bears to that of the globe; then having found H the centre of oſcillation of the globe, as before, divide IH in L, ſo that IL may bear the ſame proportion to LH, as the line CH bears to the line G; then will L be the centre of oſcillation of the whole pendulum. Fig. 9.

This is the point from whence the length of a pendulum is meaſured, which in our latitude, in a pendulum that ſwings ſeconds, is 39 inches and two tenths.

The ſquares of the times in which pendulums, acted upon by different degrees of gravity, perform their vibrations in, are to each other, inverſely as the gravities.

Dem. The ſpaces falling bodies deſcend through are as the ſquares of the times, when the gravity by which they are impelled is given; and as the gravity, when the time is given (for the ſum of the velocities produced in any time will always be as the generating forces:) conſequently, when neither is given, they are in a ratio compounded of both; the ſquares of the times are therefore inverſely as the gravities. [*For if in* 3 *quantities* a, b, c; a *is as* b c, *then* b: $b\frac{a}{c}$, i. e. *if* a *is given,* as $\frac{1}{c}$ *or as* c *inverſely.*] But if the ſquares of the times, in which bodies fall thro' given ſpaces, are inverſely as the gravities by which they are acted upon; then the ſquares of the times, in which pendulums of equal lengths perform their vibrations, will be alſo in the ſame ratio, on account of the conſtant equality between the time of the vibration of a pendulum, and of the deſcent of a body through eight times its length.

From whence it follows, that a pendulum will vibrate ſlower when nearer the equator, than the ſame when nearer the poles; for the gravity of all bodies is leſs, the nearer they are to the equator; viz. on account of the ſpheroidical figure of the earth, and its rotation about its axis. To which we may add the increaſe of the length of the pendulum occaſioned by the heat in thoſe parts: (for we find by experiment, that bodies are enlarged in every dimenſion in proportion to the degree of heat that is given them;) for which reaſon the vibrations of the pendulum will alſo be ſlower.

53 The wedge. Plate CLXXII. fig. 1.

5. The fifth mechanical power or engine is the *wedge*; which may be conſidered as two equally inclined planes DEF and CEF, joined together at their baſes *e*EF: then, DC is the whole thickneſs of the wedge at its back ABCD, where the power is applied; EF is the depth or height of the wedge; DF the length of one of its ſides, equal to CF the length of the other ſide; and OF is its ſharp edge, which is entered into the wood intended to be ſplit by the force of a hammer or mallet ſtriking perpendicularly on its back. Thus, Fig. 2. AB *b* is a wedge driven into the cleft CDE of the wood FG.

When the wood does not cleave at any diſtance before the wedge, there will be an equilibrium between the power impelling the wedge downward, and the reſiſtance of the wood acting againſt the two ſides of the wedge; if the power be to the reſiſtance, as half the thickneſs of the wedge at its back is to the length of either of its ſides; that is, as A *a* to A *b*, or B *a* to B *b*. And if the power be increaſed, ſo as to overcome the friction of the wedge and the reſiſtance ariſing from the coheſion or ſtickage of the wood, the wedge will be drove in, and the wood ſplit aſunder.

But when the wood cleaves at any diſtance before the wedge (as it generally does), the power impelling the wedge will not be to the reſiſtance of the wood, as half the thickneſs of the wedge is to the length of one of its ſides, but as half its thickneſs is to the length of either ſide of the cleft, eſtimated from the top or acting part of the wedge. For if we ſuppoſe the wedge to be lengthened down from *b* to the bottom of the cleft, at E, the ſame proportion will hold; namely, that the power will be to the reſiſtance, as half the thickneſs of the wedge is to the length of either of its ſides; or, which amounts to the ſame thing, as the whole thickneſs of the wedge is to the length of both its ſides.

In order to prove what is here advanced concerning the wedge, let us ſuppoſe the wedge to be divided lengthwiſe into two equal parts; and then it will become two equally inclined planes; one of which, as *abc*, may be made uſe of as a half wedge for ſeparating the moulding *cd* from the wainſcot AB. It is evident, that when this half wedge has been driven its whole length *ac* between the wainſcot and moulding, its ſide *ac* will be at *ed*, and the moulding will be ſeparated to *fg* from the wainſcot. Now, from what has been already proved of the inclined plane, it appears, that to have an equilibrium between the power impelling the half wedge and the reſiſtance of the moulding, the former muſt be to the latter as *ab* to *ac*; that is, as the thickneſs of the back which receives the ſtroke is to the length of the ſide againſt which the moulding acts. Therefore, ſince the power upon the half wedge is to the reſiſtance againſt its ſide, as the half back *ab* is to the whole ſide *ac*, it is plain, that the power upon the whole wedge (where the whole back is double the half back) muſt be to the reſiſtance againſt both its ſides, as the thickneſs of the whole back is to the length of both the ſides, ſuppoſing the wedge at the bottom of the cleft; or as the thickneſs of the whole back to the length of both ſides of the cleft, when the wood ſplits at any diſtance before the wedge. For, when the wedge is driven quite into the wood, and the wood ſplits at ever ſo ſmall a diſtance before its edge, the top of the wedge then becomes the acting part, becauſe the wood does not touch it any where elſe. And ſince the bottom of the cleft muſt be conſidered as that part where the whole ſtickage or reſiſtance is accumulated, it is plain, from the nature of the lever, that the farther the power acts from the reſiſtance, the greater is the advantage.

Plate CLXXI. fig. 14.

Some writers have advanced, that the power of the wedge is to the reſiſtance to be overcome, as the thickneſs of the back of the wedge is to the length only of one of its ſides; which ſeems very ſtrange: for, if we ſuppoſe A B to be a ſtrong inflexible bar of wood or iron fixed into the ground at C B, and D and E to be two blocks of marble lying on the ground on oppoſite ſides of the bar; it is evident that the block D may be ſeparated from the bar to the diſtance *d*, equal to *ab*, by driving the inclined plane or half wedge *abo* down between them; and the block E may be ſeparated to an equal diſtance on the other ſide, in like manner, by the half wedge *cdo*. But the power impelling each half wedge will be to the reſiſtance of the block againſt its ſide, as the thickneſs of that half wedge is to the length of its acting ſide. Therefore the power to drive both the half wedges is to both the reſiſtances, as both the half backs is to the length of both the acting ſides, or as half the thickneſs of the whole back is to the length of either ſide. And if the bar be taken away, the blocks put cloſe together, and the two half wedges joined to make one, it will require as much force to drive it down between the blocks, as is equal to the ſum of the ſeparate powers acting upon the half wedges when the bar was between them.

Plate CLXXI fig. 3

To confirm this by an experiment, let two cylinders, as AB and CD, be drawn towards one another by lines running over fixed pulleys, and a weight of 40 ounces hanging at the lines belonging to each cylinder: and let a wedge of 40 ounces weight, having its back juſt as thick as either of its ſides is long, be put between the cylinders, which will then act againſt each ſide with a reſiſtance equal to 40 ounces, whilſt its own weight endeavours to bring it down and ſeparate them: And here, the power of the wedge's gravity impelling it downward, will be to the reſiſtance of both the cylinders againſt the wedge, as the thickneſs of the wedge is to the length of both its ſides;

Fig.

for there will then be an equilibrium between the weight of the wedge and the reſiſtance of the cylinders againſt it, and it will remain at any height between them; requiring juſt as much power to puſh it upward as to pull it downward. If another wedge of equal weight and depth with this, and only half as thick, be put between the cylinders, it will require twice as much weight to be hung at the ends of the lines which draw them together, to keep the wedge from going down between them. That is, a wedge of 40 ounces, whoſe back is only equal to half the length of one of its ſides, will require 80 ounces to each cylinder, to keep it in an equilibrium between them: and twice 80 is 160, equal to four times 40. So that the power will be always to the reſiſtance, as the thickneſs of the back of the wedge is to the length (not of its one ſide, but) of both its ſides.

Plate LXXII. 4.

The beſt way, though perhaps not the neateſt, for making a wedge with its appurtenances for ſuch experiments is as follows. Let IKLM and LMNO be two flat pieces of wood, each about 15 inches long, and three or four in breadth, joined together by a hinge at LM; and let P be a graduated arch of braſs, on which the ſaid pieces of wood may be opened to any angle not more than 60 degrees, and then fixed at the given angle by means of the two ſcrews *a* and *b*. Then, IKNO will repreſent the back of the wedge LM, its ſharp edge which enters the wood, and the outſides of the pieces IKLM and LMNO the two ſides of the wedge againſt which the wood acts in cleaving. By means of the ſaid arch, the wedge may be opened ſo as to adjuſt the thickneſs of its back in any proportion to the length of either of its ſides, but not to exceed that length: and any weight, as *p*, may be hung to the wedge upon the hook M; which weight, together with the weight of the wedge itſelf, may be conſidered as the impelling power; which is all the ſame in experiment, whether it be laid upon the back of the wedge to puſh it down, or hung to its edge to pull it down. Let AB and CD be two wooden cylinders, each about two inches thick, where they touch the outſides of the wedge; and let their ends be made like two round flat plates, to keep the wedge from ſlipping off endwiſe between them. Let a ſmall cord, with a loop on one end of it, go over a pivot in the end of each cylinder, and the cords S and T belonging to the cylinder AB go over the fixed pulleys W and X, and be faſtened at their other ends to the bar *wx*, on which any weight as Z may be hung at pleaſure. In like manner, let the cords Q and R belonging to the cylinder B C go over the fixed pulleys U and V to the bar *uv*, on which a weight Y equal to Z may be hung. Theſe weights, by drawing the cylinders towards one another, may be conſidered as the reſiſtance of the wood acting equally againſt oppoſite ſides of the wedge; the cylinders themſelves being ſuſpended near, and parallel to each other, by their pivots, in loops on the lines E, F, G, H; which lines may be fixed to hooks in the ceiling of the room. The longer theſe lines are the better; and they ſhould never be leſs than four feet each. The farther alſo the pulleys WV and WX are from the cylinders, the truer will the experiments be: and they may turn upon pins fixed into the wall.

In this machine, the weights Y and Z, and the weight *p*, may be varied at pleaſure, ſo as to be adjuſted in proportion of the length of the wedge's ſides to the thickneſs of its back; and when they are ſo adjuſted, the wedge will be *in æquilibrio* with the reſiſtance of the cylinders.

The wedge is a very great mechanical power, ſince not only wood but even rocks can be ſplit by it; which would be impoſſible to effect by the lever, wheel and axle, or pulley: for the force of the blow, or ſtroke, ſhakes the cohering parts, and thereby makes them ſeparate the more eaſily.

54 The ſcrew. Fig. 5. 6.

6. The ſixth and laſt mechanical power is the *ſcrew;* which cannot properly be called a *ſimple machine*, becauſe it is never uſed without the application of a lever or winch to aſſiſt in turning it: and then it becomes a compound engine of a very great force either in preſſing the parts of bodies cloſe together, or in raiſing great weights. It may be conceived to be made by cutting a piece of paper ABC (fig. 5.) into the form of an inclined plane or half wedge, and then coiling it round a cylinder AB (fig. 6.). And here it is evident, that the winch E muſt turn the cylinder once round before the weight of reſiſtance D can be moved from one ſpiral winding to another, as from *d* to *c;* therefore, as much as the circumference of a circle deſcribed by the handle of the winch is greater than the interval or diſtance beeween the ſpirals, ſo much is the force of the ſcrew. Thus, ſuppoſing the diſtance between the ſpirals to be half an inch, and the length of the winch to be 12 inches; the circle deſcribed by the handle of the winch where the power acts will be 76 inches nearly, or about 152 half-inches, and conſequently 152 times as great as the diſtance between the ſpirals: and therefore a power at the handle, whoſe intenſity is equal to no more than a ſingle pound, will balance 152 pounds acting againſt the ſcrew; and as much additional force, as is ſufficient to overcome the friction, will raiſe the 152 pounds; and the velocity of the power will be to the velocity of the weight as 152 to 1. ——Hence it appears, that the longer the winch be made, and the nearer the ſpirals are to one another, ſo much the greater is the force of the ſcrew.

Fig. 7.

A machine for ſhewing the force or power of the ſcrew may be contrived in the following manner. Let the wheel C have a ſcrew *a b* on its axis, working in the teeth of the wheel D, which ſuppoſe to be 48 in number. It is plain, that for every time the wheel C and ſcrew *ab* are turned round by the winch A, the wheel D will be moved one tooth by the ſcrew; and therefore, in 48 revolutions of the winch, the wheel D will be turned once round. Then, if the circumference of a circle deſcribed by the handle of the winch be equal to the circumference of a groove *e* round the wheel D, the velocity of the handle will be 48 times as great as the velocity of any given point in the groove. Conſequently, if a line G (above number 48) goes round the groove *e*, and has a weight of 48 pounds hung to it below the pedeſtal EF, a power equal to one pound at the handle will balance and ſupport the weight. To prove this by experiment, let the circumferences of the grooves of the wheels C and D be equal to one another; and then if a weight H of one pound be ſuſpended by a line going round the groove of the wheel C, it will balance a weight of 48 pounds hanging by the line G; and a ſmall addition to the weight H will cauſe it to deſcend, and ſo raiſe up the other weight.

If the line G, inſtead of going round the groove *e* of the wheel D, goes round its axle I; the power of the machine will be as much increaſed, as the circumference of the groove *e* exceeds the circumference of the axle: which, ſuppoſing it to be 6 times, then one pound at H will balance 6 times 48, or 288 pounds hung to the line on the axle: and hence the power or advantage of this machine will be as 288 to 1. That is to ſay, a man, who by his natural ſtrength could lift an hundred weight, will be able to raiſe 288 hundred, or $14\frac{8}{20}$ ton weight, by this engine.

Plate CLXXII. fig. 8. 55 A combination of all the mechanical powers.

But the following engine is ſtill more powerful, on account of its having the addition of four pulleys: and in it we may look upon all the mechanical powers as combined together, even if we take in the balance. For as the axis D of the bar AB is in its middle at C, it is plain, that, if equal weights are ſuſpended upon any two pins equidiſtant from the axis C, they will counterpoiſe each other.—It becomes a lever by hanging a ſmall weight P upon the pin *n*, and a weight as much heavier upon either of the pins *b*, *c*, *d*, *e*, or *f*, as is in proportion to the pins heing ſo much nearer the axis. The wheel and axle FG is evident: ſo is the ſcrew E; which takes in the inclined plane, and with it the half wedge. Part of a cord goes round the axle, the reſt under the lower pulleys K, *m*, over the upper pulleys L, *n*, and then it is tied to a hook at *m* in the lower or moveable block, on which hangs the weight W.

In this machine, if the wheel F has 30 teeth, it will be turned once round in 30 revolutions of the bar AB, which is fixed on the axis D of the ſcrew E: if the length of the bar is equal to twice the diameter of the wheel, the pins *a* and *n* at the ends of the bar will move 60 times as faſt as the teeth of the wheel do: and conſequently, one ounce at P will balance 60 ounces hung upon a tooth at *q* in the horizontal diameter of the wheel. Then, if the diameter of the wheel F is 10 times as great as the diameter of the axle G, the wheel will have 10 times the velocity of the axle; and therefore one ounce P at the end of the lever AC will balance 10 times 60, or 600 ounces hung to the rope H which goes round the axle. Laſtly, if four pulleys be added, they will make the velocity of the lower block K, and weight W, four times leſs than the velocity of the axle: and this being the laſt power in the machine, which is four times as great as that gained by the axle, it makes the whole power of the machine 4 times 600, or 2400. So that a man who could lift 100 weight in his arms by his natural ſtrength, would be able to raiſe 2400 hundred-weight by this engine.

By one or more of theſe ſimple powers, all great weights are raiſed to conſiderable heights: but in them all, the more they diminiſh the weight, the more ſlow they are in their operations, and conſequently the more do they retard the workman's diſpatch; and univerſally the more ſimple they are, the more expeditious. Beſides this, their friction or rubbing againſt each other greatly diminiſhes their power. The friction in the balance is leaſt, it is more in the lever, increaſed in the axle and wheel, yet more in the pulley, but moſt of all in the ſcrew. In general, in combined engines, upon account of this friction, they will require a third part more of power to move them, than the theory allows. For this reaſon, therefore, it will for ever be impoſſible to fulfil the boaſt of Wilkins, who vaunted that he could pull up an oak by the roots with a ſingle horſe-hair; for the force requiſite to work the machine in pulling it up, would nearly amount to a third part of the force which the machine exerts. The large capſtan and pulley, uſed in lanching a man of war, would in theory do it moſt effectually. A ſimple lever, drawn a proper length by the imagination, would do it as well; it would even fulfil the great boaſt of Archimedes, it would remove the earth itſelf. The learned often amuſe themſelves with fancies like theſe; and it was for this that Cicero called *Archimedes* a trifler.—As the friction of machines, however, forms a very conſiderable reſiſting power in mechanics, we ſhall here ſubjoin thoſe methods by which it can beſt be computed.

56 Friction.

The doctrine of friction, as aſcertained by the lateſt experiments, may be ſummed up in the following manner. 1. When one body inſiſts on another upon a horizontal plane, it preſſes it with its whole weight; which being equally re-acted on, and conſequently the whole effect of its gravity deſtroyed by the plane, it will be abſolutely free to move in any horizontal direction by any the leaſt power applied thereto, provided both the touching ſurſaces be perfectly ſmooth. 2. But ſince we find no ſuch thing as perfect ſmoothneſs in the ſurfaces of bodies, but an evident roughneſs or unevenneſs of the parts in their ſurface, ariſing from their poroſity and peculiar texture, it is eaſy to underſtand, that, when two ſuch ſurfaces come together, the prominent parts of one will, in ſome meaſure, fall into the concave parts of the other; and therefore, when an horizontal motion is attempted in one, the fixed prominent parts of the other will give more or leſs reſiſtance to the moving ſurface, by holding and detaining its parts; and this is what we call *friction*. 3. Now ſince any body will require a force proportional to its weight to draw it over a given obſtacle, it follows, that the friction ariſing to the moving body will always be in proportion to its weight only, and not the quantity of the ſurface by which it bears upon the reſiſting plane or ſurface. Thus, if a piece of wood four inches wide and one thick, be laid upon another fixed piece of the ſame wood, it will require the ſame weight to draw it along, whether it be laid on its broad or narrow ſide. 4. For though there be four times the number of touching particles on the broad ſide (*cæteris paribus*), yet each particle is preſſed with but $\frac{1}{4}$ of the weight that thoſe are on the narrow ſide; and ſince four times the number, multiplied by $\frac{1}{4}$ of the weight, is qual to $\frac{1}{4}$ of the number multiplied by four times the weight, it is plain the reſiſtance is equal in both caſes, and ſo requires the ſame force to overcome it. 5. The reaſon why friction is proportional to

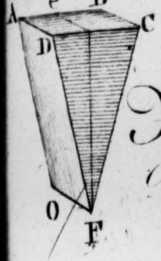
Fig. 1.

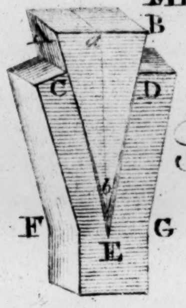
Fig. 2

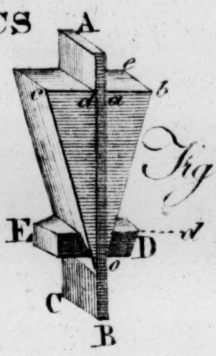
Fig. 3.
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E
D
d
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C
B

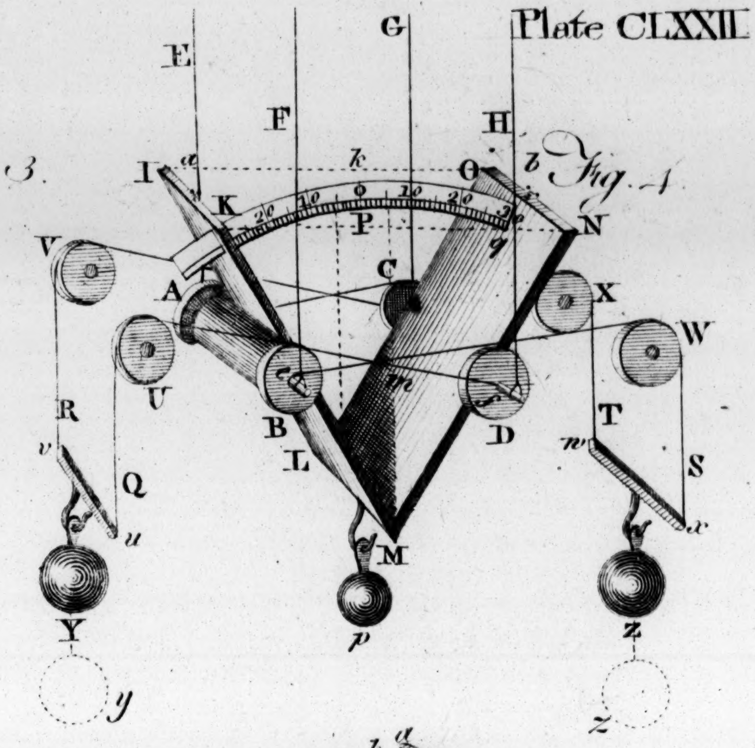
Fig. 4
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30
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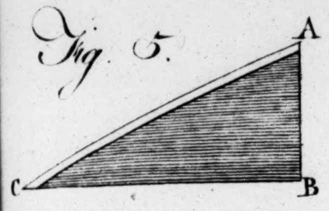
Fig. 5.

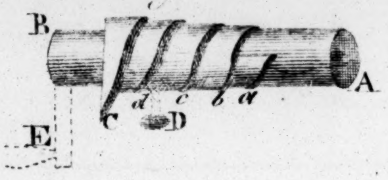
Fig. 6.

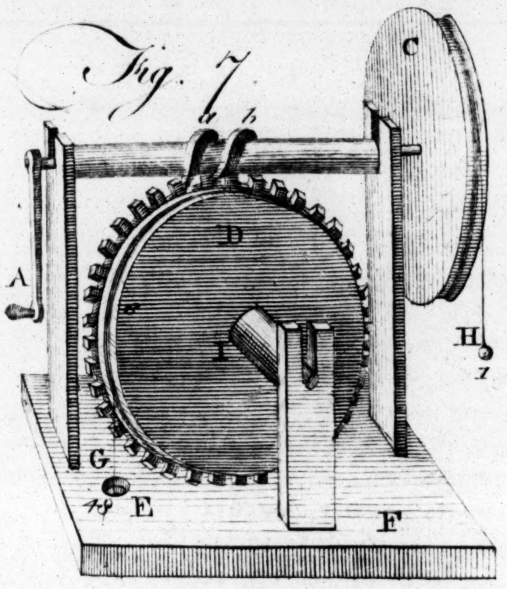
Fig. 7.
C
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b
A
D
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H
G
E
F
48

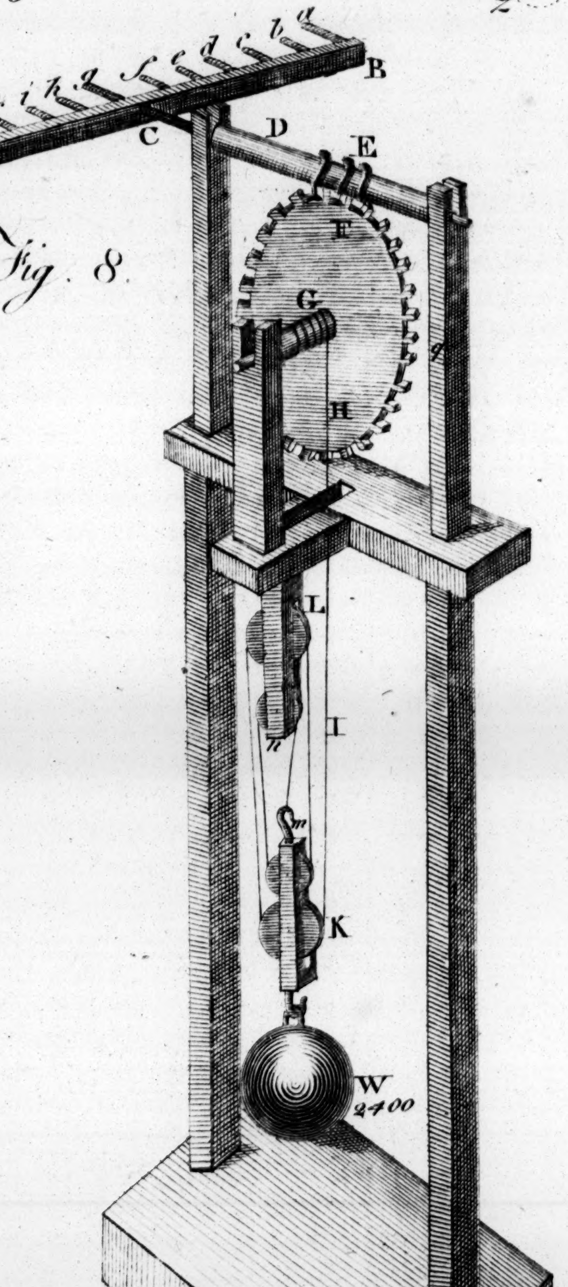
Fig. 8.
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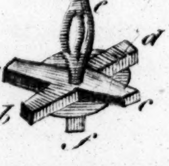
Fig. 10.

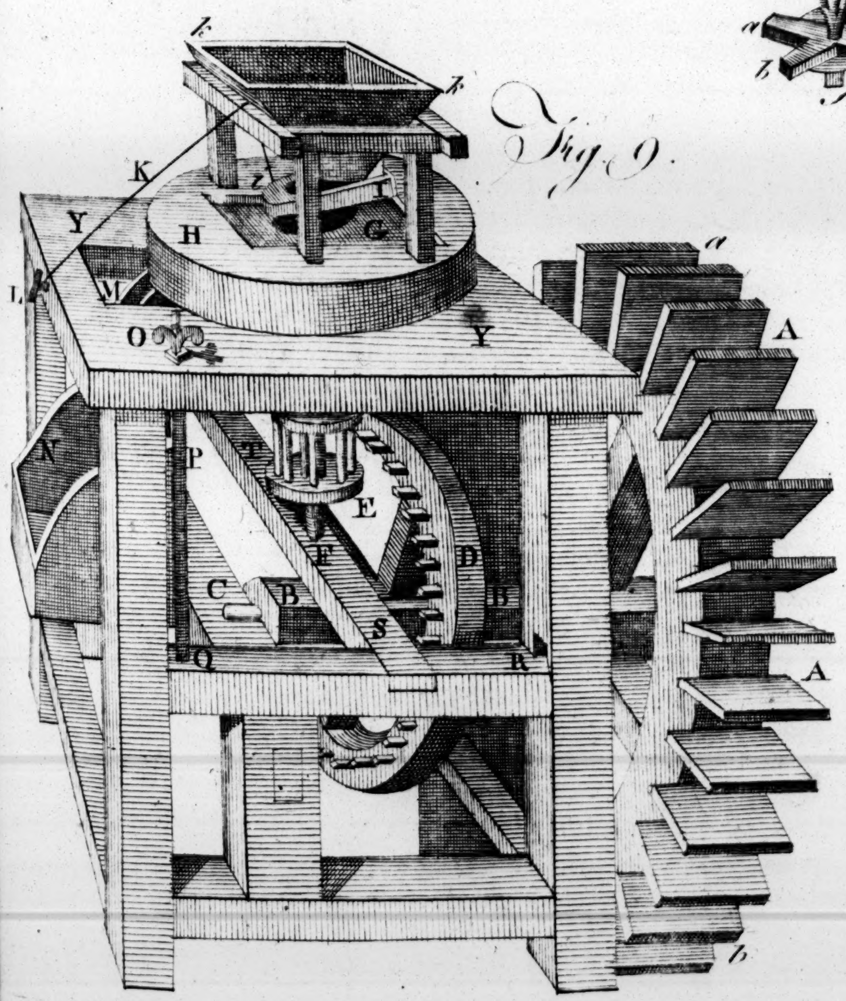
Fig. 9.
k
k
K
Y
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G
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B
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Q
R
A
b

A Bell Sc.

3 MA 53

to the weight of the moving body, is, becauſe the power applied to move the body muſt raiſe it over the prominent parts of the ſurface on which it is drawn; and this motion of the body, as it is not upright, ſo it will not require a power equal to its whole weight; but being in the nature of the motion on an inclined plane, it will require only a part of its own weight, which will vary with the various degrees of ſmoothneſs and aſperity. 6. It is found by experiment, that a body will be drawn along by nearly $\frac{1}{3}$ of its weight; and if the ſurfaces be hard and well poliſhed, by leſs than a third part; whereas, if the parts be ſoft or ragged, it will require a much greater weight. Thus alſo the cylinder of wood AB, if very ſmooth, and laid on two well poliſhed ſupporters CD, (having been firſt oiled or greaſed) and then charged with the weight of two pounds in the two equal balls GH, it will require an additional weight *x*, equal to about a third part of the two pounds, to give motion to or overcome the friction of the ſaid cylinder. 7. Now this additional weight, as it cauſes a greater weight of the cylinder, will likewiſe increaſe the friction; and therefore require the addition of another weight *y*, equal to the third part of its own weight: for the ſame reaſon, the weight *y* will require another *z*, a third part leſs; and ſo on *ad infinitum.* Hence, ſuppoſing the friction to be preciſely a third of the weight, the firſt weight with all the additional ones, viz. $2, \frac{2}{3}, \frac{2}{9}, \frac{2}{27}$, &c. will be a ſeries of numbers in geometrical progreſſion decreaſing. Now the ſum of all theſe terms, except the firſt, is found, by a well-known theorem in arithmetic, to be equal to one pound. So that if the weight of the cylinder be inconſiderable, the readieſt way to overcome the friction would be to double the power G, or H, at once. 8. But though we may, at a medium, allow a third part of the weight with which any ſimple machine is charged, for the friction ariſing from thence; yet this is very precarious, and ſeldom is the caſe: for if ABCD be a piece of braſs of ſix ounces, and EFGH be alſo a plate of braſs, and both the ſurfaces well ground and poliſhed, the weight P of near two ounces will be required to draw along the body AC alone; but if AC be loaded with 6, 8, or 10lb. then a ſixth part of the weight will be ſufficient to draw it along the plane. On the other hand, if the plane be covered with a linen or woollen cloth, then a third or half part, and ſometimes more, will be requiſite to draw it along on the plane. 9. Yet notwithſtanding the difficulty and uncertainty attending the eſtimation of the quantity of friction, it is ſtill a moſt uſeful and neceſſary inquiry, how and by what means the friction of any machine may be diminiſhed. In order to this, we muſt conſider friction mechanically, or as a force acting againſt a power applied to overcome it. Thus ſuppoſe AB an upright ſtem or ſhaft, turning freely in the ſocket B fixed in the table or plane IKLM; and AC, DE, two arms fixed in the ſaid ſhaft, the latter of which, DE, has three pins going into a ſocket in the middle of heavy weights, F, G, or H, in ſuch a manner, that when a power applied at C moves the lever AC, it cauſes the lever DE to protrude or thruſt along the weights at F, G, or H, in a circular manner upon the table. 10. Now ſince we ſuppoſe the weight, all the while it is in motion, is freely and wholly ſupported by the plane, it follows that all the reſiſtance it can give to the power applied to C, is only what ariſes from its friction on the plane. What this friction is, will be found by applying the weight at G, ſo that BG be equal to AC; for then the power applied to C, acting in a tangent to the circle CRS, that ſhall juſt move the weight G, will be equal to its friction. But if the weight be applied at F, becauſe BF is greater than AC, the ſame power at C, as before, will not move it, by reaſon its force is here increaſed by having a greater velocity than the power; as, on the other hand, if placed at H, a leſs power at C ſhall move it, becauſe of its having there leſs velocity than the power, as is evident from the properties of the lever. 11. Hence we underſtand, that though the weight of a machine remains the ſame; yet the friction may be diminiſhed, by contriving that the parts on which it moves and rubs, ſhall have leſs velocity than the power which moves it: thus, if the cylinder AB (fig. 6.) were to move on the two ſmall pins or gudgeons E, F, the friction would be abated in the proportion of the diameter of the cylinder to that of the pins. 12. The friction on theſe gudgeons is ſtill farther diminiſhed by cauſing them to move on the circumference of a wheel: thus, let F be the gudgeon of the cylinder, revolving on the wheel CDE (fig. 9.), the velocity of the wheel's circumference will be the ſame with that of the gudgeon; but the velocity of the wheel's axis AB (which is now to be conſidered as the rubbing part) is leſs than that of the wheel, in proportion as its diameter is leſs than that of the wheel: for example, if the friction of the cylinder moving on its ſurface be $\frac{1}{3}$ part of the weight, and the gudgeon be to the cylinder as 1 : 10, they will reduce the friction to $\frac{1}{30}$ part; and if, again, the axis of the wheel be to the wheel as 1 : 10, the wheel will reduce the friction to $\frac{1}{300}$ part; and if the axis of this wheel be laid on the perimeter of another wheel, the friction will be reduced to a ſtill leſſer part of the weight; ſo that you may proceed in this manner to diminiſh the friction *ad infinitum;* and wheels applied in this manner are called *friction-wheels.* 13. Beſides what has been already ſaid, ſomewhat farther is neceſſary to diminiſh the friction of wheel-carriages. It was before obſerved, that friction aroſe chiefly by lifting the body over the prominent parts of the plane on which it is moved: now if we can contrive to move the body along without lifting or ſuſtaining its weight, we ſhall move it without much friction; and this may be done by laying the body on any moveable circular ſubject, as rollers, wheels, &c.: thus let AB (fig. 10.) be the ſection of any heavy body, laid on a roller EF, upon the plane CD, and drawn by the power P; it is evident, when AB moves, the aſperities of its ſurface will lay hold on thoſe of the roller, and move it likewiſe; and it is as evident, that when the body AB is drawn againſt the prominent parts of the roller, they immediately give way, and make no reſiſtance: thus the perpendicular diameter *a b* yields into the ſituation *e f*, and *c d* ſucceeds in its place. By this circular motion of the roller, its prominent parts below do only deſcend and move upon or over, and are not drawn againſt, the fixed prominent parts of the plane, and ſo receive no reſiſtance from them. Hence the body AB is conveyed along without being lifted up, in the ſame manner as a wheel is moved by a pinion without any conſiderable reſiſtance.

Chap. IV. *Of Man, conſidered as an artificial Machine.*

57 Machinery of the human frame.

Man has been conſidered by anatomiſts as a ſyſtem of all the artificial machines united in the human fabric; they have found the lever, the pulley, the axle in the wheel, the wedge, and even the ſcrew, or at leaſt ſomething reſembling each of them, in his perſon: thus, his arms have been likened to levers; his head, turning upon its axle; the digaſtric muſcle that aſſiſts his ſwallowing, to a rope running over its pulley; the glands, as lifting up their fluids in the manner of an artificial water-ſcrew; and his teeth have been compared to wedges. But ſome have not ſtopt here: they have gone on not only to pleaſe themſelves with the reſemblance, but to eſtimate the force of man through all his vital and involuntary motions, ſuch as the running of the blood through his veins, the drawing his breath, and ſuch like, by the inflexible laws of mechaniſm. They have even applied geometrical rules to meaſure objects conſtantly in change, and built theories upon proportions they were unable to diſcover. Thus, when Borelli once got the hint of comparing the muſcles or fleſhy parts to cords, he then readily built this theory, and calculated the human force by conſidering the thickneſs of the cords, and the length of the lever. Thus, when another found the ſimilitude between the blood running thro' its channels, and water ſpouting through pipes, he purſued the ſpeculation, till he at laſt was taught to believe that vomits would cure a ſpitting of blood, and bathing in warm water would be a remedy for the dropſy; happy, however, had his theory never been put into practice.

It is as impoſſible to determine the muſcular force of any man by the bare inſpection or admeaſurement of his muſcles, as it is to meaſure the ſwiftneſs of the circulation of his fluids by the ſpouting of his blood from a vein. Neither can be done, though Cheyne has pretended to demonſtrate, that if we compare the muſcular ſtrength of two animals, that animal whoſe fluids circulate twice as ſwift will be ſix times as ſtrong. Freind and Wainright adopted his demonſtration, for he called it a *demonſtration;* and indeed it was drawn up with a ſufficient degree of mathematical parade. Martin, however, in a treatiſe entitled *De ſimilibus animalibus*, has demonſtrated that Cheyne's demonſtration was falſe; but it was in order to eſtabliſh another demonſtration of his own. He aſſerted, that the force in ſimilar animals was as the cube roots of the fourth powers of the limb put into motion. The learner will not perhaps underſtand the preciſe meaning of theſe words; but it is no matter, for his demonſtration is as falſe as the former.

From the mere dimenſions of the muſcles in two ſimilar animals, it is impoſſible to determine their force. The ſtrength of the muſcle is generally more in proportion to the exerciſe it has been employed in, than to its ſize; the legs of a chairman are ſtronger; the arms of a ſmith: in ſhort, to uſe the words of a bully in a Spaniſh comedy, who miſtook his man and was beaten, we can never know the ſtrength of the muſcles till we experience their effects.

But, though we cannot determine, with any preciſion, of two men which are ſtrongeſt; yet, in the ſame man, we can compare the force of his muſcles with rather more preciſion: this at leaſt can be ſaid with great certainty, that thoſe muſcles which are inſerted into the bone, neareſt to the place where it moves upon another, overcome the greateſt reſiſtance, and conſequently act with the greateſt force. But to a learner this wants explanation.

All our fleſh is compoſed of muſcles, which (if we may uſe a vulgar ſimilitude) are like red ribbands, and almoſt all have one of their ends fixed into one bone, and another of their ends into ſome other bone. Thus, if we feel the great ham-ſtring, which is made up of many muſcles, we ſhall find that at one end it is fixed into the bones of the leg, juſt under the knee, and at the other end it runs upwards, partly to be fixed in the great bone of the thigh. The muſcles being thus ſtretched from one bone to another, have a wonderful power of contracting and ſhortening themſelves at pleaſure; and when we chooſe to put them into action, they ſwell in the middle, ſomewhat into the ſhape of a nine-pin. As theſe muſcles thus contract, they muſt neceſſarily draw the two bones, into which they are inſerted, their own way: the ham-ſtring, when it contracts, for inſtance, draws the leg backward toward the thigh; when we want to make the limb ſtraight, there are muſcles inſerted under the fore-part of the knee, that, contracting, anſwer this purpoſe; while, in the mean time, the ham-ſtring ſuffers itſelf to be relaxed, in order to let the oppoſing muſcles take effect. This being underſtood, it will follow, that if we conſider any one of the bones, the arm-bone for inſtance, as a beam, and the muſcles that raiſe it and put it into motion, as the power that agitates and works the inſtrument, the whole will give us the idea of the third kind of lever, where the prop is at one end, the weight to be ſuſtained at the other, and the ſtrength is applied between them both. Thus, for inſtance, if you ſtretch out your arm, the prop is in the joint of the ſhoulder, the weight is the hand, and the raiſing power is the muſcles, which are fixed into the arm-bone near the ſhoulder, and go from thence to be inſerted into the bones of the trunk of the body. Now the nearer the ſhoulder theſe muſcles are inſerted into the arm-bone, it is evident that the longer will be the lever againſt which they are to act, and conſequently the greater will appear the weight which they are to ſuſtain. To make this quite plain: Suppoſe a ladder were laid flat on the ground; and ſuppoſe that a perſon, ſtanding at one end, take the neareſt round of the ladder in both his hands, and thus, pulling back, attempt to raiſe the fartheſt end, keeping the neareſt end ſtill ſteady to the ground. Would not this require immenſe ſtrength to effect? Pretty ſimilar is the force that the muſcles of the arm exert in raiſing the whole length of the arm, and the weight of the hand beſide. They are inſerted into the bone cloſe to the ſhoulder, and ſupport the whole length of the arm in the deſired direction. But what is more, they do not only act upon the lever at ſo diſadvantageous a diſtance, but alſo they act upon it in a direction the moſt oblique, and conſequently at a greater diſadvantage ſtill. Suppoſe one attempt to raiſe the diſtant end of the ladder by pulling the round neareſt him; this, as was ſaid, will be very diſadvantageous: but ſuppoſe yet farther, that he ſhould firſt lie upon his back, and then, by drawing the next round to him of the ladder, he ſhould attempt to raiſe the diſtant end; the force that would be capable of effecting this, would be incredible. Yet in this very manner it is that the muſcles of the ſhoulder act, in raiſing the arm. They are not only inſerted at the greateſt diſtance from the weight, but they exert their power the moſt obliquely. The force they exert in keeping the hand and arm extended is great; the force they exert in keeping it extended, while the hand holds a weight of about 20 pounds, is aſtoniſhing. Some ſay that theſe muſcles, upon equal terms, would lift a weight 10,000 times greater. What has been here ſaid of the muſcles of the arm is true, in a greater or leſs degree, of all the muſcles in the body; ſo that this natural machine, thus faſhioned by the Great Workman, is infinitely more powerful than any artificial machine that man could form, tho' it took up four times the ſpace.

The muſcles, as we ſaid, are ſupported by bones: theſe make altogether a ſingle pillar or column, which, though not perfectly ſtraight, but with about five different curvatures or bendings; yet, when perfectly balanced upon itſelf, will actually ſupport weights that would ſurpriſe the inexperienced. La Hire and Deſaguliers give us ſeveral accounts of the amazing weight ſome people have ſuſtained, when they were able to fix the pillar of their bones directly beneath it. The latter tells of a German who ſhewed ſeveral feats of this kind at London, and who performed before the king and a part of the royal family. This man, being placed in a proper ſituation, with a belt which reſted upon his head and ſhoulders, and which was fixed below to a cannon of 4000 weight, had the props which ſupported the cannon taken away, and by fixing the pillar of his bones immoveably againſt the weight, ſupported it with ſeeming unconcern. There are few that have not ſeen thoſe men, who, catching a horſe by the tail, and placing themſelves in direct oppoſition to the animal's motion, have thus ſtopped the horſe, though whipped by his rider to proceed. In all ſuch caſes, the pillar of the bones is placed in direct oppoſition to the weight; they ſupport each other, and are prevented from rubbing or cracking by elaſtic griſtles fixed between each bone; theſe give way a little upon great preſſure, and reſtore themſelves almoſt inſtantly when that is removed. Beſides theſe, there is a viſcous or ſlimy liquor that is ſqueezed in, as if from a ſponge, between every joint, and keeps theſe griſtles ſmooth, moiſt, and pliant. By means of this fluid all the joints move eaſily, and obey the impulſe of the muſcles with greater diſpatch. This fluid, and the griſtles (or *cartilages*, as anatomiſts call them,) contribute not a little to the ſtrength of the animal; they reſiſt the burthen with an elaſtic force, and conform themſelves to the inequality of the preſſure. In old age both are diminiſhed, the griſtles become hard, and this liquor (which anatomiſts call the *ſynovia*) is ſqueezed out in leſs quantities. The man therefore, in old age, becomes more ſtiff and more weak, chiefly upon this account; though partly becauſe his muſcles become then alſo more rigid, hard, and leſs *fleſhy*, as it is uſually called; as thoſe who have eaten the fleſh of old animals know. While we are at reſt, this fluid or ſynovia above-mentioned oozes out between the joints, to fit them for the hour of action; when in exerciſe, the ends of the bones preſs againſt their griſtles, and theſe are ſeparated in ſome meaſure by the ſynovia or fluid: but there is ſtill another liquor of an oily nature, which is preſſed at the ſame time from a ſmall fleſhy ſponge, placed in every joint; and this mixing with the ſynovia, makes all ſupple and fit for buſineſs. It was ſaid, that the ſynovia or viſcid liquor oozes out between the joints in the hour of reſt; it is therefore in greateſt quantity between them in the morning, after we have taken our reſt the preceding night. So great is the quantity uſually ſeparated during ſleep between the joints of the back-bone, that ſome men are an inch taller in the morning than at night; and all men are ſomewhat taller, as may be quickly found by any who chooſe to make the experiment upon themſelves.

From what has been ſaid it appears, that, in carrying large burdens, the whole art conſiſts in keeping the column of the body as directly under the weight as poſſible, and the body as upright under the weight as we can. For if the centre of gravity in the burden, falls without this column, it will go near to fall: in fact, if the ſupporter were an inanimate machine, it would fall inevitably; but human power, in ſome meaſure, catches the centre while yet beginning to deſcend, and reſtores the balance which it had loſt the moment before. A man balancing under a weight, reſembles one of thoſe people whom we uſually ſee walking upon a wire: they totter from ſide to ſide, for a moment loſe the centre of gravity; but by throwing forward a limb, or diſtorting their bodies, they recover it again, to the great amuſement of every ſpectator. It is thus that he who carries a weight is obliged to act; on whatever part of his body the weight is placed, he balances it by throwing as much of his column beneath the load as he can. Could the weight be laid and evenly balanced upon him, ſtanding in his natural poſture, he could, as we obſerved before, ſupport an incredible burden; and though he could not move under what he could thus ſupport, yet he could carry a much greater load than if the burden were laid in any other manner. The weight a man could ſupport, when thus evenly laid upon his ſhoulders, would break the back of the ſtrongeſt horſe in the world. The reaſon is obvious. In a man, the whole column of bones ſupports the weight directly; in an horſe, the weight is laid upon the column croſſwiſe. The porters of Conſtantinople are known to carry each a weight of 900 pounds; they lean upon a ſtaff while loaded, and are unloaded in the ſame manner. The porters of Marſeilles in France are found to carry yet more; their manner is this: four of them carry the burden between them, each having a ſort of hood that covers the temples and head down to the ſhoulders; to this are faſtened the cords that ſupport the frame or bier, on which the weight is laid. By this contrivance the whole column of the bones acts directly againſt the load, and an immenſe weight is thus ſuſtained.

We now therefore at length ſee the reaſon why two men carrying a load between them, can ſuſtain a greater weight than what either could ſeparately carry, if it were divided into two equal parts. The reaſon is, that two men can bear the load each more upright, and with the column of their bones more oppoſed againſt it.

As man bears a weight the better the more upright he ſtands againſt it, it muſt follow neceſſarily, that the more bendings he makes in ſupporting weights, the leſs will be his power. There are three principal bendings in the human column; the firſt at the hams, the ſecond at the hips, and the third along the backbone, which reſembles the oſier in pliancy, though it be ſtronger than the oak. A man of ordinary ſtature and ſtrength, upon an average, has been computed to weigh 160 pounds; he can ſupport, as we ſaid before, an immenſe weight if his column acts directly againſt it; if he bends a little at the hams, ſuch a man may raiſe from the ground about 170 pounds, provided the weights are placed to the greateſt advantage. If he bends at the hips and back, he will lift 30 pounds leſs. If a weight be placed upon his head, and he be put between the rounds of a ladder placed horizontally and breaſt-high, he can lift 30 pounds by the ſtrength of the muſcles of his ſhoulders and neck alone.

From this we ſee, that human ſtrength is not the fourth part as great when the body is bent, as when it is upright. From this alſo we ſee, that if a man draws a load after him, as in that caſe all his muſcles act in an oblique direction, he can exert but very little force, when compared to other animals. Deſagulier pretends to ſay, that an horſe can draw as much, upon an average, as five Engliſh workmen. The French writers ſay, Dr Barthes in particular, that an horſe can draw as much as ſix Frenchmen, or ſeven Dutchmen; but if the load were to be placed upon the ſhoulders, two men will be found to be as ſtrong as an horſe. A London porter ſhould carry 300 weight at the rate of three miles an hour; two chairmen carry 150 pounds each, and walk at the rate of four miles an hour: Whereas a travelling horſe ſeldom carries above 200 weight; and a day's journey with ſuch a load, would be apt to diſqualify him from travelling the day following.

Man's greateſt force, therefore, is directly upward; if he draws a load, he muſt act at a diſadvantage. A man, however, when obliged to draw a load, a rolling ſtone for inſtance, hath two methods of doing this. He may either turn his back to the ſtone, and puſhing the frame with his breaſt, thus go onward, while the ſtone rolls after; or he may turn his face to the ſtone, and go backward, drawing the ſtone with him. This laſt method may be the moſt inconvenient, but it gives the workman much the greateſt ſhare of power, and that for two reaſons. In the firſt place, by inclining farther back, he can give a greater column of his body to the draught; and in the next place, a greater number of his muſcles come into action; particularly the two great deltoid muſcles of the arms, the force of which is very great. It is for this reaſon that men who row a boat, more uſually draw the oar to them, than puſh it from them.

Chap. V. *Of Wheel-Carriages.*

59 Of wheel-carriages. By what we have ſeen of man conſidered as a machine, it is eaſy to obſerve that his frame is not adapted to drawing carriages; while, on the contrary, in that of an animal upon all fours, the column of whoſe bodies, and the ſituation of whoſe muſcles, act almoſt directly upon bodies placed behind them, they are perfectly fitted by nature for this kind of ſervice. Horſes are uſually employed in the draught in Britain; mules, oxen, ſheep, and other animals, are ſometimes uſed in other parts of the world. It might incur ridicule if we pretended to inform the learner that each of theſe will draw a weight or carriage in proportion as they are ſtrong. But notwithſtanding this is generally the caſe, yet we are going to mention what will ſeem a paradox; namely, that two horſes may be found, one ſtronger than the other, and alſo better ſkilled in the draught, yet the weaker ſhall draw a weight with the very ſame carriage the ſtronger one could not remove! This will be effected, if the weakeſt horſe be the heavieſt; if he exceeds his antagoniſt more in weight than he is exceeded in ſtrength. It is known, that the weight re-acts or pulls back the horſe, as much as the horſe acts upon the weight to pull it forward. Now the horſe has two ſources of power in drawing the weight along: his ſtrength, which gives him velocity; and his weight, which added gives force; and it is evident that the horſe which hath both in the greateſt proportion, will draw the heavieſt weights. If we ſhould imagine both horſes raiſing an equal weight from a deep pit, and this weight ſtill increaſed, ſo as to overcome their ſtrength, it is plain that the lighteſt horſe would ſooneſt be drawn in. We have ſeveral inſtances in ordinary practice, of the great benefit of increaſing the horſe's weight to promote his draught: for, in many places, horſes employed in turning a mill have a ſmall load laid upon their backs, which, though it takes away ſomething from their velocity, adds to their weight, and conſequently increaſes their force.

But ſuppoſing the ſtrength, ſkill, and weight, of two horſes to be the ſame, all the difference then in their drawing the ſame weights, will ariſe from the commodiouſneſs of the machine in which they draw. If the load they are to drag after them be breaſt-high, they can draw it with much greater eaſe than if it lay along the ground. They can, for inſtance, draw much greater draughts, if the weights are laid upon a ſledge as high as the horſe's ſhoulders, than if the ſame weights were laid upon a low ſledge on the ground. For, in the firſt caſe, the column of their bodies acts directly againſt the weight; in the latter, it acts obliquely; and we have ſhewn before, that the more directly this column can act, the greater is its force. Even in either going up-hill or down-hill, the ſledge breaſt-high is more commodious than that laid low. For if the low ſledge is dragged up an hill, it is plain, that it will be then lower, with reſpect to the horſes, than it was before, and conſequently they will be obliged to draw it more obliquely upwards than when they drew it along the plain. If, on the contrary, the low ſledge is drawn down an hill, it will then be higher with reſpect to the horſes than when on the plain, and therefore their power of drawing it will be greater; but, in going down an hill, its own gravity conſpires with the draught, and will alſo help the load to deſcend, ſo that the horſes in this caſe are permitted to exert their greateſt power where there is the leaſt neceſſity; they can draw the low ſledge down-hill with all their power, when, by the natural deſcending of the load, they are not permitted to exert it. This doctrine, however, ſimple as it is, is different from what is uſually taught by merchaniſts upon this ſubject.

59 the el.

Sledges were probably the firſt machines uſed in carrying loads; we find them thus employed in Homer, we mean in the original, in conveying wood for the funeral pile of Patroclus. There are ſome countries alſo that preſerve their uſe to this day. However, men early began to find how much more eaſily a machine could be drawn upon a rough road, that run upon wheels, than one that thus went with a ſliding motion. And indeed, if all ſurfaces were ſmooth and even, bodies could be drawn with as much eaſe upon a ſledge as upon wheels; and in Holland, Lapland, and other countries, they uſe ſledges upon the ſmooth ſurface of the ice; for as every ſurface upon which we travel is uſually rough, wheels have been made uſe of, which rub leſs againſt the inequalities than ſledges would do. In fact, wheels would not turn at all upon ice, if it were perfectly ſmooth, for the cauſe of the wheels turning upon a common road is the obſtacles it continually meets. For if we ſuppoſe the wheels to be lifted from the ground, and carried along in the air, the wheels in this caſe would not turn at all, for there would be nothing to put any part into motion rather than another; in the ſame manner, if they were carried along upon perfectly ſmooth ice, they would meet nothing to give a beginning to the circulatory motion, and all their parts would reſt equally alike. But if we ſuppoſe the wheel drawn along a common road, then the parts will receive unequal obſtructions, for it meets with obſtacles that retard it at bottom: therefore the upper part of the wheel, which is not retarded, will move more ſwiftly than the lower part, which is; but this it cannot do, unleſs the wheel moves round. And thus it is that the obſtacles in the rough road cauſe this circulatory motion in the wheel.

This rotation of the wheels about their axle very much diminiſhes that friction which always attends the weight's being drawn along upon a ſledge; and this in ſo great a proportion, that, according to Helſham, a carriage drawn by four wheels, will be drawn with five times as ſmall an effort as one that ſlides upon the ſame ſurface in a ſledge. Still more to diminiſh the friction in wheel-carriages, an expedient hath been found out, whereby the axle, contrary to what is uſual in moſt carriages, is made to turn round, and its gudgeons or ends, inſtead of preſſing againſt the boxes as in common wheels, are made to bear on the circumference of moveable wheels; ſo that by this contrivance, a number of parts are made to roll one over the other, which ſlided before: ſuch wheels, from their thus diminiſhing the friction, are called *friction-wheels*.

The ſtructure of *wheel carriages* is generally ſo well known, that it would be needleſs to deſcribe them. And therefore we ſhall only point out ſome inconveniencies attending the common method of placing the wheels and loading the waggons; and make an obſervation or two upon the advantages of the uſe of broad wheels.

In coaches, and all other four-wheeled carriages, the fore-wheels are made of a leſs ſize than the hind ones; both on account of turning ſhort, and to avoid cutting the braces: otherwiſe, the carriage would go much eaſier if the fore-wheels were as high as the hind ones; and the higher the better, becauſe their motion would be ſo much the ſlower on their axles, and conſequently the friction proportionably taken off. But carriers and coachmen give another reaſon for making the fore-wheels much lower than the hind-wheels; namely, that when they are ſo, the hind-wheels help to puſh on the fore ones: which is too unphiloſophical and abſurd to deſerve a refutation; and yet, for their ſatisfaction, we ſhall ſhew by experiment that it has no exiſtence but in their own imaginations.

It is plain that the ſmall wheels muſt turn as much oftener round than the great ones, as their circumferences are leſs. And therefore, when the carriage is loaded equally heavy on both axles, the fore-axle muſt endure as much more friction, and conſequently wear out as much ſooner than the hind-axle, as the fore-wheels are leſs than the hind-ones. But the great misfortune is, that all the carriers to a man do obſtinately perſiſt, againſt the cleareſt reaſon and demonſtration, in putting the heavier part of the load upon the fore-axle of the waggon; which not only makes the friction greateſt where it ought to be leaſt, but alſo preſſeth the fore-wheels deeper into the ground than the hind-wheels, notwithſtanding the fore-wheels, being leſs than the hind ones, are with ſo much the greater difficulty drawn out of a hole or over an obſtacle, even ſuppoſing the weights on their axles were equal. For the difficulty, with equal weights, will be as the depth of the hole or height of the obſtacle is to the ſemidiameter of the wheel. Thus, if we ſuppoſe the ſmall wheel D of the waggon AB to fall into a hole of the depth EF, which is equal to the ſemidiameter of the wheel, and the waggon to be drawn horizontally along; it is evident, that the point E of the ſmall wheel will be drawn directly againſt the top of the hole; and therefor, all the power of horſes and men will not be able to draw it out, unleſs the ground gives way before it. Whereas, if the hind-wheel C falls into ſuch a hole, it ſinks not near ſo deep in proportion to its ſemidiameter; and therefore the point G of the large wheel will not be drawn directly, but obliquely, againſt the top of the hole; and ſo will be eaſily got out of it. Add to this, that ſince a ſmall wheel will often ſink to the bottom of a hole, in which a great wheel will go but a very little way, the ſmall wheels ought in all reaſon to be loaded with leſs weight than the great ones: and then the heavier part of the load would be leſs jolted upward and downward, and the horſes tired ſo much the leſs, as their draught raiſed the load to leſs heights.

Plate CLXXIII. fig. 4.

It is true, that when the waggon-road is much uphill, there may be danger in loading the hind part much heavier than the fore part; for then the weight would overhang the hind axle, eſpecially if the load be high, and endanger tilting up the fore-wheels from the ground. In this caſe, the ſafeſt way would be to load it equally heavy on both axles; and then as much more of the weight would be thrown upon the hind-axle than upon the fore one, as the ground riſes from a level below the carriage. But as this ſeldom happens, and when it does a ſmall temporary weight laid upon the pole between the horſes would overbalance the danger, and this weight might be thrown into the waggon when it comes to level ground; it is ſtrange that an advantage ſo plain and obvious as would ariſe from loading the hind-wheels heavieſt, ſhould not be laid hold of, by complying with this method.

To confirm theſe reaſonings by experiment, let a ſmall model of a waggon be made, with its fore-wheels $2\frac{1}{2}$ inches in diameter, and its hind-wheels $4\frac{1}{2}$; the whole model weighing about 20 ounces. Let this little carriage be loaded any how with weights, and have a ſmall cord tied to each of its ends, equally high from the ground it reſts upon; and let it be drawn along a horizontal board, firſt by a weight in a ſcale hung to the cord at the fore-part; the cord going over a pulley at the end of the board to facilitate the draught, and the weight juſt ſufficient to draw it along. Then turn the carriage, and hang the ſcale and weight to the hind-cord, and it will be found to move along with the ſame velocity as at firſt: which ſhews, that the power required to draw the carriage is all the ſame, whether the great or ſmall wheels are foremoſt; and therefore the great wheels do not help in the leaſt to puſh on the ſmall wheels in the road.

Hang the ſcale to the fore-cord, and place the fore-wheels (which are the ſmall ones) in two holes, cut three eight parts of an inch deep in the board; then put a weight of 32 ounces into the carriage over the fore-axle, and an equal weight over the hind-one: this done, put 44 ounces into the ſcale, which will be juſt ſufficient to draw out the fore-wheels: but if this weight be taken out of the ſcale, and one of 16 ounces put into its place, if the hind-wheels are placed in the holes, the 16 ounce weight will draw them out; which is little more than a third part of what was neceſſary to draw out the fore-wheels. This ſhews, that the larger the wheels are, the leſs power will draw the carriage, eſpecially on rough ground.

Put 64 ounces over the axle of the hind-wheels, and 32 over the axle of the fore-ones, in the carriage; and place the fore-wheels in the holes: then put 38 ounces into the ſcale, which will juſt draw out the fore-wheels; and when the hind-ones come to the hole, they will find but very little reſiſtance, becauſe they ſink but a little way into it.

But ſhift the weights in the carriage, by putting the 32 ounces upon the hind-axle, and the 64 ounces upon the fore-one; and place the fore-wheels in the holes: then, if 76 ounces be put into the ſcale, it will be found no more than ſufficient to draw out theſe wheels; which is double the power required to draw them out when the lighter part of the load was put upon them: which is a plain demonſtration of the abſurdity of putting the heavieſt part of the load in the fore-part of the waggon.

Every one knows what an outcry was made by the generality, if not the whole body of the carriers, againſt the broad-wheel act; and how hard it was to perſuade them to comply with it, even though the government allowed them to draw with more horſes, and carry greater loads than uſual. Their principal objection was, that as a broad wheel muſt touch the ground in a great many more points than a narrow wheel, the friction muſt of courſe be juſt ſo much the greater; and conſequently, there muſt be ſo many more horſes than uſual, to draw the waggon. It is believed that the majority of people were of the ſame opinion; not conſidering, that if the whole weight of the waggon and load in it bears upon a great many points, each ſuſtains a proportionably leſs degree of weight and friction, than when it bears only upon a few points; ſo that what is wanting in one, is made up in the other; and therefore will be juſt equal under equal degrees of weight, as may be ſhewn by the following plain and eaſy experiment.

Let one end of a piece of packthread be faſtened to a brick, and the other end to a common ſcale for holding weights: then, having laid the brick edgewiſe on a table, and let the ſcale hang under the edge of the table, put as much weight into the ſcale as will juſt draw the brick along the table. Then taking back the brick to its former place, lay it flat on the table, and leave it to be acted upon by the ſame weight in the ſcale as before, which will draw it along with the ſame eaſe as when it lay upon its edge. In the former caſe, the brick may be conſidered as a narrow wheel on the ground; and in the latter, as a broad wheel. And ſince the brick is drawn along with equal eaſe, whether its broad ſide or narrow edge touches the table, it ſhews that a broad wheel might be drawn along the ground with the ſame eaſe as a narrow one, (ſuppoſing them equally heavy), even though they ſhould drag, and not roll, as they go along.

As narrow wheels are always ſinking into the ground, eſpecially when the heavieſt part of the load lies upon them, they muſt be conſidered as going conſtantly up-hill, even on level ground; and their edges muſt ſuſtain a great deal of friction by rubbing againſt the ruts made by them. But both theſe inconveniencies are avoided by broad wheels; which, inſtead of cutting and ploughing up the roads, roll them ſmooth, and harden them; as experience teſtifies in places where they have been uſed, eſpecially either on wettiſh or ſandy ground: though, after all, it muſt be confeſſed, that they will not do in ſtiff clayey croſs-roads; becauſe they would ſoon gather up as much clay as would be almoſt equal to the weight of an ordinary load.

If the wheels are always to go upon ſmooth and level ground, the beſt way would be to make the ſpokes perpendicular to the naves; that is, to ſtand at right angles to the axles; becauſe they would then bear the weight of the load perpendicularly, which is the ſtrongeſt way for wood. But becauſe the ground is generally uneven, one wheel often falls into a cavity or rut, when the other does not, and then it bears much more of the weight than the other does: in which caſe, concave or diſhing wheels are beſt; becauſe when one falls into a rut, and the other keeps upon high ground, the ſpokes become perpendicular in the rut, and therefore have the greateſt ſtrength when the obliquity of the load throws moſt of its weight upon them; whilſt thoſe on the high ground have leſs weight to bear, and therefore need not be at their full ſtrength. So that the uſual way of making the wheels concave is by much the beſt.

The axles of the wheels ought to be perfectly ſtraight, that the rims of the wheels may be parallel to each other; for then they will move eaſieſt, becauſe they will be at liberty to go on ſtraight forwards. But, in the uſual way of practice, the axles are bent downward at their ends; which brings the ſides of the wheels next the ground nearer to one another than their oppoſite or higher ſides are: and this not only makes the wheels to drag ſidewiſe as they go along, and gives the load a much greater power of cruſhing them than when they are parallel to each other, but alſo endangers the over-turning of the carriage when any wheel falls into a hole or rut; or when the carriage goes in re XXIII. 5. a road which has one ſide lower than the other, as along the ſide of a hill. Thus (in the hind-view of a waggon or cart) let AE and BF be the great wheels parallel to each other, on their ſtraight axle K, and HCI the carriage loaded with heavy goods from C to G. Then, as the carriage goes on in the oblique road A*a*B, the centre of gravity of the whole machine and load will be at C; and the line of direction C*d*D falling within the wheel BF, the carriage will not overſet. , 6. But if the wheels be inclined to each other on the ground, as AE and BF are, and the machine be loaded as before, from C to G, the line of direction C*d*D falls without the wheel BF, and the whole machine tumbles over. When it is loaded with heavy goods 5. (ſuch as lead or iron) which lie low, it may travel ſafely upon an oblique road ſo long as the centre of gravity is at C, and the line of direction C*d* falls within the wheels; but if it be loaded high with lighter goods . 7. (ſuch as wool-packs) from C to L, the centre of gravity is raiſed from C to K, which throws the line of direction K*k* without the loweſt edge of the wheel BF, and then the load overſets the waggon.

If there be ſome advantage from ſmall fore-wheels, on account of the carriage turning more eaſily and ſhort than it can be made to do when they are large; there is at leaſt as great a diſadvantage attending them, which is, that as their axle is below the level of the horſes breaſts, the horſes not only have the loaded carriage to draw along, but alſo part of its weight to bear; which tires them ſooner, and makes them grow much ſtiffer in their hams, than they would be if they drew on a level with the fore-axle: and for this reaſon we find coach-horſes ſoon become unfit for riding. So that on all accounts it is plain, that the fore-wheels of all carriages ought to be ſo high as to have their axles even with the breaſt of the horſes; which would not only give the horſes a fair draught, but likewiſe cauſe the machine to be drawn by a leſs degree of power.

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By means of wheels, ſome people have contrived carriages to go without horſes, or any other moving power than what was given by the paſſengers, by the wind, &c. One of theſe is repreſented by ABCD. te XXIV. 1. It is moved by the footman behind it; and the fore-wheels, which act as a rudder, are guided by the perſon who ſits in the carriage (A).

Between the hind-wheels is placed a box, in which is concealed the machinery that moves the carriage. AA, (fig. 2.) is a ſmall axis fixed into the box. B is a pulley, over which runs a rope, whoſe two ends are faſtened to the ends of the two leavers or treddles CD, whoſe other ends are fixed in ſuch manner in the piece E, which is joined to the box, that they can eaſily move up and down. F, F, are two flat pieces of iron that are joined to the treddles, and take the teeth of the two wheels H,H, which are fixed on the ſame axis with the hind-wheels of the carriage, I, I.

It is evident, that when the footman behind preſſes down one of the treddles, ſuppoſe C, with his foot, he muſt bring down one of the pieces of iron F, and conſequently turn the wheel H that is next to it; and at the ſame time, by means of the rope that goes over the pulley, he muſt raiſe the other treddle D, together with its piece F, which being thruſt down will turn the other wheel H; and ſo alternately: and as the great wheels are fixed on the ſame axis, they muſt neceſſarily move at the ſame time.

It is eaſy to conceive, that if the ends of the treddles next E, inſtead of being placed behind the carriage, were turned the oppoſite way, ſo as to come under the feet of the perſon who ſits in it, he might move it with equal, or even greater facility, than the footman, as it would then be charged with the weight of one perſon only.

A machine of this kind will afford a ſalutary recreation in a garden or park, or on any plain ground; but in a rough or deep road muſt be attended with more pain than pleaſure.

61
To ſail as faſt, with a fair wind, by land, as by water.
Fig. 3.

Another contrivance for being carried without draught, is by means of a ſailing chariot, or boat fixed on four wheels, as AB; which is driven before the wind by the ſails CD, and guided by the rudder E. In a chariot of this kind, the wheels ſhould be farther aſunder, and the axle-trees longer, than in other carriages, to prevent overturning.

A machine of this ſort was conſtructed in the laſt century by Stephinus, at Scheveling in Holland, and is celebrated by many writers. Its velocity with a ſtrong wind is ſaid to be ſo great, that it would carry eight or ten perſons from Scheveling to Putten, which are 42 Engliſh miles diſtant, in two hours.

Carriages of this kind are ſaid to be frequent in China; and in any wide, level country, muſt be, ſometimes, both pleaſant and profitable. The great inconvenience attending this machine is, that it can only go in the direction the wind blows, and even not then unleſs it blow ſtrong; ſo that, after you have got ſome way on your journey, if the wind ſhould fail, or change, you muſt either proceed on foot, or go back. Some remedy for this inconvenience will be found in the next contrivance. The Hollanders have, or had, ſmall veſſels, ſomething of this kind, that carry one or two perſons on the ice, having a ſledge at bottom inſtead of wheels; and being made in the form of a boat, if the ice break the paſſengers are ſecured from drowning.

62
To ſail by land againſt the wind.

To ſail againſt the wind: Let ABCD be the body of a ſailing chariot; M the maſt, to which are fixed the wings or ſails EFGH; the two firſt of which, EF, are here ſuppoſed to be expanded by the wind; R is the rudder by which it is guided. Therefore, the wind driving the ſails round, with the maſt M, and the cog-wheel K, take the teeth, placed perpendicular to the ſides of the two fore-wheels of the carriage, and conſequently keep it in continual motion.

The body of this machine ſhoud not be large, nor placed very high, not only to prevent overturning, but that its motion may not be thereby impeded; for the

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(A) This machine was invented by M. Richard, a phyſician of Rochelle, and was exhibited at Paris in the laſt century. It is deſcribed by M. Ozanam in his *Recreations Mathematiques*.

the velocity will be in proportion to the force of the wind on the ſails, to that on the body of the machine. Therefore, if they be both equal, it will ſtand ſtill; or if the force on the body be greateſt, it will go backwards; unleſs there be a contrivance to lock the wheels. The upper part of the machine next A, may be made to take off when the wind is contrary, and there may be another ſet of ſails placed between the two hind-wheels, which will conſiderably increaſe its velocity. But after all, for general uſe, a common carriage muſt be preferable: for this cannot be expected to go up a moderate aſcent without great difficulty; nor down a declivity, when there is a ſtrong wind, without danger; and even on level ground, if the road be in any degree rough, its progreſs muſt be very ſlow, attended both with difficulty and danger. In an open country, however, where there is a large tract of level and ſmooth ground, and frequent ſtrong winds, a machine of this ſort will certainly be very convenient; and in moſt countries, when made of a ſmall ſize, may be uſeful to young people, by affording them a pleaſant and healthful exerciſe.

63
The uninvertible carriage.
Plate CLXXIV.
fig. 5.

A carriage the body of which is incapable of being overturned may be made as follows. The body muſt conſiſt of a regular hollow globe, as AB, at the bottom of which is to be an immoveable weight, and which muſt be proportioned to the number of perſons or the load the machine is intended to carry. Round the globe muſt go two horizontal iron circles D, E, and two others F, G, that are perpendicular to the former. All theſe circles muſt be made exactly to fit the globe, that it may move freely in every direction. The two horizontal circles are to be joined on each ſide by a perpendicular bar, one of which is expreſſed in the figure by HI. All theſe irons ſhould be lined with leather, to prevent unneceſſary friction. The body of the carriage may be either of leather or hard wood; but the latter will be moſt elegible, as leaſt liable to wear. The wheel on each ſide is to be faſtened to the perpendicular bar by means of a handle K, that keeps it ſteady.

Now, the body of this machine moving freely in the iron circles every way, the centre of gravity will always lie at C; therefore, in whatever poſition the wheels are, or even if they overturn, the body of the carriage will conſtantly remain in the ſame perpendicular direction.

At L is placed a pin, round which is a hollow moveable cylinder: this pin moves up and down in the groove MN, that it may not impede the perpendicular motion of the circles, at the ſame time that it prevents the body of the machine from turning round in a horizontal direction. O is one of the windows, P the door, and QR the ſhafts to this machine.

When a carriage of this ſort is intended for a ſingle perſon, or a light weight, it may be hung on ſwivels, in the ſame manner as the rolling lamp or the ſea-compaſs, which will make its horizontal motion ſtill more regular: and when it is deſigned to carry ſeveral perſons, by adding another perpendicular bar on each ſide, between the two horizontal circles, it may be placed on four wheels. The body of this machine ſhould be frequently oiled or greaſed, not only to prevent any diſagreeable noiſe that may ariſe from its rubbing againſt the circles, but to prevent unneceſſary wear in the ſeveral parts.

This carriage is not intended for ſmooth roads, or a regular pavement; there certainly, thoſe of the common conſtruction are much preferable; nor ſhould a carriage totally free from irregular motion be ſought after by thoſe who are in perfect health: but there are many perſons, ſubject to different diſorders, who by being obliged to travel over rough roads in the common carriages, ſuffer tortures of which the healthful have no idea; to all theſe, therefore, and to every one who is forced to travel through dangerous roads, a carriage of this ſort muſt doubtleſs be highly deſirable.

As this deſign may appear to ſome perſons, on a ſuperficial view, impracticable, we ſhall here inſert an account of a ſimilar carriage, which we have taken from the firſt volume of the abridgment of the Philoſophical Tranſactions, by Lowthorp. There is not, however, any deſcription of the manner in which that machine was conſtructed. The account is as follows: "A new ſort of calaſh deſcribed by Sir R. B. This calaſh goes on two wheels; carries one perſon; is light enough. Though it hangs not on braces, yet it is eaſier than the common coach. A common coach will overturn if one wheel go on a ſuperficies a foot and a half higher than the other; but this will admit of the difference of three feet and one-third in height of the ſuperficies, without danger of overturning. We choſe all the irregnlar banks, and ſides of ditches, to run over; and I have this day ſeen it, at five ſeveral times, turn over and over, and the horſe not at all diſordered. If the horſe ſhould be in the leaſt unruly, with the help of one pin you diſengage him from the calaſh without any inconvenience (*a contrivance of this ſort may be eaſily added to the foregoing deſign.*) I myſelf have been once overturned, and knew it not till I looked up and ſaw the wheel flat over my head: and if a man went with his eyes ſhut, he would imagine himſelf in the moſt ſmooth way, though at the ſame time there be three feet difference in the height of the ground of each wheel."

CHAP. VI. *Of Mills and Cranes.*

[64] 6
A comm
mill.
Plate
CLXXII.
fig. 9.

IN a common *breaſt-mill*, where the fall of water may be about ten feet, AA is the great wheel, which is generally about 17 or 18 feet in diameter, reckoned from the outermoſt edge of any float-bard at *a* to that of its oppoſite float at *b*. To this wheel the water is conveyed thro' a channel; and by falling upon the wheel, turns it round.

On the axis BB of this wheel, and within the mill-houſe, is a wheel D, about 8 or 9 feet diameter, having 61 cogs, which turn a trundle E containing ten upright ſtaves or rounds; and when theſe are the number of cogs and rounds, the trundle will make $6\frac{1}{10}$ revolutions for one revolution of the wheel.

The trundle is fixed upon a ſtrong iron axis called the ſpindle, the lower end of which turns in a braſs foot, fixed at F, in the horizontal beam ST called the *bridge-tree*; and the upper part of the ſpindle turns in a wooden buſh fixed into the nether-millſtone which lies upon beams in the floor YY. The top part of the ſpindle above the buſh is ſquare, and goes into a ſquare hole in a ſtrong iron croſs *a b c d* (ſee fig. 10.) called the *rynd;* under which, and cloſe to the buſh, is a round piece of thick leather upon the ſpindle, which it turns round at the ſame time that it does the rynd.

The rynd is let into grooves in the under ſurface of the running millſtone G (fig. 9.), and ſo turns it round in the ſame time that the trundle E is turned round by the cog-wheel D. This millſtone has a large hole quite through its middle, called the *eye of the ſtone*, through which the middle part of the rynd and upper end of the ſpindle may be ſeen; whilſt the four ends of the rynd lie hid below the ſtone in their grooves.

The end T of the bridge-tree TS (which ſupports the upper millſtone G upon the ſpindle) is fixed into a hole in the wall; and the end S is let into a beam QR called the *brayer*, whoſe end R remains fixed in a mortiſe; and its other end Q hangs by a ſtrong iron-rod P, which goes through the floor YY, and has a ſcrew-nut on its top at O; by the turning of which nut, the end Q of the brayer is raiſed or depreſſed at pleaſure, and conſequently the bridge-tree TS and upper millſtone. By this means, the upper millſtone may be ſet as cloſe to the under one, or raiſed as high from it, as the miller pleaſes. The nearer the millſtones are to one another, the finer they grind the corn; and the more remote from one another, the coarſer.

The upper millſtone G is incloſed in a round box H, which does not touch it any where; and is about an inch diſtant from its edge all around. On the top of this box ſtands a frame for holding the hopper *k k*, to which is hung the ſhoe, I, by two lines faſtened to the hind-part of it, fixed upon hooks in the hopper, and by one end of the crook-ſtring K faſtened to the fore-part of it at *i*, the other end being twiſted round the pin L. As the pin is turned one way, the ſtring draws up the ſhoe cloſer to the hopper, and ſo leſſens the aperture between them; and as the pin is turned the other way, it lets down the ſhoe, and enlarges the aperture.

If the ſhoe be drawn up quite to the hopper, no corn can fall from the hopper into the mill: if it be let a little down, ſome will fall; and the quantity will be more or leſs, according as the ſhoe is more or leſs let down. For the hopper is open at bottom, and there is a hole in the bottom of the ſhoe, not directly under the bottom of the hopper, but forwarder towards the end *i*, over the middle of the eye of the millſtone.

There is a ſquare hole in the top of the ſpindle, in which is put the feeder *e* (fig. 10.) This feeder (as the ſpindle turns round) jogs the ſhoe three times in each revolution, and ſo cauſes the corn to run conſtantly down from the hopper, through the ſhoe, into the eye of the millſtone, where it falls upon the top of the rynd, and is, by the motion of the rynd and the leather under it, thrown below the upper ſtone, and ground between it and the lower one. The violent motion of the ſtone creates a centrifugal force in the corn going round with it, by which means it gets farther and farther from the centre, as in a ſpiral, in every revolution until it be thrown quite out; and, being then ground, it falls thro' a ſpout M, called the *mill-eye*, into the trough N.

When the mill is fed too faſt, the corn bears up the ſtone, and is ground too coarſe; and beſides, it clogs the mill ſo as to make it go too ſlow. When the mill is too ſlowly fed, it goes too faſt, and the ſtones by their attrition are apt to ſtrike fire againſt one another: Both which inconveniencies are avoided by turning the pin L backwards or forwards, which draws up or lets down the ſhoe, and ſo regulates the feeding as the miller ſees convenient.

The heavier the running millſtone is, and the greater the quantity of water that falls upon the wheel, ſo much the faſter will the mill bear to be fed, and conſequently ſo much the more it will grind. And on the contrary, the lighter the ſtone, and the leſs the quantity of water, ſo much ſlower muſt the feeding be. But when the ſtone is conſiderably wore, and become light, the mill muſt be fed ſlowly at any rate; otherwiſe the ſtone will be too much borne up by the corn under it, which will make the meal coarſe.

The quantity of power required to turn a heavy millſtone is but a very little more than what is ſufficient to turn a light one: for as it is ſupported upon the ſpindle by the bridge-tree ST, and the end of the ſpindle that turns in the braſs foot therein being but ſmall, the odds ariſing from the weight is but very inconſiderable in its action againſt the power or force of the water. And beſides, a heavy ſtone has the ſame advantage as a heavy fly; namely, that it regulates the motion much better than a light one.

In order to cut and grind the corn, both the upper and under millſtones have channels or furrows cut into them, proceeding obliquely from the centre towards the circumference. And theſe furrows are each cut perpendicularly on one ſide and obliquely on the other into the ſtone, which gives each furrow a ſharp edge, and in the two ſtones they come as it were againſt one another like the edges of a pair of ſciſſars; and ſo cut the corn, to make it grind the eaſier when it falls upon the places between the furrows. Theſe are cut the ſame way in both ſtones when they lie upon their backs, which makes them run croſs-ways to each other when the upper ſtone is inverted by turning its furrowed ſurface towards that of the lower. For, if the furrows of both ſtones lay the ſame way, a great deal of the corn would be driven onward in the lower furrows, and ſo come out from between the ſtones without ever being cut.

When the furrows become blunt and ſhallow by wearing, the running ſtone muſt be taken up, and both ſtones new dreſſed with a chiſel and hammer. And every time the ſtone is taken up, there muſt be ſome tallow put round the ſpindle upon the buſh, which will ſoon be melted by the heat the ſpindle acquires from its turning and rubbing againſt the buſh, and ſo will get in betwixt them: otherwiſe the buſh would take fire in a very little time.

The buſh muſt embrace the ſpindle quite cloſe, to prevent any ſhake in the motion; which would make ſome parts of the ſtones grate and fire againſt each other, whilſt other parts of them would be too far aſunder, and by that means ſpoil the meal in grinding.

Whenever the ſpindle wears the buſh ſo as to begin to ſhake in it, the ſtone muſt be taken up, and a chiſel drove into ſeveral parts of the buſh; and when it is taken out, wooden wedges muſt be driven into the holes; by which means the buſh will be made to embrace the ſpindle cloſe all around it again. In doing this, great care muſt be taken to drive equal wedges into the buſh on oppoſite ſides of the ſpindle; otherwiſe it will be thrown out of the perpendicular, and ſo hinder the upper ſtone from being ſet parallel to the under one, which is abſolutely neceſſary for making good work. When any accident of this kind happens, the perpendicular poſition of the ſpindle muſt be reſtored by adjuſting the bridge-tree ST by proper wedges put between it and the brayer QR.

It often happens, that the rynd is a little wrenched in laying down the upper ſtone upon it; or is made to ſink a little lower upon one ſide of the ſpindle than on the other: and this will cauſe one edge of the upper ſtone to drag all around upon the other, whilſt the oppoſite edge will not touch. But this is eaſily ſet to rights, by raiſing the ſtone a little with a lever, and putting bits of paper, cards, or thin chips, betwixt the rynd and the ſtone.

The diameter of the upper ſtone is generally about ſix feet, the lower ſtone about an inch more: and the upper ſtone when new contains about 22½ cubic feet, which weighs ſomewhat more than 1900 pounds. A ſtone of this diameter ought never to go more than 60 times round in a minute; for if it turns faſter, it will heat the meal.

The grinding ſurface of the under ſtone is a little convex from the edge to the centre, and that of the upper ſtone a little more concave: ſo that they are fartheſt from one another in the middle, and come gradually nearer towards the edges. By this means, the corn at its firſt entrance between the ſtones is only bruiſed; but as it goes farther on towards the circumference or edge, it is cut ſmaller and ſmaller; and at laſt finely ground juſt before it comes out from between them.

The water-wheel muſt not be too large, for if it be, its motion will be too ſlow; nor too little, for then it will want power. And for a mill to be in perfection, the floats of the wheel ought to move with a third part of the velocity of the water, and the ſtone to turn round once in a ſecond of time.

Such a mill as this, with a fall of water about 7½ feet, will require about 32 hogſheads every minute to turn the wheel with a third part of the velocity with which the water falls; and to overcome the reſiſtance ariſing from the friction of the geers and attrition of the ſtones in grinding the corn.

The greater fall the water has, the leſs quantity of it will ſerve to turn the mill. The water is kept up in the mill-dam, and let out by a ſluice called the *penſtock*, when the mill is to go. When the penſtock is drawn up by means of a lever, it opens a paſſage thro' which the water flows to the wheel: and when the mill is to be ſtopt, the penſtock is let down, which ſtops the water from falling upon the wheel.

A leſs quantity of water will turn an overſhot-mill (where the wheel has buckets inſtead of float-boards), than a breaſt-mill, where the fall of the water ſeldom exceeds half the height A *b* of the wheel. So that, where there is but a ſmall quantity of water, and a fall great enough for the wheel to lie under it, the bucket (or overſhot) wheel is always uſed. But where there is a large body of water, with a little fall, the breaſt or float-board wheel muſt take place. Where the water runs only upon a little declivity, it can act but ſlowly upon the under part of the wheel at *b*; in which caſe, the motion of the wheel will be very ſlow: and therefore, the floats ought to be very long, tho' not high, that a large body of water may act upon them; ſo that what is wanting in velocity may be made up in power: and then the cog-wheel may have a greater number of cogs in proportion to the rounds in the trundle, in order to give the millſtone a ſufficient degree of velocity.

They who recollect what has been ſaid concerning the acceleration of bodies falling freely by the power of gravity acting conſtantly and uniformly upon them, may perhaps aſk, Why ſhould the motion of the wheel be equable, and not accelerated, ſince the water acts conſtantly and uniformly upon it? The plain anſwer is, that the velocity of the wheel can never be ſo great as the velocity of the water that turns it; for, if it ſhould become ſo great, the power of the water would be quite loſt upon the wheel, and then there would be no proper force to overcome the friction of the geers and attrition of the ſtones. Therefore, the velocity with which the wheel begins to move, will increaſe no longer than till its momentum or force is balanced by the reſiſtance of the machine; and then the wheel will go on with an equable motion.

[If the cog-wheel D be made about 18 inches diameter, with 30 cogs, the trundle as ſmall in proportion, with 10 ſtaves, and the millſtones be each about two feet in diameter, and the whole work be put into a ſtrong frame of wood, as repreſented in the figure, the engine will be a hand-mill for grinding corn or malt in private families. And then, it may be turned by a winch inſtead of the wheel AA; the millſtone making three revolutions for every one of the winch. If a heavy fly be put upon the axle B, near the winch, it will help to regulate the motion.] 66 A hand-mill.

If the cogs of the wheel and rounds of the trundle could be put in as exactly as the teeth are cut in the wheels and pinions of a clock, then the trundle might divide the wheel exactly: that is to ſay, the trundle might make a given number of revolutions for one of the wheel, without a fraction. But as any exact number is not neceſſary in mill-work, and the cogs and rounds cannot be ſet in ſo truly as to make all the intervals between them equal; a ſkilful mill-wright will always give the wheel what he calls *a hunting cog*; that is, one more than what will anſwer to an exact diviſion of the wheel by the trundle. And then, as every cog comes to the trundle, it will take the next ſtaff or round behind the one which it took in the former revolution: and by that means will wear all the parts of the cogs and rounds which work upon one another equally, and to equal diſtances from one another, in a little time; and ſo make a true uniform motion throughout the whole work. Thus, in the above water-mill, the trundle has 10 ſtaves, and the wheel 61 cogs.

Sometimes, where there is a ſufficient quantity of water, the cog-wheel AA turns a large trundle BB, on whoſe axis C is fixed the horizontal wheel D, with cogs all round its edge, turning two trundles E and F Plate CLX fig.

F at the ſame time; whoſe axes or ſpindles G and H turn two millſtones I and K, upon the fixed ſtones L and M. And when there is not work for them both, either may be made to lie quiet, by taking out one of the ſtaves of its trundle, and turning the vacant place towards the cog-wheel D. And there may be a wheel fixed on the upper end of the great upright axle C for turning a couple of boulting-mills; and other work for drawing up the ſacks, fanning and cleaning the corn, ſharpening of tools, &c.

67 orſe-

If, inſtead of the cog-wheel AA and trundle BB, horizontal levers be fixed into the axle C below the wheel D, then horſes may be put to theſe levers for turning the mill: which is often done where water cannot be had for that purpoſe.

68 ind-

The working parts of a wind-mill differ very little from thoſe of a water-will: only the former is turned by the action of the wind upon four ſails, every one of which ought (as is generally believed) to make an angle of 54$\frac{2}{3}$ degrees with a plane perpendicular to the axis on which the arms are fixed for carrying them; it being demonſtrable, that when the ſails are ſet to ſuch an angle, and the axis turned end-ways toward the wind, the wind has the greateſt power upon the ſails. But this angle anſwers only to the caſe of a vane or ſail juſt beginning to move: for, when the vane has a certain degree of motion, it yields to the wind; and then that angle muſt be increaſed to give the wind its full effect.

Again, the increaſe of this angle ſhould be different, according to the different velocities from the axis to the extremity of the vane. At the axis it ſhould be 54$\frac{2}{3}$ degrees, and thence continually increaſe, giving the vane a twiſt, and ſo cauſing all the ribs of the vane to lie in different planes.

Laſtly, theſe ribs ought to decreaſe in length from the axis to the extremity, giving the vane a curvilineal form; ſo that no part of the force of any one rib be ſpent upon the reſt, but all move on independent of each other. All this is required to give the ſails of a wind-mill their true form: and we ſee both the twiſt and the diminution of the ribs exemplified in the wings of birds.

It is almoſt incredible to think with what velocity the tips of the ſails move when acted upon by a moderate gale of wind. We have ſeveral times counted the number of revolutions made by the ſails in 10 or 15 minutes; and from the length of the arms from tip to tip, have computed, that if a hoop of that diameter was to run upon the ground with the ſame velocity that it would move if put upon the ſail-arms, it would go upwards of 30 miles in an hour.

As the ends of the ſails neareſt the axis cannot move with the ſame velocity that the tips or fartheſt ends do, although the wind acts equally ſtrong upon them; perhaps a better poſition than that of ſtretching them along the arms directly from the centre of motion, might be to have them ſet perpendicularly acroſs the farther ends of the arms, and there adjuſted lengthwiſe to the proper angle. For, in that caſe, both ends of the ſails would move with the ſame velocity; and being farther from the centre of motion, they would have ſo much the more power: and then, there would be no occaſion for having them ſo large as they are generally made; which would render them lighter, and conſequently, there would be ſo much the leſs friction on the thick neck of the axle where it turns in the wall.

69 A crane. Plate CLXXIII. fig. 2.

A *crane* is an engine by which great weights are raiſed to certain heights, or let down to certain depths. It conſiſts of wheels, axles, pulleys, ropes, and a gib or gibbet. When the rope H is hooked to the weight K, a man turns the winch A, on the axis whereof is the trundle B, which turns the wheel C, on whoſe axis D is the trundle E which turns the wheel F with its upright axis G, on which the great rope HH winds as the wheel turns; and going over a pulley, I, at the end of the arm *d* of the gib *ccde*, it draws up the heavy burden K; which being raiſed to a proper height, as from a ſhip to the quay, is then brought over the quay by pulling the wheel Z round by the handles *z*, *z*, which turns the gib by means of the half wheel *b* fixt on the gib-poſt *cc*, and the ſtrong pinion *a* fixt on the axis of the wheel Z. This wheel gives the man that turns it an abſolute command over the gib, ſo as to prevent it from taking any unlucky ſwing, ſuch as often happens when it is only guided by a rope tied to its arm *d*; and people are frequently hurt, ſometimes killed, by ſuch accidents.

The great rope goes between two upright rollers *i* and *k*, which turn upon gudgeons in the fixed beams *f* and *g*; and as the gib is turned towards either ſide, the rope bends upon the roller next that ſide. Were it not for theſe rollers, the gib would be quite unmanageable; for the moment it were turned ever ſo little towards any ſide, the weight K would begin to deſcend, becauſe the rope would be ſhortened between the pulley I and axis G; and ſo the gib would be pulled violently to that ſide, and either be broken to pieces, or break every thing that came in its way. Theſe rollers muſt be placed ſo that the ſides of them round which the rope bends may keep the middle of the bended part directly even with the centre of the hole in which the upper gudgeon of the gib turns in the beam *f*. The truer theſe rollers are placed, the eaſier the gib is managed, and the leſs apt to ſwing either way by the force of the weight K.

A ratchet-wheel Q is fixt upon the axis D, near the trundle E; and into this wheel falls the catch or click R. This hinders the machine from running back by the weight of the burden K, if the man who raiſes it ſhould happen to be careleſs, and ſo leave off working at the winch A ſooner than he ought to do.

When the burden K is raiſed to its proper height from the ſhip, and brought over the quay by turning the gib about, it is let down gently upon the quay, or into a cart ſtanding thereon, in the following manner: A man takes hold of the rope *tt* (which goes over the pulley *v*, and is tied to a hook at S in the catch R) and ſo diſengages the catch from the ratchet-wheel Q; and then, the man at the winch A turns it backward, and lets down the weight K. But if the weight pulls too hard againſt this man, another lays hold of the handle V, and by pulling it downward draws the gripe U cloſe to the wheel Y, which by rubbing hard againſt the gripe hinders the too quick deſcent of the weight; and not only ſo, but even ſtops it at any time if required. By this means, heavy goods may be either raiſed or let down at pleaſure, without any danger of hurting the men who work the engine.

When part of the goods are craned up, and the rope is to be let down for more, the catch R is firſt diſengaged from the ratchet-wheel Q, by pulling the cord *t*; then the handle *q* is turned half round backward, which, by the crank *n n* in the piece *o*, pulls down the frame *h* between the guides *m* and *m* (in which it ſlides in a groove) and ſo diſengages the trundle B from the wheel C: and then, the heavy hook β at the end of the rope H deſcends by its own weight, and turns back the great wheel F with its trundle E and the wheel C; and this laſt wheel acts like a fly againſt the wheel F and hook β, and ſo hinders it from going down too quick; whilſt the weight X keeps up the gripe U from rubbing againſt the wheel Y, by means of a cord going from the weight, over the pulley *w* to the hook W in the gripe; ſo that the gripe never touches the wheel, unleſs it be pulled down by the handle V.

When the crane is to be ſet at work again for drawing up another burden, the handle *q* is turned half round forwards; which, by the crank *nn*, raiſes up the frame *h*, and cauſes the trundle B to lay hold of the wheel C; and then, by turning the winch A, the burden of goods K is drawn up as before.

The crank *nn* turns pretty ſtiff in the mortiſe near *o*, and ſtops againſt the farther end of it when it has got juſt a little beyond the perpendicular; ſo that it can never come back of itſelf: and therefore, the trundle B can never come away from the wheel C, until the handle *q* be turned half round.

The great rope runs upon rollers in the lever LM, which keep it from bending between the axle at G and the pulley I. This lever turns upon the axis N by means of the weight O, which is juſt ſufficient to keep its end L up to the rope; ſo that, as the great axle turns, and the rope coils round it, the lever riſes with the rope, and prevents the coilings from going over one another.

The power of this crane may be eſtimated thus: Suppoſe the trundle B to have 13 ſtaves or rounds, and the wheel C to have 78 ſpur-cogs; the trundle E to have 14 ſtaves, and the wheel F 56 cogs. Then, by multiplying the ſtaves of the trundles, 13 and 14, into one another, their product will be 182; and by multiplying the cogs of the wheels, 78 and 56, into one another, their product will be 4368; and dividing 4368 by 182, the quotient will be 24: which ſhews, that the winch A make 24 turns for one turn of the wheel F and its axle G on which the great rope or chain HIH winds. So that, if the length or radius of the winch A were only equal to half the diameter of the great axle G, added to half the thickneſs of the rope H, the power of the crane would be as 24 to 1: but the radius of the winch being double the above length, it doubles the ſaid power, and ſo makes it as 48 to 1: in which caſe, a man may raiſe 48 times as much weight by this engine as he could do by his natural ſtrength without it, making proper allowance for the friction of the working parts. Two men may work at once, by having another winch on the oppoſite end of the axis of the trundle under B; and ſo make the power ſtill double.

If this power be thought greater than what may be generally wanted, the wheels may be made with fewer cogs in proportion to the ſtaves in the trundles; and ſo the power may be of whatever degree is judged to be requiſite. But if the weight be ſo great as will require yet more power to raiſe it (ſuppoſe a double quantity), then the rope H may be put under a moveable pulley, as δ, and the end of it tied to a hook in the gib at ε; which will give a double power to the machine, and ſo raiſe a double weight hooked to the block of the moveable pulley.

When only ſmall burdens are ſo raiſed, this may be quickly done by men puſhing the axle G round by the handſpokes *y*,*y*,*y*,*y*; having firſt diſengaged the trundle B from the wheel C: and then, this wheel will only act as a fly upon the wheel F; and the catch R will prevent its running back, if the men ſhould inadvertently leave off puſhing before the burden be unhooked from β.

Laſtly, when very heavy burdens are to be raiſed, which might endanger the breaking of the cogs in the wheel F; their force againſt theſe cogs may be much abated by men puſhing round the handſpokes *y*,*y*,*y*,*y*, whilſt the man at A turns the winch.

We have only ſhewn the working parts of this crane, without the whole of the beams which ſupport them; knowing that theſe are eaſily ſuppoſed, and that if they had been drawn, they would have hid a great deal of the working parts from ſight, and alſo confuſed the figure.

To Another crane, Plate CLXX fig. 3.

Another very good crane is made in the following manner. AA is a great wheel turned by men walking within it at H. On the part C, of its axle BC, the great rope D is wound as the wheel turns; and this rope draws up goods in the ſame way as the rope HH does in the above-mentioned crane, the gib-work here being ſuppoſed to be of the ſame ſort. But theſe cranes are very dangerous to the men in the wheel; for, if any of the men ſhould chance to fall, the burden will make the wheel run back and throw them all about within it; which often breaks their limbs, and ſometimes kills them. The late ingenious Mr Padmore of Briſtol, (whoſe contrivance the forementioned crane is), obſerving this dangerous conſtruction, contrived a method for remedying it, by putting cogs all around the outſide of the wheel, and applying a trundle E to turn it; which increaſes the power as much as the number of cogs in the wheel is greater than the number of ſtaves in the trundle: and by putting a ratchet-wheel F on the axis of the trundle, (as in the above-mentioned crane), with a catch to fall into it, the great wheel is ſtopt from running back by the force of the weight, even if all the men in it ſhould leave off walking. And by one man working at the winch I, or two men at the oppoſite winches when needful, the men in the wheel are much aſſiſted, and much greater weights are raiſed, than could be by men only within the wheel. Mr Padmore put alſo a gripe-wheel G upon the axis of the trundle, which being pinched in the ſame manner as deſcribed in the former crane, heavy burdens may be let down without the leaſt danger. And before this contrivance, the lowering of goods was always attended with the utmoſt danger to the men in the wheel; as every one muſt be ſenſible of who has ſeen ſuch engines at work. And it is ſurpriſing that the maſters of wharfs and cranes ſhould be ſo regardleſs of the limbs, or even lives of their workmen, that, excepting the late Sir James Creed of Greenwich, MECHANICS Plate CLX

Fig. 1

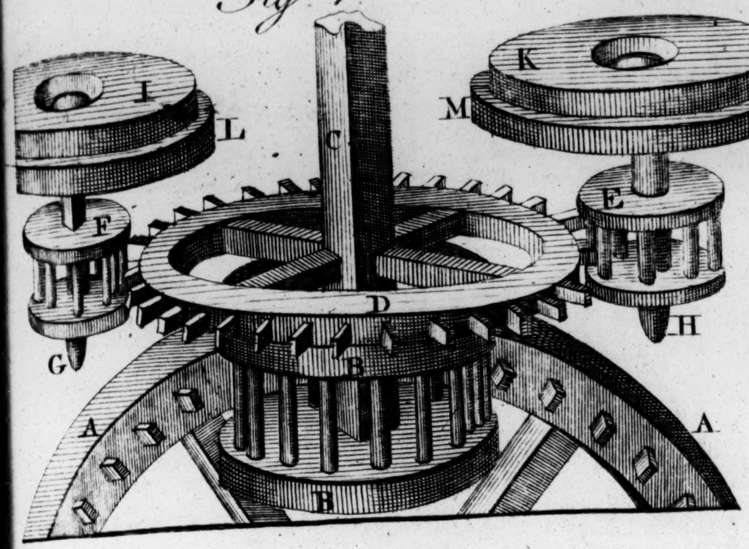

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Fig. 3

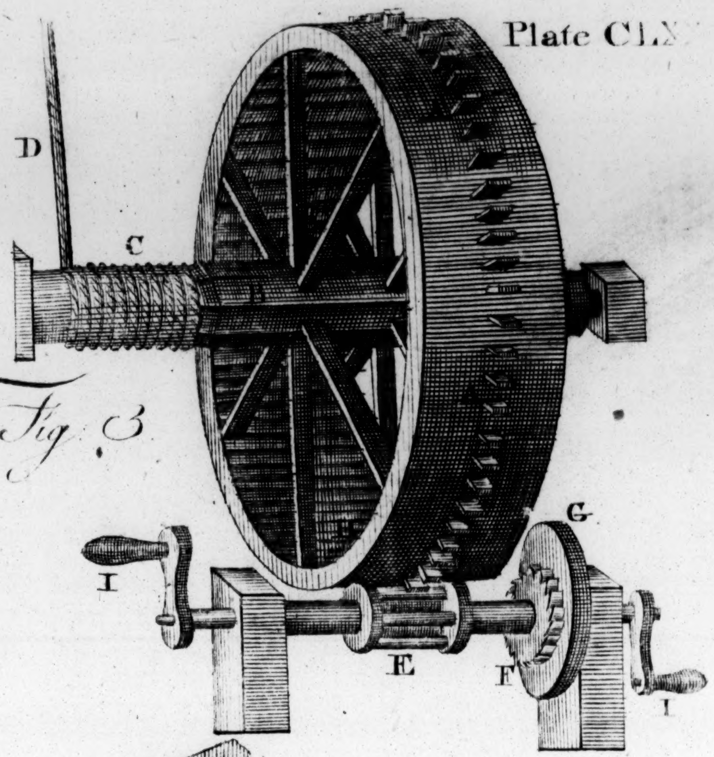

Fig. 2

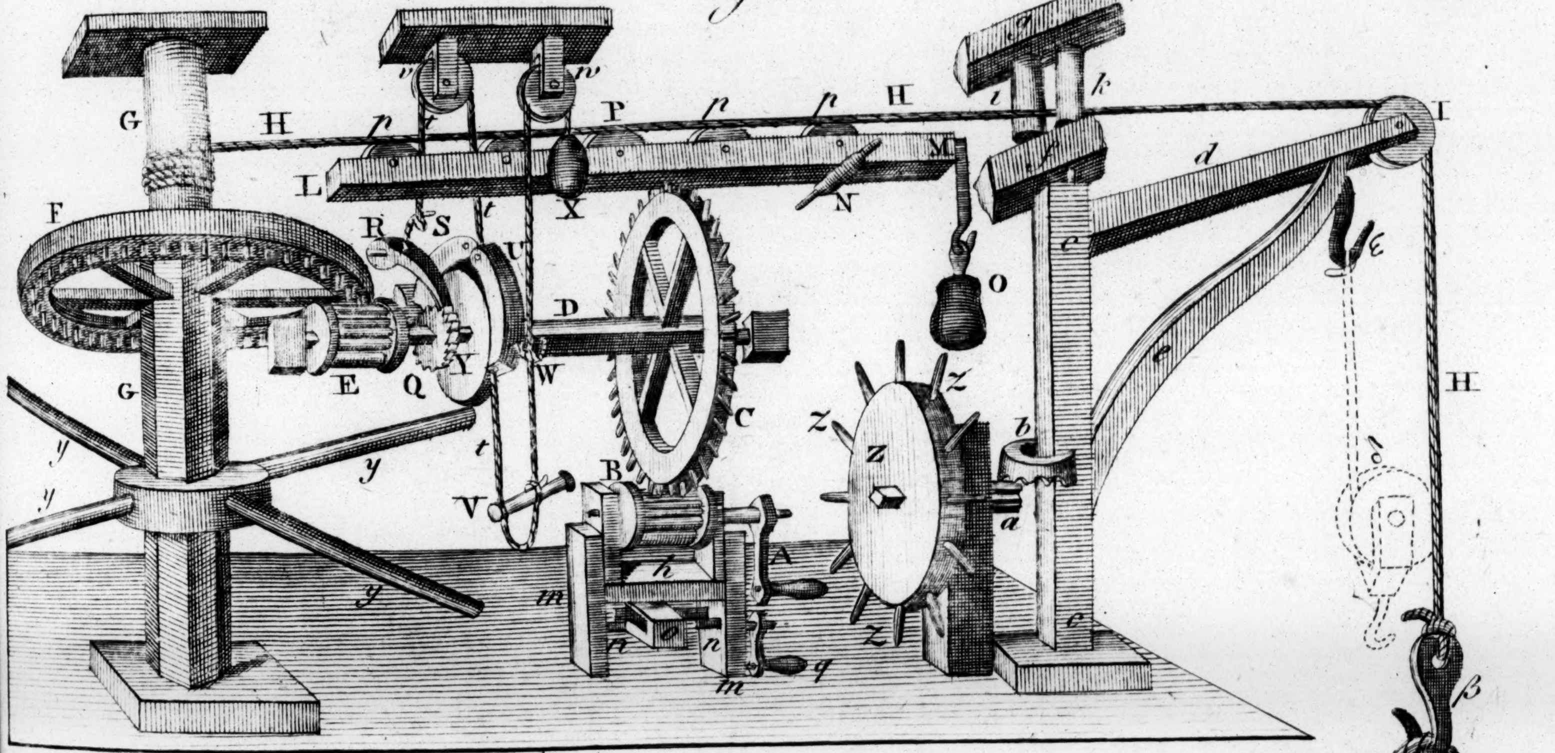

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Fig. 4

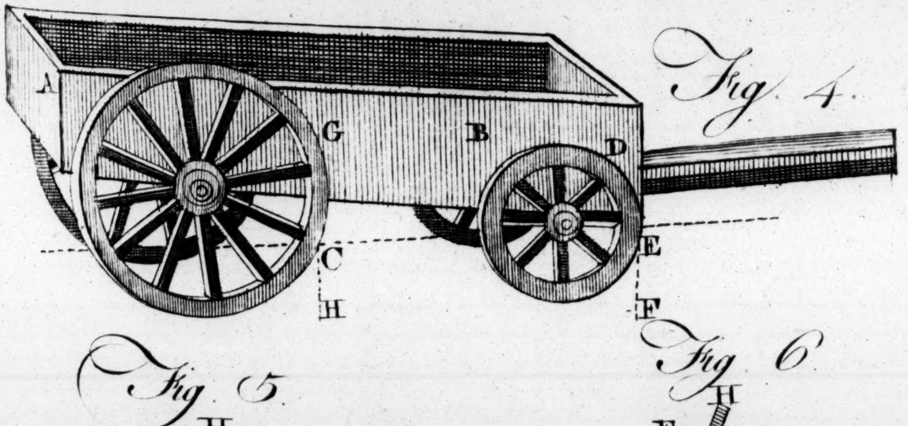

Fig. 5

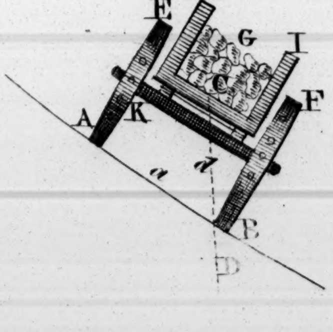

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Fig. 6

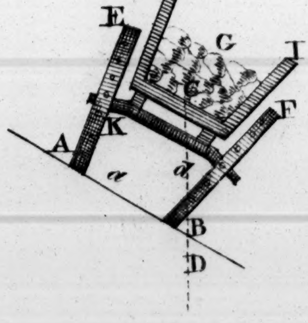

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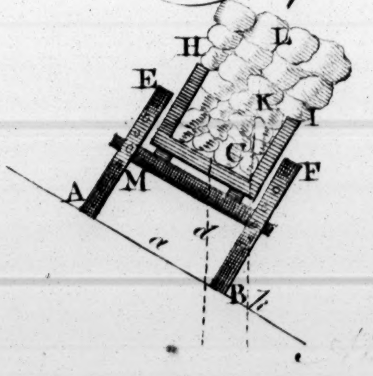
Fig. 7



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Pl. II

3 MA 53

Fig. 1.

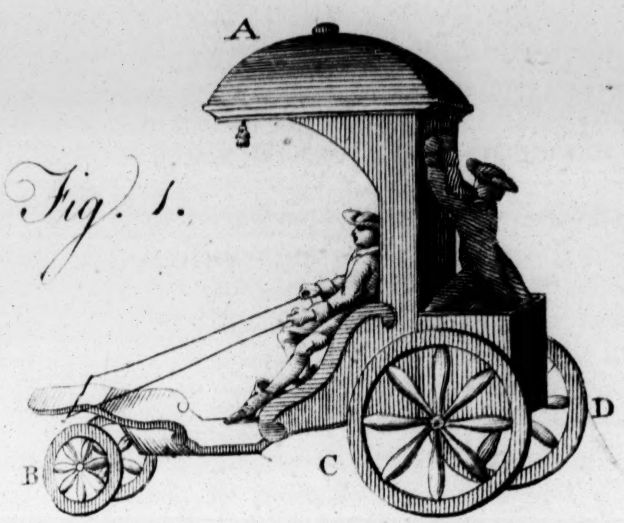

Fig. 3.

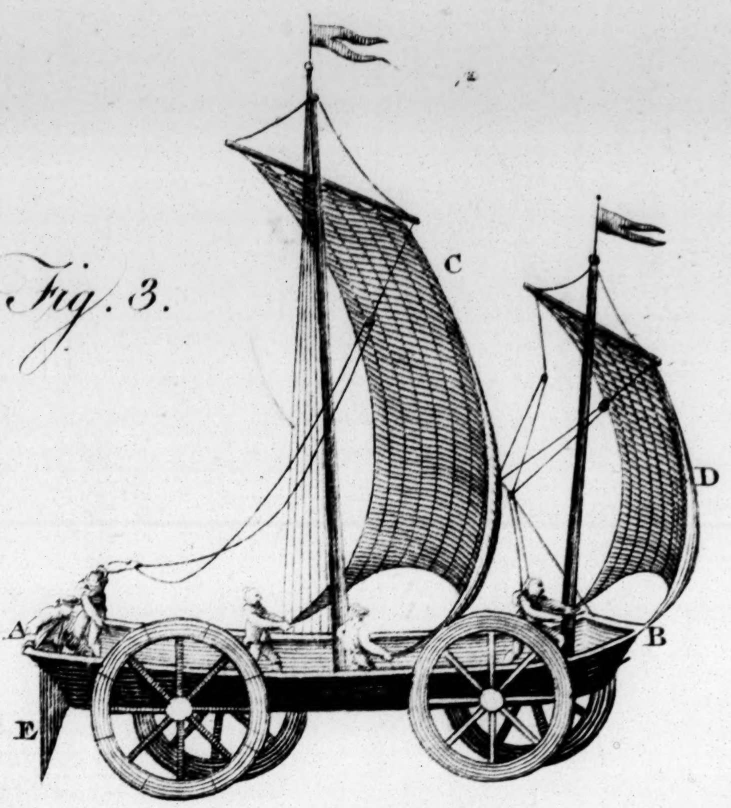

Fig. 2.

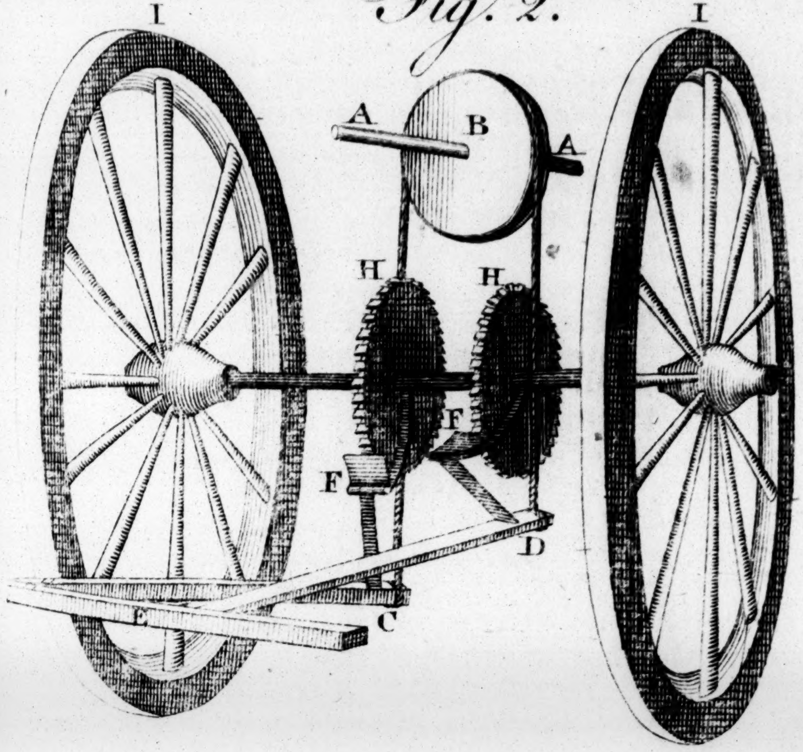
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Fig. 5.

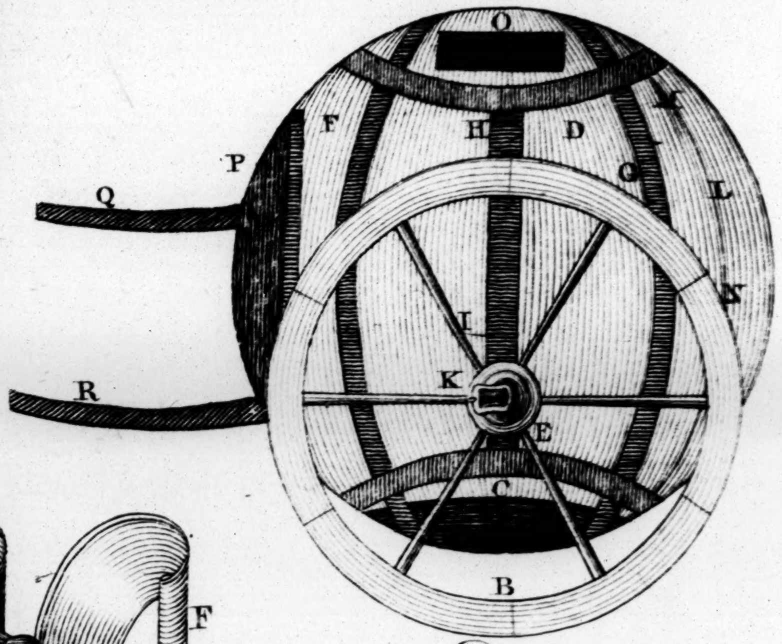
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Fig. 5.

The INHALER.

See that Article and the Index subjoin'd to Medicine

Fig. 4.

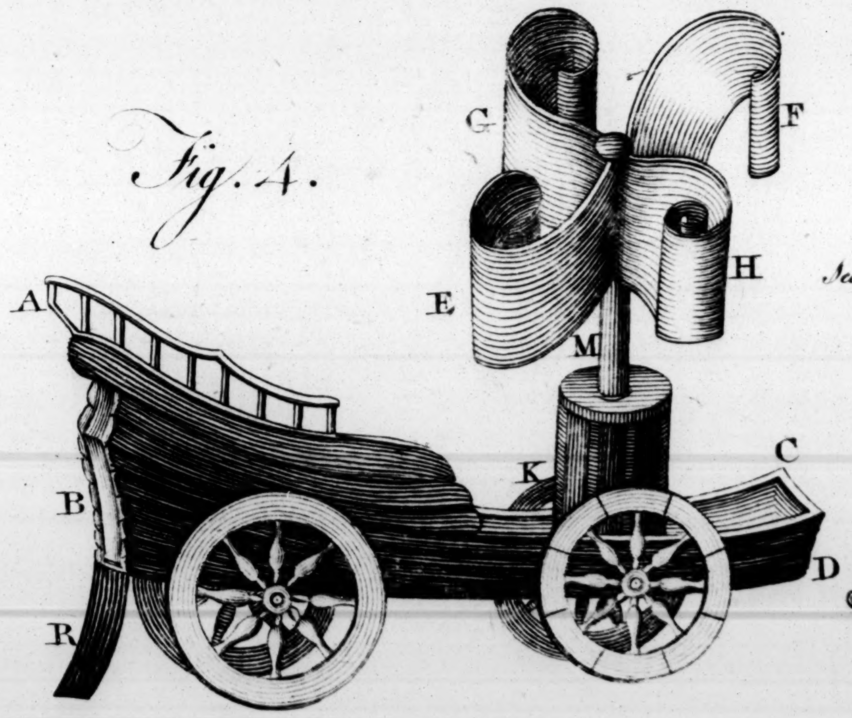
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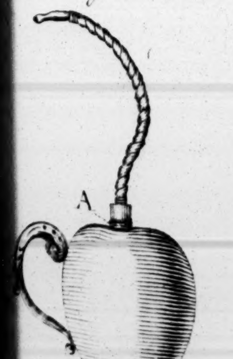
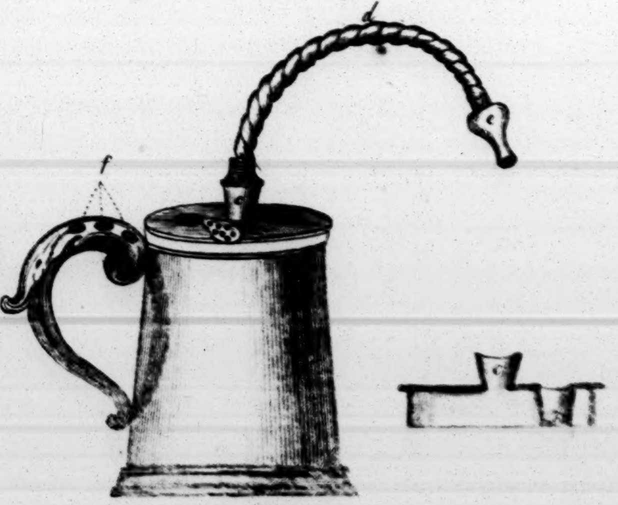
Fig. 6.

The INHALER.

proved by Mr. Aitken





A. Bell Sculp.

3 MA 53

wich, and ſome gentlemen at Briſtol, there is ſcarce an inſtance of any who has uſed this ſafe contrivance.

Chap. VII. *Of the Communication of Motion.*

Before we proceed to explain the laws by which bodies communicate their motion from one to another, it is very neceſſary to make a diſtinction between motion and velocity; which ought to be well obſerved, and is as follows.

By the motion of a body (ſometimes called its *quantity of motion*, ſometimes its *momentum*) is not to be underſtood the velocity only with which the body moves; but the ſum of the motion of all its parts taken together: conſequently the more matter any body contains, the greater will be its motion, though its velocity remains the ſame. Thus, ſuppoſing two bodies, one containing ten times the quantity of matter the other does, moving with equal velocity; the greater body is ſaid to have ten times the motion, or momentum, that the other has: for it is evident, that a tenth part of the larger has as much as the other whole body. In ſhort, that quality in moving bodies which philoſophers underſtand by the term *momentum* or *motion*, is no other than what is vulgarly called their *force*, which every one knows to depend on their quantity of matter, as well as their velocity. This is that power a moving body has to affect another in all actions that ariſe from its motion, and is therefore a fundamental principle in mechanics.

Now, ſince this momentum, or force, depends equally on the quantity of matter a body contains, and on the velocity with which it moves; the method to determine how great it is, is to multiply one by the other. Thus, ſuppoſe two bodies, the firſt having twice the quantity of matter, and thrice the velocity, which the other has; any two numbers, that are to each other as two to one, will expreſs their quantities of matter (it being only their relative velocities and quantities of matter which we need conſider); and any two numbers that are as three to one, their velocities: now multiply the quantity of matter in the firſt, viz. two, by its velocity three, the product is ſix; and multiply the quantity of matter in the ſecond by its velocity, viz. one, by one, the product is one; their relative forces therefore or powers will be as ſix to one, or the moment of one is ſix times greater than that of the other. Again, if their quantities of matter had been as three to eight, and their velocities as two to three, then would their moments have been as ſix to twenty-four, that is, as one to four.

This being rightly apprehended, what follows, concerning the laws of the communication of motion by impulſe and the mechanical powers, will be eaſily underſtood.

The Communication of Motion.

I. In Bodies not Elaſtic.

1 elaſtic s.

Thoſe bodies are ſaid to be not elaſtic, which, when they ſtrike againſt one another, do not rebound, but accompany one another after impact, as if they were joined. This proceeds from their retaining the impreſſion made upon their ſurfaces, after the impreſſing force ceaſes to act. For all rebounding is occaſioned by a certain ſpring in the ſurfaces of bodies, whereby thoſe parts, which receive the impreſſion made by the ſtroke, immediately ſpring back, and throw off the impinging body; now, this being wanting in bodies void of elaſticity, there follows no ſeparation after impact.

When one body impinges on another which is at reſt, or moving with leſs velocity the ſame way, the quantity of the motion or momentum in both bodies taken together remains the ſame after impact as before; for by the third law of nature, the re-action of one being equal to the action of the other, what one gains, the other muſt loſe.

Thus, ſuppoſe two equal bodies, one impinging with 12 degrees of velocity on the other at reſt: the quantities of matter in the bodies being equal, their moments and velocities are the ſame; the ſum in both 12; this remains the ſame after impact, and is equally divided between them; they have therefore ſix a-piece; that is, the impinging body communicates half its velocity, and keeps half.

When two bodies impinge on each other by moving contrary ways, the quantity of motion they retain after impact is equal to the difference of the motion they had before: for by the third law of nature, that which had the leaſt motion, will deſtroy an equal quantity in the other; after which they will move together with the remainder, that is the difference.

Thus for inſtance, let there be two equal bodies moving towards each other, the one with three degrees of velocity, the other with five, the difference of their moments or velocities will be two; this remains the ſame after impact, and is equally divided between them, they have therefore one a-piece: that is, the body which had five degrees of velocity, loſes three, or as much as the other had; communicates half the remainder, and keeps the other half.

From theſe poſitions it is eaſy to reduce a theorem, that ſhall ſhew the velocity of bodies after impact in all caſes whatever. Let there be two bodies A and B, the velocity of the firſt a, of the other b; then the moment of A will be expreſſed by Aa, and of B by Bb; therefore the ſum of both will be $Aa+Bb$; and $Aa-Bb$ will be the difference when they meet. Now theſe quantities remain the ſame after impact; but knowing the quantities of motion and quantities of matter, we have the velocity by dividing the former by the latter: therefore $\frac{Aa+Bb}{A+B}$ or $\frac{Aa-Bb}{A+B}$ will in all caſes expreſs the velocity of the bodies after impact.

II. In Elaſtic Bodies.

72 Elaſtic bodies.

Bodies perfectly elaſtic are ſuch as rebound, after impact, with a force equal to that with which they impinge upon one another; thoſe parts of their ſurfaces, that receive the impreſſion, immediately ſpringing back, and throwing off the impinging bodies with a force equal to that of impact.

From hence it follows, that the action of elaſtic bodies on each other (that of the ſpring being equal to that of the ſtroke) is twice as much as the ſame in bodies void of elaſticity. Therefore, when elaſtic bodies impinge on each other, the one loſes and the other gains twice as much motion as if they had not been elaſtic; we have therefore an eaſy way of determining the change of motion in elaſtic bodies, knowing firſt what it would have been in the ſame circumſtances, had the bodies been void of elaſticity.

Thus, if there be two equal and elaſtic bodies, the one in motion with 12 degrees of velocity impinging on the other at reſt, the impinging body will communicate twice as much velocity as if it had not been elaſtic, that is, 12 degrees, or all it had; conſequently it will be at reſt, and the other will move on with the whole velocity of the former.

It ſometimes happens, that in bodies not elaſtic, the one loſes more than half its velocity, in which caſe, ſuppoſing them elaſtic, it loſes more than all; that is, the exceſs of what it loſes, above what it has, is negative, or in a contrary direction. Thus, ſuppoſe the circumſtances of impact ſuch, that a body, which has but 12 degrees of velocity, loſes 16: the overplus four is to be taken the contrary way; that is, the body will rebound with four degrees of velocity. *v. g.* Let it be required to determine the velocity of a body after impact againſt an immoveable object. Let us firſt ſuppoſe the object and body both void of elaſticity: it is evident the impinging body would be ſtopped or loſe all its motion, and communicate none; if they are elaſtic, it muſt loſe twice as much, and conſequently will rebound with a force equal to that of the ſtroke.

It is ſufficient if only one of the bodies is elaſtic, provided the other be infinitely hard; for then the impreſſion in the elaſtic body will be double of what it would have been had they both been equally elaſtic: and conſequently the force with which they rebound, will be the ſame as if the impreſſion had been equally divided between the two bodies.

There are no bodies, that we know of, either perfectly elaſtic, or infinitely hard: the nearer therefore any bodies approach to perfection of elaſticity, ſo much the nearer do the laws, which they obſerve in the mutual communication of their motion, approach to thoſe we have laid down.

Sir Iſaac Newton made trials with ſeveral bodies, and found that the ſame degree of elaſticity always appeared in the ſame bodies, with whatever force they were ſtruck, ſo that the elaſtic power, in all the bodies he made trial upon, exerted itſelf in one conſtant proportion to the compreſſing force. He found the celerity with which balls of wool, bound up very compact, receded from each other, to bear nearly the proportion of five to nine to the celerity wherewith they met; and in ſteel, he found nearly the ſame proportion: in cork the elaſticity was ſomething leſs, but in glaſs much greater; for the celerity, with which balls of that material ſeparated after percuſſion, he found to bear the proportion of 15 to 16 to the celerity wherewith they met.

We have hitherto ſuppoſed the direction, in which bodies impinge upon one another, to be perpendicular to their ſurfaces: when it is not ſo, the force of impact will be leſs, by how much the more that direction varies from the perpendicular; for it is manifeſt, that a direct impulſe is the greateſt of all others that can be given with the ſame degree of velocity.

The force of oblique percuſſion is to that of direct, as the ſine of the angle of incidence to the radius.

Plate CLXVII. fig. 10.

Dem. Let there be a plane, as AD, againſt which let a body impinge in the point D in the direction BD: which line may be ſuppoſed to expreſs the force of direct impulſe, and may be reſolved into two others BC and BA; the one parallel, the other perpendicular to the plane; but that force which is exerted in a direction parallel to the plane can no way affect it: the ſtroke therefore ariſes wholly from the other force expreſſed by the line BA; but this is to the line BD, as the ſine of the angle of incidence ADB to the radius; from whence the propoſition is clear.

If the ſurface of the body to be ſtruck is a curve, then let AD be made a tangent to D the point of incidence, and the demonſtration will be the ſame.

This is the caſe when bodies impel one another by acting upon their ſurfaces; but in forces, where the ſurfaces of bodies are not concerned, as in attraction, &c. we muſt not conſider the relation which the direction of the force has to the ſurface of the body to be moved, but to the direction in which it is to be moved by that force. Here the force of action will be leſs, by how much the more theſe two directions vary from each other.

The force of oblique action is to that of direct, as the co-ſine of the angle comprehended between the direction of the force, and that wherein a body is to be moved thereby, to the radius.

Dem. Let FD repreſent a force acting upon a body as D, and impelling it towards E; but let DM be the only way in which it is poſſible for the body to move: the force FD may be reſolved into two others FG and FH, or which is equal to GD; but it is evident that only the force GD impels it towards M. Now, FD being the radius, GD is the co-ſine of the angle FDG comprehended between the two directions FE and GM; from whence the propoſition is clear. Fig. 11.

The meaning in both caſes will be underſtood from the inſtance of a ſhip under ſail. The force by which the wind acts upon the ſail, will be leſs, by how much the more the direction of the wind varies from one that is perpendicular to the ſurface of the ſail: but the force of the ſail, to move the ſhip forward, will be leſs, by how much the more the direction of the ſhip's courſe varies from that in which ſhe is impelled by the ſail.

To this we may add the following propoſition relating to oblique forces, viz. that if a body is drawn or impelled three different ways at the ſame time by as many forces acting in different directions; and if the quantity of thoſe forces is ſuch, that the body is kept in its place by them: then will the forces be to each other, as the ſeveral ſides of a triangle drawn reſpectively parallel to the directions in which they act.

Dem. Let the lines AB, AD, AE, repreſent the three forces acting upon the body A in thoſe directions, and by that means keeping it at reſt in the point A. Then the forces EA and DA will be equivalent to BA, otherwiſe the body would be put into motion by them. But theſe forces are alſo equivalent to AC, conſequently AC may be made uſe of to expreſs the force AB; and EC, which is parallel and equal to AD, may expreſs the force AD, while AE expreſſes its own: but ACE is a triangle whoſe ſides are all parallel to the given directions; therefore the ſides of this triangle will expreſs the relation of the forces by which the body is kept at reſt. Q. E. D. Fig. 12.

CHAP. VIII. *Demonſtration of the Effects of the Mechanical Powers.*

THOUGH the effects of the powers of mechaniſm are apparent to every eye, yet, to give a mathematical demonſtration why theſe effects muſt always take place, is by no means an eaſy matter. The moſt elegant and convincing demonſtration of this kind is that by Dr Hamilton, profeſſor of philoſophy in the univerſity of Dublin.—' The moſt noted theorem in mechanics (ſays he) is this, " When two heavy bodies counterpoiſe each other by means of any machine, and are then made to move together, the quantities of motion with which one deſcends and the other aſcends perpendicularly will be equal." An æquilibrium always accompanying this equality of motions, bears ſuch a reſemblance to the caſe wherein two moving bodies ſtop each other when they meet together with equal quantities of motion, that many writers have thought that the cauſe of an æquilibrium in the ſeveral machines might be immediately aſſigned, by ſaying, that ſince one body always loſes as much motion as it communicates to another, two heavy bodies counteracting each other muſt continue at reſt, when they are ſo circumſtanced that one cannot deſcend without cauſing the other to aſcend at the ſame time, and with the ſame quantity of motion. For then, ſhould one of them begin to deſcend, it muſt inſtantly loſe its whole motion by communicating it to the other. This argument, however plauſible it may ſeem, I think is by no means ſatisfactory; for when we ſay that one body communicates its motion to another, we muſt neceſſarily ſuppoſe the motion to exiſt firſt in the one and then in the other; but in the preſent caſe, where the two bodies are ſo connected that one cannot poſſibly begin to move before the other, the deſcending body cannot be ſaid to communicate its motion to the other, and thereby make it aſcend: But whatever we ſhould ſuppoſe cauſes one body to deſcend, muſt be alſo the immediate cauſe of the other's aſcending; ſince, from the connection of the bodies, it muſt act upon them both together as if they were really but one. And therefore, without contradicting the laws of motion, I might ſuppoſe the ſuperior weight of the heavier body, which is in itſelf more than able to ſuſtain the lighter, would overcome the lighter, and cauſe it to aſcend with the ſame quantity of motion with which the heavier deſcends; eſpecially as both their motions, taken together, may be leſs than what the difference of the weights, which is here ſuppoſed to be the moving force, would be able to produce in a body falling freely.

' However, as the theorem above-mentioned is a very elegant one, it ought certainly to be taken notice of in every treatiſe of mechanics, and may ſerve as a very good index of an æquilibrium in all machines: but I do not think that we can from thence, or from any one general principle, explain the nature and effects of all the mechanic powers in a ſatisfactory manner; becauſe ſome of theſe machines differ very much from others in their ſtructures, and the true reaſon of the efficacy of each of them is beſt derived from its particular ſtructure.

' The ſimple mechanic powers are uſually reckoned ſix; the lever, axle and wheel, pulley, wedge, inclined plane, and ſcrew. I ſhall conſider theſe machines ſeparately, and explain the nature and property of each of them, by ſhewing from its ſtructure what weight it will enable any given force to ſuſtain.

' The lever is conſidered as an inflexible line, void of weight, and moveable about a fixed point called its *fulcrum* or prop. The property of the lever, expreſſed in the moſt general terms, is this: " When two weights, or any two forces, act againſt each other on the arms of a lever, and are *in æquilibrio*, they will be to each other inverſely as the perpendicular or ſhorteſt diſtances of their lines of direction from the fulcrum."

' This propoſition contains two caſes; for the directions of the forces may either meet in a point, or be parallel to each other. Moſt writers begin their demonſtration of this propoſition with the ſecond caſe, which ſeems to be the ſimpleſt, and from which the other may be deduced by the reſolution of forces. Archimedes, in his demonſtration, ſets out with a ſuppoſition, the truth of which may reaſonably be doubted: for he ſuppoſes, that if a number of equal weights be ſuſpended from the arm of a lever, and at points equidiſtant from each other, whether all theſe points be at the ſame ſide of the fulcrum, or ſome of them on the oppoſite ſide, theſe weights will have the ſame force to turn the lever as they would have were they all united and ſuſpended from a point which lies in the middle between all the points of ſuſpenſion, and may be conſidered as the common centre of gravity of all the ſeparate weights. Mr Huygens, in his *Miſcellaneous obſervations on mechanics*, ſays, that ſome mathematicians have endeavoured, by altering the form of this demonſtration, to render its defects leſs ſenſible; though without ſucceſs. He therefore propoſed another proof, which is extremely tedious and prolix, and alſo depends on a poſtulatum, that, I think, ought not to be granted on this occaſion; it is this: " When two equal bodies are placed on the arms of a lever, that which is furtheſt from the fulcrum will prevail and raiſe the other up." Now, this is taking it for granted, in other words, that a ſmall weight placed further from the fulcrum, will ſuſtain or raiſe a greater one. The cauſe and reaſon of which fact muſt be derived from the demonſtration that follows, and therefore this demonſtration ought not to be founded on the ſuppoſed ſelf-evidence of what is partly the thing to be proved.

' Sir Iſaac Newton's demonſtration of this propoſition is indeed very conciſe; but it depends on this ſuppoſition, that when from the fulcrum of a lever ſeveral arms or radii iſſue out in different directions, all lying in the ſame vertical plane, a given weight will have the ſame power to turn the lever from which-ever arm it hangs, provided the diſtance of its line of direction from the fulcrum remains the ſame. Now it muſt appear difficult to admit this ſuppoſition, when we conſider that the weight can exert its whole force to turn the lever only on that arm which is the ſhorteſt, and is parallel to the horizon, and on which it acts perpendicularly; and that the forces which it exerts, or with which it acts perpendicularly, on any one of the oblique arms, muſt be inverſely as the length of one in motion with 12 degrees of velocity impinging on the other at reſt, the impinging body will communicate twice as much velocity as if it had not been elaſtic, that is, 12 degrees, or all it had; conſequently it will be at reſt, and the other will move on with the whole velocity of the former.

It ſometimes happens, that in bodies not elaſtic, the one loſes more than half its velocity, in which caſe, ſuppoſing them elaſtic, it loſes more than all; that is, the exceſs of what it loſes, above what it has, is negative, or in a contrary direction. Thus, ſuppoſe the circumſtances of impact ſuch, that a body, which has but 12 degrees of velocity, loſes 16: the overplus four is to be taken the contrary way; that is, the body will rebound with four degrees of velocity. *v. g.* Let it be required to determine the velocity of a body after impact againſt an immoveable object. Let us firſt ſuppoſe the object and body both void of elaſticity: it is evident the impinging body would be ſtopped or loſe all its motion, and communicate none; if they are elaſtic, it muſt loſe twice as much, and conſequently will rebound with a force equal to that of the ſtroke.

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We have hitherto ſuppoſed the direction, in which bodies impinge upon one another, to be perpendicular to their ſurfaces: when it is not ſo, the force of impact will be leſs, by how much the more that direction varies from the perpendicular; for it is manifeſt, that a direct impulſe is the greateſt of all others that can be given with the ſame degree of velocity.

The force of oblique percuſſion is to that of direct, as the ſine of the angle of incidence to the radius.

Plate CLXVII. fig. 10. *Dem.* Let there be a plane, as AD, againſt which let a body impinge in the point D in the direction BD: which line may be ſuppoſed to expreſs the force of direct impulſe, and may be reſolved into two others BC and BA; the one parallel, the other perpendicular to the plane; but that force which is exerted in a direction parallel to the plane can no way affect it: the ſtroke therefore ariſes wholly from the other force expreſſed by the line BA; but this is to the line BD, as the ſine of the angle of incidence ADB to the radius; from whence the propoſition is clear.

If the ſurface of the body to be ſtruck is a curve, then let AD be made a tangent to D the point of incidence, and the demonſtration will be the ſame.

This is the caſe when bodies impel one another by acting upon their ſurfaces; but in forces, where the ſurfaces of bodies are not concerned, as in attraction, &c. we muſt not conſider the relation which the direction of the force has to the ſurface of the body to be moved, but to the direction in which it is to be moved by that force. Here the force of action will be leſs, by how much the more theſe two directions vary from each other.

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Dem. Let FD repreſent a force acting upon a body as D, and impelling it towards E; but let DM be the only way in which it is poſſible for the body to move: the force FD may be reſolved into two others FG and FH, or which is equal to GD; but it is evident that only the force GD impels it towards M. Now, FD being the radius, GD is the co-ſine of the angle FDG comprehended between the two directions FE and GM; from whence the propoſition is clear. Fig. 11.

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Dem. Let the lines AB, AD, AE, repreſent the three forces acting upon the body A in thoſe directions, and by that means keeping it at reſt in the point A. Then the forces EA and DA will be equivalent to BA, otherwiſe the body would be put into motion by them. But theſe forces are alſo equivalent to AC, conſequently AC may be made uſe of to expreſs the force AB; and EC, which is parallel and equal to AD, may expreſs the force AD, while AE expreſſes its own: but ACE is a triangle whoſe ſides are all parallel to the given directions; therefore the ſides of this triangle will expreſs the relation of the forces by which the body is kept at reſt. Q. E. D. Fig. 12.

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'However, as the theorem above-mentioned is a very elegant one, it ought certainly to be taken notice of in every treatiſe of mechanics, and may ſerve as a very good index of an æquilibrium in all machines: but I do not think that we can from thence, or from any one general principle, explain the nature and effects of all the mechanic powers in a ſatisfactory manner; becauſe ſome of theſe machines differ very much from others in their ſtructures, and the true reaſon of the efficacy of each of them is beſt derived from its particular ſtructure.

'The ſimple mechanic powers are uſually reckoned ſix; the lever, axle and wheel, pulley, wedge, inclined plane, and ſcrew. I ſhall conſider theſe machines ſeparately, and explain the nature and property of each of them, by ſhewing from its ſtructure what weight it will enable any given force to ſuſtain.

'The lever is conſidered as an inflexible line, void of weight, and moveable about a fixed point called its *fulcrum* or prop. The property of the lever, expreſſed in the moſt general terms, is this: "When two weights, or any two forces, act againſt each other on the arms of a lever, and are *in æquilibrio*, they will be to each other inverſely as the perpendicular or ſhorteſt diſtances of their lines of direction from the fulcrum."

'This propoſition contains two caſes; for the directions of the forces may either meet in a point, or be parallel to each other. Moſt writers begin their demonſtration of this propoſition with the ſecond caſe, which ſeems to be the ſimpleſt, and from which the other may be deduced by the reſolution of forces. Archimedes, in his demonſtration, ſets out with a ſuppoſition, the truth of which may reaſonably be doubted: for he ſuppoſes, that if a number of equal weights be ſuſpended from the arm of a lever, and at points equidiſtant from each other, whether all theſe points be at the ſame ſide of the fulcrum, or ſome of them on the oppoſite ſide, theſe weights will have the ſame force to turn the lever as they would have were they all united and ſuſpended from a point which lies in the middle between all the points of ſuſpenſion, and may be conſidered as the common centre of gravity of all the ſeparate weights. Mr Huygens, in his *Miſcellaneous obſervations on mechanics*, ſays, that ſome mathematicians have endeavoured, by altering the form of this demonſtration, to render its defects leſs ſenſible; though without ſucceſs. He therefore propoſed another proof, which is extremely tedious and prolix, and alſo depends on a poſtulatum, that, I think, ought not to be granted on this occaſion; it is this: "When two equal bodies are placed on the arms of a lever, that which is furtheſt from the fulcrum will prevail and raiſe the other up." Now, this is taking it for granted, in other words, that a ſmall weight placed further from the fulcrum, will ſuſtain or raiſe a greater one. The cauſe and reaſon of which fact muſt be derived from the demonſtration that follows, and therefore this demonſtration ought not to be founded on the ſuppoſed ſelf-evidence of what is partly the thing to be proved.

'Sir Iſaac Newton's demonſtration of this propoſition is indeed very conciſe; but it depends on this ſuppoſition, that when from the fulcrum of a lever ſeveral arms or radii iſſue out in different directions, all lying in the ſame vertical plane, a given weight will have the ſame power to turn the lever from which-ever arm it hangs, provided the diſtance of its line of direction from the fulcrum remains the ſame. Now it muſt appear difficult to admit this ſuppoſition, when we conſider that the weight can exert its whole force to turn the lever only on that arm which is the ſhorteſt, and is parallel to the horizon, and on which it acts perpendicularly; and that the forces which it exerts, or with which it acts perpendicularly, on any one of the oblique arms, muſt be inverſely as the length of that arm, which is evident from the reſolution of forces.

‘ Mr Maclaurin, in his *View of Newton's philoſophy*, after giving us the methods by which Archimedes and Newton prove the property of the lever, propoſes one of his own, which, he ſays, appears to be the moſt natural one for this purpoſe. From equal bodies, ſuſtaining each other at equal diſtances from the fulcrum, he ſhews us how to infer that a body of one pound (for inſtance) will ſuſtain another of two pounds at half its diſtance from the fulcrum; and from thence that it will ſuſtain one of three pounds at a third part of its diſtance from the fulcrum: and going on thus, he deduces, by a kind of induction, what the proportion is in general between two bodies that ſuſtain each other on the arms of a lever. But this argument, were it otherwiſe ſatisfactory, yet as it cannot be applied when the arms of the lever are incommenſurable, it cannot conclude generally, and therefore is imperfect.

‘ There are ſome writers on mechanics, who, from the compoſition of forces, demonſtrate that caſe of the general propoſition relating to the lever, in which the directions of the forces are oblique to each other, and meet in a point: but I do not find that they have had any other way of proving the ſecond caſe, in which the directions of the forces are parallel, but by conſidering theſe directions as making an angle with each other, though an infinitely ſmall one, or as meeting at an infinite diſtance; which way of reaſoning is not to be admitted in ſubjects of this kind, where the proof ſhould always ſhew us, directly from the laws of motion, why the concluſion muſt be true, in ſuch manner that we might ſee clearly the force of every ſtep from the firſt principles down to the concluſion, which we are prevented from doing when any ſuch arbitrary and inconſiſtent ſuppoſition is introduced.

‘ From thus conſidering the various proofs that have been given of this fundamental propoſition in mechanics, we may ſee the reaſon why many ſubſequent writers have appeared diſſatisfied with the former demonſtrations, and have looked for new ones: I ſhall now propoſe two methods of demonſtrating it, merely from the compoſition and reſolution of forces. The propoſition may be expreſſed as follows.

“ When three forces act upon an inflexible line,
“ whether ſtraight or crooked, and keep it *in æqui-*
“ *librio*, any two of them will be to each other in-
“ verſely as the perpendicular diſtances of their lines
“ of direction from that point to which the third force
“ is applied.”

Plate CLXVIII. Fig 1.

‘ Let the three forces E, G, F, (fig. 2.) act upon three points A, B, D, in an inflexible line; and firſt let the directions of the forces E and F (which act on the ſame ſide of the line) meet in the point C. Then it is evident that the force, which is compounded of theſe two, muſt act upon the line A B D in the direction of a right line that paſſeth through the point C; conſequently the force G, which ſuſtains this compounded force, muſt be equal thereunto, and muſt act in a contrary direction; therefore the force G muſt act in the direction of the line C B. From the point B draw B H and B K perpendicular to the directions of the forces E and F, and draw B M and B N parallel to theſe directions, forming the parallelogram B M C N; then, ſince theſe three forces are *in æquilibrio*, they muſt be to each other reſpectively as the ſides and diagonal of this parallelogram to which their directions are parallel; therefore E is to F as C M to C N or M B, that is, (becauſe the ſides of a triangle are as the ſines of the oppoſite angles) as the ſine of the angle M B C, or its alternate one B C N, to the ſine of the angle B C M; but making C B the radius, B K is the ſine of the former angle, and B H of the latter; therefore E is to F as B K to B H; ſo that the forces E and F are to each other inverſely as the perpendicular diſtances of their lines of direction from the point B, on which the third force G acts. Now to compare the forces F and G together: From the point A, on which the third force acts, draw A B and A L perpendicular to the directions of the forces G and F; then, as was ſaid before, F is to G as M B is to C B; but M B is to C B as A B to A L; becauſe, making C A the radius, A B is the ſine of the angle M C B, and A L is the ſine of the angle M C N, or C M B its ſupplement, to two right ones; therefore the forces F and G are to each other inverſely as the perpendicular diſtances of their lines of direction from the point A, on which the third force E acts; and thus the firſt caſe of the propoſition is proved, in which the forces act againſt each other in oblique directions.

‘ We muſt now conſider what parts of the forces E and F act againſt the force G in directions parallel to G C; for it is ſuch parts only that really oppoſe the force G, and keep it *in æquilibrio*; and from thence we ſhall ſee what proportion two forces muſt have to each other when they are *in æquilibrio*, and act in parallel directions. Let the three forces act upon the points A, B, and D, (fig. 2.); let them be *in æquilibrio*, and their lines of direction meet in the point C, as in the preceding caſe: then if the points A, B, and D, are not in a right line, draw the line A D meeting B C in P, and from P draw P N and P M parallel to the directions of the forces E and F; through the points A and D draw lines parallel to B C; and through B draw a perpendicular to theſe lines, meeting them in H and K; from the point M draw M O parallel to A D, and meeting B C in O. Now the three forces E, G, and F, that are *in æquilibrio*, will be to each other reſpectively as the ſides of the triangle C M P, as in the preceding caſe; but the force E, which is denoted by the line M C, may be reſolved into two forces acting in the directions M O and O C, the former of theſe only urges the point A towards D, and the latter acts in direct oppoſition to the force G; in like manner the force F, which is denoted by the line P M, may be reſolved into two forces acting in the directions O M and P O, the former of which only urges the point D towards A, and the latter acts in direct oppoſition to the force G; now it is evident that the force G, which is denoted by the line P C, is ſuſtained only by thoſe parts of the forces E and F which act againſt it, in directions parallel to B C, and are denoted by the lines O C and P O, which, taken together, are equal to P C; for the other parts of the forces E and F which are denoted by M O, are loſt, being equal, and contrary to each other: if, therefore, inſtead of the forces F and E, we ſuppoſe two other forces, R and L, to act on the points

Fig. 2.

D

D and A, in directions parallel to BC, and to keep the force G *in æquilibrio*, it follows, from what has been proved, that R and L taken together will be equal to G, and that theſe three forces will be to each other reſpectively as the lines PO, OC, and PC; therefore R will be to L as (PO to OC, that is, as AM to MC, or as AP to PD, or) HB to BK, conſequently the forces R and L are to each other inverſely as the perpendicular diſtances of their lines of direction from the point B, to which the third force is applied. Now to compare the forces R and G together; ſince the forces R and L may be denoted by BH and BK, and are both together equal to G, that force will be denoted by the whole line KH, and therefore R will be to G as BH to KH; ſo that theſe forces are alſo to each other inverſely as the perpendicular diſtances of their lines of direction from the line of direction of the third force L; and thus the ſecond caſe of the propoſition is proved, in which the forces act againſt each other in parallel directions. If the point in the inflexible line, to which one of the forces is applied, ſhould become a fixed point, or *fulcrum*, round which the line may turn, it is evident that the other two forces will continue *in æquilibrio*, as they were before; and therefore the property of the lever, in all caſes, is manifeſtly proved by this propoſition.

‘ The centre of gravity of a body is ſaid to be that point which being ſuſtained, or prevented from deſcending, the body will continue at reſt. From hence it follows, that when a body hangs freely from a ſingle point and continues at reſt, its centre of gravity will lie perpendicularly under the point of ſuſpenſion; for in that ſituation only it will be ſuſtained, and can deſcend no lower.

‘ From this property, which agrees likewiſe to the common centre of gravity of two bodies joined together by an inflexible right line, and which may then be conſidered as one, I ſhall ſhew that their centre of gravity is a point in the line that joins them together, ſo ſituated that the diſtances of the two bodies from it are to each other inverſely as their weights. This theorem concerning the poſition of the common centre of gravity of two bodies, which is a very noted one in mechanics, I have never ſeen demonſtrated otherwiſe than by inferring it from the general property of the lever: but I think the method I ſhall now propoſe of deducing it directly from the definition of the centre of gravity, is the moſt conciſe as well as the moſt natural, and beſides it will afford us a very eaſy way of demonſtrating the property of the lever.

‘ Let the two bodies A and B be joined by an inflexible right line paſſing through their centres of gravity, and let them be ſuſpended from the fixed point or pin at P, by the threads AP and BP, ſo that they may hang freely in ſuch a poſition as their joint gravity will give them. When theſe bodies continue at reſt, their common centre of gravity muſt lie directly under the point of ſuſpenſion, or in the perpendicular line PL, conſequently it muſt be at the point C, the interſection of the lines PL and AB; the poſition of which point, in the line AB, will be determined by finding out the proportion between the ſegments CA and CB. If the inflexible line was not interpoſed between theſe bodies, they would move till their threads coincided with the perpendicular line PL; ſince therefore they are kept aſunder by this line, they muſt urge it with certain forces in oppoſite directions; and theſe urging forces muſt be equal, ſince the line on which they act continues at reſt: and therefore the force with which each body urges the other in the direction of this line, may be denoted by the ſame letter U, and we may denote the weights of the two bodies reſpectively by the letters A and B. Now the body A is acted upon by three forces, *viz.* by its weight A in the direction PC, by the force U with which the other body urges it in the direction CA, and by the reaction of the pin in the direction AP; and ſince theſe three forces are *in æquilibrio*, and keep the body at reſt, they are to each other reſpectively as the ſides of the triangle PCA; therefore A is to U, as PC to CA. In like manner the body B is urged by three forces, *viz.* its weight B in the direction PC, the urging force U in the direction CB, and the reaction of the pin in the direction BP, which forces are to each other as the ſides of the triangle PCB; therefore U is to B, as CB to PC; and therefore (*ex æquo perturbate*) A is to B, as CB to CA; conſequently the weights of the bodies A and B are to each other inverſely as their diſtances from the point C, which lies directly under the point of ſuſpenſion, and is therefore their common centre of gravity.

‘ When two bodies are connected by an inflexible line, and this line is ſupported by a prop ſo that their centre of gravity cannot deſcend, the bodies muſt continue to reſt, and will be *in æquilibrio*. Therefore it is eaſy to ſee how, from the theorem now demonſtrated, we may prove the property of the lever in that caſe where the directions of the forces are parallel; and from thence the other caſe, in which the directions are oblique to each other, may be deduced by the reſolution of forces, as is uſually done. And this is the ſecond method by which I ſaid the general property of the lever might be ſtrictly demonſtrated.

‘ The lever is the moſt ſimple of all the mechanic powers; and to it may be reduced the balance and the *axis in peritrochio*, or axle and wheel: Though I do not conſider the balance as a diſtinct mechanic power, becauſe it is evidently no other than a lever fitted for the particular purpoſe of comparing the weights of bodies, and does not ſerve for raiſing great weights or overcoming reſiſtances as the other machines do.

When a weight is to be raiſed by means of an axle and wheel, it is faſtened to a cord that goes round the axle, and the power which is to raiſe it is hung to a cord that goes round the wheel. If then the power be to the weight as the radius of the axle to the radius of the wheel, it will juſt ſupport that weight, as will eaſily appear from what was proved of the lever. For the axle and wheel may be conſidered as a lever, whoſe *fulcrum* is a line paſſing through the centre of the wheel and middle of the axle, and whoſe long and ſhort arms are the radii of the wheel and axle which are parallel to the horizon, and from whoſe extremities the cords hang perpendicularly. And thus an axle and wheel may be looked upon as a kind of perpetual lever, on whoſe arms the power and weight always act perpendicularly, though the lever turns round its *fulcrum*. And in like manner, when wheels and axles move each other by means of teeth on their peripheries, ſuch a machine is really a perpetual compound lever: and, by conſidering it as ſuch, we may compute the proportion of any power to the weight it is able to ſuſtain by the help of ſuch an engine. And ſince the radii of two contiguous wheels, whoſe teeth are applied to each other, are as the number of teeth in each, or inverſely as the number of revolutions which they make in the ſame time; we may, in the computation, inſtead of the ratio of theſe radii, put the ratio of the number of the teeth on each wheel, or the inverſe ratio of the number of revolutions they make in the ſame time.

‘ Some writers have thought the nature and effects of the pully might be beſt explained by conſidering a fixed pully as a lever of the firſt, and a moveable pully as one of the ſecond kind. But the pully cannot properly be conſidered as a lever of any kind; for when any power ſuſtains a weight by means of a ſyſtem of pullies, that power will ſuſtain the ſame weight if the pullies be removed, and the ropes be brought over the axles on which the pullies turned. And in this caſe I believe no one would ſay that theſe axles could be conſidered as levers. If the weight was to be raiſed up, there would in this caſe be a very great reſiſtance from the friction of the ropes on the axles; and it is merely to avoid this reſiſtance that pullies are uſed, which move round the axles with but little friction. I think the beſt and moſt natural method of explaining the effects of the pulley (that is, of computing the proportion of any power to the weight it can ſuſtain by means of any ſyſtem of pullies), is by conſidering that every moveable pully hangs by two ropes equally ſtretched, which muſt bear equal parts of the weight; and therefore when one and the ſame rope goes round ſeveral fixed and moveable pullies, ſince all its parts on each ſide of the pullies are equally ſtretched, the whole weight muſt be divided equally amongſt all the ropes by which the moveable pullies hang. And conſequently if the power which acts on one rope be equal to the weight divided by the number of ropes, that power muſt ſuſtain the weight.

‘ Upon this principle the proportion of the power to the weight it ſuſtains by means of any ſyſtem of pullies, may be computed in a manner ſo eaſy and natural, as muſt be obvious to every common capacity.

‘ The proportion which any power bears to the reſiſting force it is able to ſuſtain by means of a wedge, has been laid down differently by different authors as they happened to conſider it in particular caſes. Without examining their ſeveral opinions, I ſhall endeavour to expreſs this proportion in one general propoſition, which may extend to the ſeveral caſes in which the wedge is applied.

Plate CLXVIII. fig. 4.

‘ Let the æquicrural triangle ABC repreſent a wedge, whoſe baſe or back is AC, and ſides are the lines AB and CB, and whoſe height is the line BP, which biſects the vertical angle ABC, and alſo the baſe perpendicularly in P. When a power is applied to the wedge in order to overcome or remove any reſiſting forces, it acts perpendicularly on the back of the wedge, and the reſiſting forces act on its ſides, and they are always ſuppoſed to act in directions that make equal angles with the ſides. When the reſiſting forces and the power that acts on the wedge are *in æquilibrio*, the former will be to the latter, as the height of the wedge to a line drawn from the middle of the baſe to one ſide, and parallel to the direction in which the reſiſting force acts on that ſide.

‘ Let E and F repreſent two bodies, or two reſiſting forces acting on the ſides of the wedge perpendicularly, and whoſe lines of direction EP and FP meet at the middle point of the baſe, on which the power P acts perpendicularly, then will EP and FP be equal: let the parallelogram ENFP be completed, its diagonals PN and EF will biſect each other perpendicularly in H. Now when theſe forces (which act perpendicularly on the ſides and baſe of the wedge,) are *in æquilibrio*, they will be to each other as the ſides and diagonal of this parallelogram, that is, the ſum of the reſiſting forces will be to the power P, as the ſides EP and FP to the diagonal PN, or as one ſide EP to half the diagonal PH, that is (from the ſimilarity of the right-angled triangles BEP, EHP) as BP, the height of the wedge, to EP the line which is drawn from the middle of the baſe to the ſide AB, and is the direction in which the reſiſting force acts on that ſide.

‘ From the demonſtration of this caſe, in which the reſiſting forces act perpendicularly on the ſides of the wedge, it appears that the reſiſtance is to the power which ſuſtains it, as one ſide of the wedge AB is to the half of its breadth AP; becauſe AB is to AP as BP is to EP.

‘ It appears from hence, that if PN be made to denote the force with which the power P acts on the wedge, the lines PE and PF, which are perpendicular to the ſides, will denote the force with which the power P protrudes the reſiſting bodies in directions perpendicular to the ſides of the wedge.

‘ Let us now ſuppoſe in the ſecond caſe, that the reſiſting bodies E and F act upon the wedge in directions parallel to the lines DP and OP, that are equally inclined to its ſides, and meet in the point P. Draw the lines EG and FK perpendicular to DP and OP; then making PN denote the force with which the power P acts on the wedge, PE and PF will denote the forces with which it protrudes the reſiſting bodies in directions perpendicular to the ſides of the wedge, as I obſerved before: now each of theſe forces may be reſolved into two, denoted reſpectively by the lines PG and GE, PK and KF, of which GE and KF will be loſt, as they act in directions perpendicular to thoſe of the reſiſting bodies; and PG and PK will denote the forces by which the power P oppoſes the reſiſting bodies, by protruding them in directions contrary to thoſe in which they act on the wedge; therefore, when the reſiſting forces are *in æquilibrio* with the power P, the former muſt be ſo to the latter, as the ſum of the lines PG and PK is to PN, or as PG is to PH, that is, as PB, the height of the wedge, is to PD (A) the line drawn from the middle of the baſe to one ſide of the

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(A) [*PG is to PH as PB to PD.*] The right-angled triangles PGE and PED are ſimilar, having the angle at P common to both; therefore PG is to PE as PE to PD: ſo likewiſe the right-angled triangles PHE and PEB are ſimilar, and therefore PH is to PE as PE to PB: therefore the rectangles PG into PD and PH into PB are equal, each of them being equal to the ſquare of PE; conſequently their ſides are reciprocally proportional, that is, PG is to PH as PB to PD.

the wedge and parallel to the direction in which the reſiſting force acts on that ſide.

‘ From what has been demonſtrated, we may deduce the proportion of the power to the reſiſtance it is able to ſuſtain in all the caſes in which the wedge is applied. Firſt, when in cleaving timber the wedge fills the cleft, then the reſiſtance of the timber acts perpendicularly on the ſides of the wedge; therefore in this caſe, when the power which drives the wedge is to the coheſive force of the timber as half the baſe to one ſide of the wedge, the power and reſiſtance will be *in æquilibrio*.

‘ Secondly, when the wedge does not exactly fill the cleft, which generally happens, becauſe the wood ſplits to ſome diſtance before the wedge: Let ELF repreſent a cleft into which the wedge ABC is partly driven; as the reſiſting force of the timber muſt act on the wedge in directions perpendicular to the ſides of the cleft, draw the line PD in a direction perpendicular to EL the ſide of the cleft, and meeting the ſide of the wedge in D; then the power driving the wedge and the reſiſtance of the timber when they balance, will be to each other as the line PD to PB the height of the wedge.

‘ Thirdly, when a wedge is employed to ſeparate two bodies that lie together on an horizontal plane, for inſtance two blocks of ſtone; as theſe bodies muſt recede from each other in horizontal directions, their reſiſtance muſt act on the wedge in lines parallel to its baſe CA; therefore the power which drives the wedge will balance the reſiſtance when they are to each other as PA, half the breadth of the wedge to PB its height; and then any additional force ſufficient to overcome the reſiſtance ariſing from the friction of the bodies on the horizontal plane will ſeparate them from each other.

‘ The inclined plane is reckoned by ſome writers among the mechanic powers; and I think with reaſon, as it may be uſed with advantage in raiſing weights.

‘ Let the line AB repreſent the length of an inclined plane, AD its height, and the line BD we may call its *baſe*. Let the circular body GEF be ſuppoſed to reſt on the inclined plane, and to be kept from falling down it by a ſtring CS tied to its centre C. Then the force with which this body ſtretches the ſtring will be to its whole weight, as the ſine of ABD, the angle of elevation, to the ſine of the angle which the ſtring contains with a line perpendicular to AB the length of the plane. For let the radius CE be drawn perpendicular to the horizon, and CF perpendicular to AB, and from E draw EO parallel to the ſtring and meeting CF in O: Then, as the body continues at reſt and is urged by three forces, *viz.* by its weight in the direction CE, by the reaction of the plane in the direction FC, and by the reaction of the ſtring in the direction EO; the reaction of the ſtring, or the force by which it is ſtretched, is to the weight of the body as EO to CE; that is, as the ſine of (the angle ECO, which is equal to) ABD the angle of elevation, to the ſine of the angle EOC, equal to SCO, the angle which the ſtring contains with the line CF perpendicular to AB, the length of the plane.

“ When therefore the ſtring is parallel to the length of the plane; the force with which it is ſtretched, or with which the body tends down the inclined plane, is to its whole weight, as the ſine of the angle of elevation to the radius, or as the height of the plane to the length. And in the ſame manner it may be ſhewn, that when the ſtring is parallel to BD the baſe of the plane, the force with which it is ſtretched is to the weight of the body as AD to BD, that is, as the height of the plane to its baſe. If we ſuppoſe the ſtring which ſupports the body CEF, to be faſtened at S; and that a force, by acting on the line AD, the height of the plane, in a direction parallel to the baſe BD, drives the inclined plane under the body, and by that means makes it riſe in a direction parallel to AD: Then, from what was proved in the third caſe of the wedge, it will appear, that this force muſt be to the weight of the body, as AD to BD, or rather in a proportion ſomewhat greater; if it makes the plane move on and the body riſe.

‘ From this laſt obſervation we may clearly ſhew the nature and force of the ſcrew; a machine of great efficacy in raiſing weights, or in preſſing bodies cloſely together. For if the triangle ABD be turned round a cylinder whoſe periphery is equal to BD, then the length of the inclined plane BA will riſe round the cylinder in a ſpiral manner, and form what is called the *thread* of the ſcrew; and we may ſuppoſe it continued in the ſame manner round the cylinder from one end to the other; and AD the height of the inclined plane will be every where the diſtance between two contiguous threads of this ſcrew, which is called a *convex ſcrew*. And a concave ſcrew may be formed to fit this exactly, if an inclined plane every way like the former be turned round the inſide of a hollow cylinder, whoſe periphery is ſomewhat larger than that of the other. Let us now ſuppoſe the concave ſcrew to be fixed, and the convex one to be fitted into it, and a weight to be laid on the top of the convex ſcrew: then, if a power be applied to the periphery of this convex ſcrew to turn it round, at every revolution the weight will be raiſed up through a ſpace equal to the diſtance between the two contiguous threads, that is, to the line AD the height of the inclined plane BA; therefore, ſince this power applied to the periphery acts in a direction parallel to BD, it muſt be to the weight it raiſes as AD to BD, or as the diſtance between two contiguous threads to the periphery of the convex ſcrew, which diſtance between two contiguous threads is to be meaſured by a line parallel to the length of the ſcrew. If we now ſuppoſe that a hand-ſpike or handle is inſerted into the bottom of the convex ſcrew, and that the power which turns the ſcrew is applied to the extremity of this handle, which is generally the caſe; then as the power is removed farther from the axis of motion, its force will be ſo much increaſed, and therefore ſo much may the power itſelf be diminiſhed. So that the power which, acting on the end of a handle, ſuſtains a weight by means of a ſcrew, will be to that weight as the diſtance between two contiguous threads of the ſcrew, to the periphery deſcribed by the end of the handle. In this caſe we may conſider the machine as compoſed of a ſcrew and a lever, or, as Sir Iſaac Newton expreſſes it, *cuneus à vecte impulſus*.

‘ Of any two or more of theſe ſimple machines combined together, all other machines, however complicated, are compoſed. And their powers and manner of acting may therefore be explained from the principles here laid down.

Mechoacan, Mecklenburg.

MECHOACAN, a province of Mexico, or New Spain, in America, bounded on the north by Panuco and Guadalajara, on the eaſt by Panucs and Mexico Proper, on the ſouth by the Pacific Ocean, and on the weſt by Guadalajara and the South Sea. The ſoil is exceedingly fertile; and the climate ſo wholeſome, that the Spaniards imagine it to be poſſeſſed of ſome peculiarly reſtorative quality; for which reaſon the ſick and infirm flock to it from all quarters. The commodities are ſulphur, indigo, ſarſaparilla, ſaſſafras, cacao, vanelloes, ambergriſe, hides, wool, cotton, ſilk, ſugar, the root mechoacan or white jalap, and ſilver. This province formed an independent kingdom at the time Mexico was reduced by Cortez. The ſovereign had long been the inveterate enemy of the Mexicans, and was conſidered, next to the republic of Tlaſcala, as the moſt formidable barrier againſt the extenſion of the imperial frontier. However, he ſubmitted to Cortez without ſtriking a blow, being intimidated by the wonders he had performed with a handful of men; and thus Mechoacan became a province of the Spaniſh empire, and a valuable addition to Mexico. The country at that time was exceedingly populous, but the natives are now much thinned; and that rather by the luxury and effeminacy introduced by the Spaniards, than by their tyranny. The capital of the province is alſo called *Mechoacan* by the natives, but *Valladolid* by the Spaniards.

Mechoacan, or *White Jalap*. See Convolvulus, and the *Table* of the Materia Medica.

MECKLENBURG, a duchy of Germany, containing thoſe of Schwerin and Guſtro, is bounded by Pomerania on the eaſt, by part of the marquiſate of Brandenburg and the duchy of Lunenburg on the ſouth, the Baltic on the north, and Holſtein and Saxe-Lawenburg on the weſt. Their greateſt length is about 120 miles, and greateſt breadth upwards of 60. With reſpect to the ſoil, much cannot be ſaid in favour of it, as it conſiſts in general, either of ſand, or large and deſolate heaths, interſperſed with moors, woods, fens, and lakes. It yields very little wheat, and not a great deal of oats, rye, and barley; but breeds a conſiderable number of ſheep and cattle, has plenty of fiſh, with ſtone-quarries, ſalt-ſprings, alum, iron, and ſome copper. The principal rivers here are the Elde and Stor, which fall into the Elbe as it glides along the borders of this country to the ſouth-weſt; the Reckenitz, which diſcharges itſelf into the Baltic; as do the Peene, the Warno, and the Stopenitz. This country has only one harbour on the Baltic, namely, that of Roſtock. In both duchies, excluſive of Roſtock, are 45 great and ſmall cities, with three convents, and a great number of manors and farms, belonging either to the duke, the nobility, or convents. The peaſants are in a ſtate of villainage; but the nobility enjoy very conſiderable privileges. The ſtates are compoſed of the nobility and towns; and the diets, which are ſummoned annually, are held alternately at Sternberg and Malehin. The duchy of Schwerin appoints four provincial counſellors, and that of Guſtro as many; who rank, according to ſeniority, with the duke's actual privy-counſellors, as their marſhals do with the colonels. The leſſer committee repreſents the whole body of the nobility and commons, by whom the members are choſen freely and without controul, and no edict relative to the whole country can be publiſhed without their conſent, or in prejudice of their rights. The inhabitants of this country are moſtly Lutherans, under their ſuperintendants. There are alſo ſome Calviniſts and Roman Catholics. Beſides the grammar-ſchools in the towns, there is an univerſity at Roſtock. The commodities of the duchy are corn, flax, hemp, hops, wax, honey, cattle, butter, cheeſe, wool, and wood, a part of which is exported, but hardly any manufactures.

Meckle burgh, Meconiu

Of the houſe of Mecklenburg, there are two lines ſtill ſubſiſting, viz. that of Schwerin and Strelitz. The latter commenced in duke Adolphus Frederick II. younger brother of the duke of Schwerin, and grandfather of the preſent duke of Strelitz, Adolphus Frederick IV. who entered on the government in 1752, and whoſe family hath lately received a great additional luſtre by his Britannic majeſty's taking his ſecond ſiſter for his conſort, and by her own great merit and noble deportment in that high ſtation. Beſides the duchy of Strelitz, to this duke belong the principality of Ratzeburg, with the lordſhip of Stargard, the ancient commanderies of Miro and Nemero, and a yearly penſion of 9000 dollars out of the Boitzenburgh toll. The title aſſumed by both the dukes is *duke of Mecklenburg, prince of Wenden, Schwerin, and Ratzburg, count of Schwerin and the country of Roſtock, and lord of Stargard.* By the agreement concluded at Wittſtock in 1442, the elector of Brandenburg, on the extinction of the male-line of the dukes of Mecklenburg, is entitled to their whole ſucceſſion. The duke of Schwerin has two votes both in the diet of the empire and that of the circle. The matricular aſſeſſment for the duchies of Schwerin and Guſtro is 40 horſe and 67 foot, or 748 florins monthly, including what is paid by Sweden for Wiſmar, and the bailiwics of Poll and Neukloſter. To the chamber of Wetzlar theſe two duchies pay each 243 rix-dollars, 43 kruitzers. For the government of Mecklenburg, the adminiſtration of juſtice, and the management of the revenue, there is the privy council of regency, the demeſne-chamber, the high and provincial court of juſtice, to which appeals lie in moſt caſes, both from the conſiſtory and the inferior civil courts, and which are common to both the dukes. As to the revenues, thoſe of the Schwerin line muſt be very conſiderable, thoſe ariſing from the demeſne-bailiwics and regalia alone amounting to 300,000 rix-dollars per annum. There is a tax on land that produces no contemptible ſum, and that called the *princeſs's tax* is fixed at 20,000 rix-dollars: beſides all theſe, there are alſo free-gifts. The whole revenues of the Strelitz branch are eſtimated at 120,000 rix-dollars. Each of theſe princes maintains a body of troops.

MECONIUM, the excrement contained in the guts of an infant at its birth. If this matter is not ſoon purged off, it occaſions gripes, &c. A tea-ſpoonful of true caſtor oil is an excellent purge in this caſe; but the firſt milk from the mother's breaſt is uſually ſufficient if it flows in due time.

Meconium, in pharmacy, the extract of Britiſh poppies. It has all the virtues of foreign opium, but in a ſomewhat lower degree. See Opium, and *Table of* *of the* MATERIA MEDICA.

MEDAL, a piece of metal in the form of coin, ſuch as was either current money among the ancients, or ſtruck on any particular occaſion, in order to preſerve to poſterity the portrait of ſome great perſon, or the memory of ſome illuſtrious action.

History of medals.

Scaliger deriveth the word *medal* from the Arabic *methalia*; a ſort of coin with a human head upon it. But the opinion of Voſſius is generally received; viz. that it comes from *metallum*, "metal;" of which ſubſtance medals are commonly made.—Some, indeed, apprehend that none of the ancient pieces we now ſtyle *medals*, were never current coin, but all ſtruck on particular occaſions; like thoſe modern pieces which are called by that name, to diſtinguiſh them from common and current coin. Others are of a contrary opinion, as Monſieur Patin and Father Joubert, who endeavour to prove, that they had all a regular and fixed price in payment. But the much greater probability of the middle opinion hath obtained it the general vogue: according to which, medals are diſtinguiſhed into two ſorts. Of the firſt ſort, ſome are ſuppoſed to have been originally intended, either for *miſſilia*, which were ſcattered amnng the people on days of triumph, jubilees, and ſolemn proceſſions, as is uſual among us at the coronation: or for *donativa*, of which preſents were made to princes, or their ambaſſadors, or to others in a way of honorary reward for ſome worthy action; as our Royal Society preſent every year a gold medal to one of its members who hath diſtinguiſhed himſelf by ſome valuable diſcovery in natural philoſophy. Others, which are of the moſt exquiſite workmanſhip, are ſuppoſed to be *teſtimonia probatæ monetæ*; that is, eſſays of the workmanſhip of the mint-maſters, which were preſented to their princes and to perſons of the higheſt quality.

The ſecond ſort, of which there is the greateſt quantity, are taken to have been originally the current coin of their reſpective nations, but which thro' their ſcarcity are now laid up in the cabinets of the curious.

Ancient medals are often found in the ruins of great buildings, in Greece, Italy, and other countries; where they are picked up, chiefly after violent ſhowers of rain, when being waſhed from the dirt, they are more eaſily diſcovered. They are often found in the earth, by ploughing or digging; ſometimes ſingly, as having been dropped caſually; ſometimes in urns, which are filled with them. They are often alſo found in ancient Roman ſepulchres; for inſtance, in the tumuli, or round mounts of earth, about 10 or 12 feet high, which are ſeen by the ſides of public roads in ſome parts of England, particularly in Leiceſterſhire. Theſe tumuli are the ſepulches of Roman officers, who were buried there while their legions were in that country; and are generally found cupped at the top, by their having been dug for urns and medals. And for the moſt part wherever there have been towns or encampments of the Romans, many of their coins are diſcovered in the earth by ploughing or digging; particularly at Silcheſter in Hampſhire, (the ancient Vindomis of the Romans, of which profeſſor Ward has given an account in the Philoſophical Tranſactions, n° 490.) great numbers have been found of all metals, and of all ſizes. One gentleman in the neighbourhood is poſſeſſed of ſeveral hundreds collected from this Roman ſettlement, and many of them exceedingly well preſerved. Nay, ſo extenſive was the commerce of the Roman empire in its moſt flouriſhing ſtate, that there is hardly a country in the world where its coins have not been diſcovered. Nor need we except even America, if we may depend on what Maurinus Siculus relates in his hiſtory of Spain, cap. 19. viz. that a braſs medal of the emperor Auguſtus was found in the gold mines of Brazil, and ſent by the archbiſhop of the province to the pope.

As to the æra of the invention of medals, or coins, ſee the articles COINS and MONEY.

Matter, ſize, and ſhape.

The matter or ſubſtance of ancient medals is commonly one of the three metals ſignified by the three A's, which, on ſeveral coins, are placed after the name of the mint-maſter; namely, gold, ſilver, and copper or braſs. Some medals, however, are ſaid to have been found of iron. Yet it cannot be ſuppoſed, that, if there were ſuch formerly, many of them can be now remaining; becauſe that metal is ſo ſubject to decay with ruſt. There are many ſilver coins to be met with, debaſed below the proper ſtandard. In the declenſion of the Roman empire, when there was a ſcarcity of the richer metals, this was ſometimes done by authority, in order to raiſe money to pay the army; which at times occaſioned ſeditions among them. For the like purpoſe, when our king James II. was diſtreſſed for money during the war in Ireland, he coined copper ſhillings and half-crowns. However, among the Romans, this was ſometimes done clandeſtinely, by the knavery of the mint-maſters or coiners; notwithſtanding it was made a capital crime. Thus Pliny writes, that when M. Antoninus was triumvir, he mixed iron with the denarii, which ſhould have been all ſilver. But the moſt common mixture in the baſe coin is that of copper or braſs. We ſometimes meet with old coins little better than lead: and ſome tell us, that Numa ſtamped money of leather; but no ſuch coins are to be found at this day.

As for the æs, (the firſt and moſt common metal uſed in coinage,) it is diſtinguiſhed into three ſorts, viz. the red copper, the yellow or braſs, and the potmetal, which was copper mixed with tin or lead. Before Alex. Severus, moſt coins were of the two former ſorts; but after him, almoſt all are of the laſt.

The ſecond ſort, or yellow, is alſo diſtinguiſhed into the common braſs, or kettle-metal; and the Corinthian braſs, which is ſaid by Pliny to be an accidental mixture of metal at the ſack and burning of Corinth by Mummius the Roman, when the gold, ſilver, and braſs ſtatues, and all things made of metal, being melted and running together into low places, compoſed that mixed metal, which is of a much finer colour than common braſs, and for its beauty hath been eſteemed little inferior to gold. But ſome refiners, who have ſtrictly examined this metal, can find no gold in it; and therefore juſtly look upon this account to be fabulous. Whether it was a mixed or ſimple metal, is not now known. If it was mixed, we have not been able to find ſo beautiful a compoſition; if ſimple, probably the mines that produced it have been long ſince exhauſted.

There are alſo ſome medals compoſed of two different metals, not by melting them together, but either by

Medal.

by plating over braſs or iron with ſilver (a ſort of falſe money that had its riſe in the triumvirate of Auguſtus), or by laying a rim of a different metal round the edge of a medal. Medals of this ſort, which are all of the larger ſize, are called by the antiquarians *contorniati*, from which is derived the French word *contour*, ſignifying the outline that determines and defines a figure. It cannot be ſuppoſed theſe were ever intended for common coin, becauſe the workmanſhip of them would come to more than they would be worth in currency. Nor are they ſuppoſed to be very ancient: Father Hardouin allows them no higher antiquity than the 13th century; others date them from the fifth; and others make them as ancient as the time of Nero.

Secondly, The ſize of the ancient medals is from three inches to a quarter of an inch. Thoſe of the larger ſize, or volume, as the medaliſts expreſs it, ſome of which weigh two ounces and a half, are called *medallions*: of which ſort ſcarcely any are to be met with in gold, few in ſilver, but many in copper. Theſe are not ſuppoſed to have ever been current coin; but to be ſtruck on ſuch particular occaſions, and for ſuch purpoſes, as our modern medals are. As to the ſize of other medals, there is almoſt an endleſs variety betwixt the greateſt and the leaſt. However, they are ranked in three claſſes, viz. large, middle, and ſmall; though it is ſometimes difficult to aſſign a particular medal to its proper claſs. The claſs of a medal is not ſo much determined by its breadth and thickneſs, as by the head that is ſtamped upon it. So that in caſe one of the firſt ſize for breadth and ſubſtance bears a head no bigger than one of the middle ſize, or *bronze* as they call it, it is to be ranked in the middle claſs.

Thirdly, The ſhape of medals is round, or rather roundiſh; for the ancients had not the way of making their money ſo perfectly round as ours. The two ſides or tables of the medal are diſtinguiſhed into the face and the reverſe; the face bearing the chief figure, as the portrait of ſome emperor, or other illuſtrious perſon: the reverſe, ſome emblem, inſcription, or other device, of which we ſhall treat further on.

Orders into which medals are to be diſtinguiſhed.

Medals may be diſtinguiſhed, 1. By the metal of which they are made. 2. By their different ſizes. 3. By the nation to which they belonged. 4. By the ages in which they were ſtruck.

The two former diſtinctions have been already conſidered; and as to the third, we propoſe to treat only of the Greek and Roman medals, and chiefly of the latter. Here again it will be convenient to diſtinguiſh medals into two claſſes, viz. thoſe of the ſtate, and thoſe of particular cities and colonies: for, beſides the money coined by the ſtate, it appears, that divers cities and colonies had the privilege of coining; where it is probable the chief magiſtrate was the mint-maſter. Father Hardouin has publiſhed a large catalogue of Grecian and Roman medals of this ſort, in a quarto volume, intitled, *Nummi antiqui populorum et urbium illuſtrati*: which is a valuable work; but it would have been much more entertaining and uſeful, if he had explained the devices and inſcriptions of all the medals in his catalogue, as he has done of ſome of them. However, this Mr Vaillant has done in two volumes of the Latin colonies, in which he has alſo given us cuts of the medals themſelves.

Medal.

Among the Roman colonies, ſome had *jus civitatis*, that is, the right of Roman citizens; which conſiſted in a capacity of ſtanding for all offices of ſtate, and of enjoying all other privileges of the citizens of Rome. Such a colony was called *municipium*. Of this kind was Philippi: therefore the Philippians call themſelves *Romans*, Acts xvi. 21.: While other colonies, according to Ulpian, had little more than the name; enjoying only what they call *jus Italicum*, or *jus Latii*; that is, they were free from the tributes and taxes paid by the provinces, and were capable of ſerving in the Roman legions. The former were more properly called *colonies*; the latter, only *free cities*.

The medals belonging to cities were ſo numerous, that above 200 may ſtill be collected of the Greek cities only. Nay, not only had ſeveral cities, both among the Greeks and Romans, the privilege of coining money, but generals of armies frequently did it for the ſpeedy payment of their troops. And it ſhould ſeem by a paſſage of Suetonius, in his life of Tiberius, cap. 49. that this liberty was ſometimes granted to private perſons; for he there ſpeaks of *Veretes immunitates, et jus metallorum et vectigalium pluribus civitatibus et privatis adcmpta*. But may it not admit of a query, whether the coins thus privately ſtruck were intended as money for public uſe, or only for ſuch purpoſes for which medals among us are often ſtruck by private hands. And if the latter be the caſe, we can the better account for the vaſt variety of devices and mottos we find upon medals of the ſame reign, and why ſo many of them appear without any of thoſe marks of public authority which others have.

4thly, Medals are ranked in different claſſes according to the ages when they were ſtruck, as the time of the kings, the conſuls, and the emperors.

1. Of the firſt ſort, viz. medals of the kings, we have a great many Greek ones; of which M. Vaillant has given us a catalogue, with cuts of above 120 of them. Thoſe of the kings of Macedonia yield in nothing to the moſt exquiſite workmanſhip of the Romans. There are alſo coins ſtill extant, of the kings of Pontus, Cappadocia, Bithynia, and many others. But we have no Roman medals ſtruck in the time of their kings; though many with their portraits upon them. Theſe were ſtruck by their deſcendants in after-ages, in honour of their royal anceſtors, and in order to eternize the nobility of their own families. Thus we have a medal of Ancus Marcius, the fourth king of Rome, which was ſtruck by L. Marcius Philippus, one of his deſcendants, who was conſul U. C. 662, about 500 years after the death of Ancus.

2. Conſular medals, or thoſe that were ſtruck during the government of the conſuls, from the expulſion of Tarquin the laſt king, to the beginning of the empire under Julius Cæſar, containing the ſpace of 494 years.

The number of Roman medals ſtill extant, ſuppoſed to have been ſtruck in this interval, amount to about 1500; moſt of them ſilver, and of the ſmaller ſize: for of this claſs we do not find above 50 or 60 in gold, and hardly more than 250 in copper; of which metal there are indeed ſome of all the three ſizes.

As the conſular medals have tranſmitted to us the names of ſeveral Roman families, they are called *fa-*

mily-medals. Some have ſuppoſed theſe names to be thoſe of the conſuls, under whoſe reſpective government the medals are coined. But that does not ſeem to have been the caſe: for we have no medals that bear the name of the firſt conſuls for more than 200 years. And as for thoſe which bear the name of ſuch perſons as we learn from the *Faſti* were conſuls, yet they do not ſeem to have been ſtruck in the time of their conſulſhip; for we have often the letters Q. or P. after the name, ſignifying *quæſtor* or *prætor*, (which was an office incompatible with the conſulſhip,) and ſometimes *triumvir*: theſe names therefore were more probably, either the names of the triumviri, who coined the pieces; or of their illuſtrious anceſtors, many of whom had been conſul, whoſe names and memory they endeavoured by this means to perpetuate.

The conſular medals are reckoned to be the moſt ancient of the Roman coins now extant; and yet thoſe of copper and ſilver are not ſuppoſed to be more ancient than the 484th year of Rome, nor thoſe of gold than the year 546. Whatever medals, therefore, are produced of an older date, are looked upon as ſpurious.

2. Imperial medals, down from Julius Cæſar, (who put an end, though not to the name, yet to the power of the conſuls) to the end of the Roman greatneſs, are diſtinguiſhed into thoſe of the Higher and Lower empire: the Higher Empire being reckoned from Julius Cæſar to the 30 tyrants incluſively, or at fartheſt to the end of the third century of the Chriſtian æra; the Lower Empire from thence to the end of the ninth century, none latter being accounted ancient. Nor are the claſſes of modern medals reckoned to begin till the 15th century. As for thoſe that were ſtruck in the intermediate ages betwixt the 9th and the 15th, they are ſo extremely rude and barbarous, that they deſerve no regard. It was not till the 13th century that the curioſity of medals, either as to the making or ſtudy of them, began to revive; being firſt ſet on foot by certain painters, Piſani, Bolduc, and others. Towards the middle of that age ſome medals were ſtruck with conſiderable elegance both of deſign and relief; as one of Ferdinand king of Arragon, anno 1449; and another of John emperor of Conſtantinople, ten years before. But to return to the ancient medals.

The gradual declenſion of the Roman taſte and politeneſs is in nothing more ſenſible than in its coins; which in the time of the Lower Empire, in compariſon of what they had been formerly, grow to be very mean. The bulk and ſize is thin and ſmall; the relievo flat and low, and without any thing of that elegance we ſo juſtly admire in the device and inſcriptions of thoſe which were ſtruck in the time of the Roman greatneſs. So that after medals came to be regarded and ſtudied by the moderns, few perſons troubled themſelves with collecting thoſe of the Lower Empire; until, by being neglected, ſome of them are become ſcarce, and on that account valuable. The whole number of different imperial medals, ſtill extant, is reckoned by F. Joubert to be about 1000 or 1200 of gold, about 3000 of ſilver, and 6000 or 7000 of copper and braſs.

reſſion form.

The two tables or faces of medals are diſtinguiſhed into the *face* and *reverſe*; each of which uſually bears a figure and inſcription: ſometimes, indeed, you have a figure without any inſcription; and ſometimes an inſcription without any figure.

The circular inſcription near the edge of a medal is called the *legend*. That on the face commonly contains the names, titles, offices, &c. of the perſon whoſe head it bears: That on the reverſe, either ſome motto, referring to the virtues of the perſon to whoſe honour it was ſtruck, to ſome great action which he has performed, or to the benefits which the public had reaped by him; or elſe, the legend is the name of ſome virtue, or deity, repreſented by the figure; or of ſome province, or country, repreſented by ſome ſymbol or emblem. Yet this diſtinction betwixt the two legends does not hold univerſally; for ſometimes we find the titles occupying both tables, and ſometimes the motto. I have ſaid the legend is the circular inſcription near the edge of the medal; but this is to be underſtood only in the general: ſome legends being placed in a right line, either above or below the figure; or part above, and part below; or upon the figure itſelf; and in ſeveral other forms, according to the fancy of the workman. The Latin legends are all read from the left to the right; but the legends of ſome Greek medals are wrote the contrary way, from the right to the left. The letters on the circular legends are commonly placed with the bottoms inward; but ſometimes with the bottoms toward the edge.

Beſides the two legends, there is on many medals a ſhort inſcription under the figure on the reverſe, called the *exergum* or *exergue*, as being εξ εργȣ, "out of the work," from which it is frequently ſeparated by a line over it. This exergue contains ſometimes the date of the coin, expreſſing in what conſulſhip of the emperor it was ſtruck, as COS. III. upon the reverſe of Antoninus. Sometimes it ſignifies the place where it was ſtruck, and to which the coin properly belonged, as S. M. AL. for *Signata moneta Alexandriæ*, upon the reverſe of Licinius: ſometimes the name of a province, the reduction of which the medal is deſigned to celebrate; as *Judæa*, in the reverſe of Veſpaſian. Sometimes S. C. is put in the exergue; and ſometimes other letters, which the modern medalliſts are not able to explain. Beſides the legends and exergue, you often meet with other letters on the table, or field; as the S. C. on the Roman medals; L. on Greek medals, with ſome other letter or letters expreſſing the date. The Roman L being the ancient Greek Λ, is here ſaid to ſtand for λυκοϐαντος, a poetical word for *anno*.

Let us now attend to the figures we ſee on ancient coins.

1*ſt*. On the face, where we commonly have the portrait of ſome great and illuſtrious perſon; uſually, if not always, in profile. The conſular medals have commonly the heads of ſome of their gods; or of their ancient kings; or of Rome, which is a manly face wearing a helmet to expreſs her warlike genius, and winged to denote her ſpeedy and extenſive conqueſts. The heads of the Roman kings are for the moſt part dreſſed with a diadem: which was nothing more than a fillet bound round the head, the ends of which, being tied in a knot behind, fell down upon the neck. —This was the proper badge and ornament of kings, and was never worn by any of the emperors till after

Conſtantine, when it was enriched with pearls and diamonds.

Julius Cæſar was the firſt among the Romans who ſtruck his own head upon the coin, in which he was followed by all the ſucceeding emperors. The proper dreſs of the imperial head is a crown, for the moſt part of laurel; the right of wearing which was decreed to Julius Cæſar by the ſenate, and afterwards continued to his ſucceſſors. Beſides theſe, ſeveral other crowns, of different faſhions, are found on medals; ſuch as the roſtral crown, compoſed of the prows of ſhips, which was given upon a naval victory: The mural crown, compoſed of towers; the reward of ſuch as had taken cities, and alſo the ornament of their tutelar deities: Crowns of rays were beſtowed on princes when they were deified, either before or after their death; as being properly the ornament of the gods: Some have ſuppoſed the Gentiles took the hint of theſe radiated crowns from ſome tradition of the ſhining of Moſes's face, which is mentioned, Exod. liv. 29.; and this phænomenon they conceived of as occaſioned by beams or rays of light darting from his head. Indeed this ſeems to have been likewiſe the notion of the Vulgate tranſlator, who renders the word קרן, *cornuta;* not, ſurely, imagining that Moſes was really horned, but that he appeared with rays of light, like horns, emitted from his head.

The emperor Juſtinian was the firſt who uſed an arched crown, ſurmounted with a croſs; ſuch as is wore by Chriſtian kings at this day. Some heads of emperors are wholly naked; there are ſuch of Auguſtus, Nero, Galba, and ſome others: Though more commonly a naked head, ſtruck in the imperial ages, is a ſign that it is not the head of an emperor, but of one of his ſons, or the preſumptive heir of the empire.

The heads of the gods are diſtinguiſhed by their proper crowns; as a crown of ears of corn is a ſymbol of Ceres; a crown of flowers denotes Flora; a crown of vine-leaves or ivy is the dreſs of Bacchus; the petaſus, or hat with two wings, belongs to Mercury; the hat without brims is the mark of Vulcan, &c.

Heads are not only diſtinguiſhed by their dreſs, but ſometimes by certain ſymbols attending them; as when we ſee the *lituus*, or augural ſtaff, placed by the head; which is the ſymbol of the pontifex maximus. But ſuch ſymbols are more commonly found on the reverſes, which we ſhall treat of hereafter.

The ancient coins preſent us not only with the portraits of kings and emperors, and other great men; but alſo of queens, and other ladies of high rank, chiefly the wives of the emperors. This honour of having their heads ſtamped on the coin, was done them either in their lifetime, or after their death; as on occaſion of their *apotheoſis*, or conſecration, ſignified by peacocks on the reverſe. The face of ſome medals is charged with two heads, which are either ſet face to face, as on the medals of Severus and the empreſs Domna; or back to back, as on the medal of Julius Cæſar and Octavianus (afterwards called *Auguſtus)* his adopted ſon and ſucceſſor; ſtruck by the Colonia Nemauſenſis, in honour of Auguſtus, upon his defeating Mark Antony and Cleopatra, whereby he ſubdued all Egypt to the Roman power, ſignified by the device of a crocodile chained to a palm-tree. Some are ſtamped with three heads, or more, on the face; but theſe are very uncommon.

We have obſerved before, that the titles are generally upon the face of the medal; and we now proceed to conſider them more particularly.

The titular addition to the proper name of the perſon whoſe head the medal bears, uſually conſiſts, partly, of mere titles of honour; ſuch as *Imperator*, *Cæſar*, *Auguſtus*, given to all the Roman emperors after Octavianus. The title of *Auguſtus* was firſt decreed to him by the Roman ſenate, and was aſſumed by all his ſucceſſors, as *Auguſta* was by their wives. *Cæſar* was originally the cognomen of the firſt Roman emperor C. Julius Cæſar; which, by a decree of the ſenate, all ſucceeding emperors were to bear. But when the title *Auguſtus* was conferred upon his immediate ſucceſſor, the title *Cæſar* was given to the ſecond perſon of the empire, as to the preſumptive heir of the crown; notwithſtanding it ſtill continued to be applied to the emperor himſelf. Hence we ſee the difference betwixt *Cæſar* uſed ſimply, and *Cæſar* with the addition of *Imperator Auguſtus*.

Imperator was originally an appellation with which the ſoldiers complimented a victorious general; but it afterwards came to denote the ſupreme commander, or head of the empire. However, when we find a number added to *Imperator*, as IMP. III. or IIII. it ſignifies that he had acted as general in the army, and had been ſaluted *Imperator* by the ſoldiers, as many times as the number expreſſes.

In the lower empire, the title *Dominus* was firſt aſſumed by Aurelian, and uſed by his ſucceſſors; on whoſe coins we often ſee the legend begin with D. N. for *dominus noſter*. Other titles, affixed to proper names, are a ſort of ſurnames, which the perſon's virtues are ſuppoſed to have gained him: as *Pius*, a title firſt given to Antoninus; which Commodus alſo aſſumed, and added *Felix* to it; for which a thouſand abuſes were paſſed upon him. Again, *Pater Patriæ* was a title firſt beſtowed on Cicero, for his diſcovering and defeating the conſpiracy of Catiline; and was afterwards aſſumed by the emperors. Peſcennius took upon him the ſurname of *Juſtus;* and Diocleſian, thoſe of *Beatiſſimus* and *Feliciſſimus;* Trajan had the titles *Optimus* and *Clemens* decreed him by the ſenate. Conſtantine called himſelf *Maximus;* and Victorinus affected the title of *Invictus*. Other titles, again, are the names of offices; as *Conſul*, which, in the time of the emperors, was little, if any thing more than a mere name: however, the people were fond of keeping it up, accounting it ſome remains or *memento* of their ancient liberty; and therefore the emperors ſubmitted to be choſen conſuls by the people. The number which we often ſee added to COS. ſignifies how many times the perſon had been thus elected: yet it is plain this election was not always made annually, as in the time of the proper conſuls; for the emperor Hadrian's medals have for ſeveral years together COS. III. upon them.

Another title of office is *Tribunitia Poteſtas;* which, in the time of the Roman commonwealth, was the higheſt authority; for the tribunes of the people had power to annul the decrees of the ſenate, and nothing could be concluded without their conſent: nay, they have ſometimes called the conſuls and dictators to account for their conduct before the people.—This power and title was firſt aſſumed by the emperor Auguſtus; and afterwards, generally, by his ſucceſſors.

The year of the tribuneſhip is commonly expreſſed after the title, as TRIB. POT. X. or XVI. &c. which yet does not always denote the year of the emperor's reign: for ſometimes, though rarely, this power was given to another beſides the emperor; as to the preſumptive heir of the empire. Hence it is that the year of the TRIB. POT. expreſſed in the title, is ſometimes a much higher number than the year of the emperor's reign. Thus Veſpaſian gave the *Tribunitia Poteſtas* to his ſon Titus, two years after he was made emperor. We therefore ſee on the medals of Titus, TRIB. POT. X. or XV. though he reigned but three years after his father. Other examples of the ſame kind occur in Marcus Aurelius, Caracalla, Geta, &c. The office of *Pontifex Maximus* was alſo conſtantly aſſumed by the Roman emperors, and generally expreſſed among their titles, from Auguſtus down to Conſtantine, by whom it was refuſed. It was afterwards reaſſumed by Julian, but quite laid aſide by Gratian; after whom no emperor has P. M. in his titles. Julius Cæſar aſſumed the title of *Dictator Perpetuus*. Claudius took upon him the office of *Cenſor*, and Domitian made himſelf *Cenſor Perpetuus*; as appears upon their coins.

It is to be obſerved, that theſe names and titles are expreſſed in different caſes. Sometimes in the nominative caſes, as Cæſar Auguſtus. Sometimes in the genitive, as *Divi Julii*: which caſe is chiefly uſed in the Greek medals, as Βασιλεως Αληξανδρȣ; as if εικων or νωμισμα was underſtood; that is, the image or coin of Alexander. Sometimes the name is put in the dative caſe; as IMP. *Nervæ*, *Trajano*, *Germanico*, &c. It is rarely put in the accuſative, in the Latin; though there is an inſtance of that ſort in a medal of Gallienus, inſcribed *Gallienum Auguſtum*; but it is more common in the Greek.

The titles are hardly ever wrote at length, but contractedly, by one or more of the initial letters of each word; as AUG. for *Auguſtus*; CÆS. for *Cæſar*; CÆSS. for *Cæſares*; COSS. for *Conſules*; P. P. for *Pater Patriæ*; P. F. for *Pius Felix*, &c. Mr Patin, in his *Hiſtoria Numiſmatum*, hath given us a table of Roman abreviations uſed on medals; which Mr Evelin, in his *Numiſmata*, hath ſomewhat enlarged. You have alſo a table of a great number of theſe abreviations at the end of Ainſworth's and Littleton's Dictionaries.

Secondly, We proceed to take a view of the reverſe of medals, in which the chief erudition of this ſcience lies.

Of theſe there is ſuch a vaſt variety, eſpecially of the imperial medals, that one is at a loſs which to ſingle out for a ſpecimen of the whole. As for the conſular medals, which we ſhall treat of in the firſt place, the ſame reverſe is common to many of them; as Caſtor and Pollux on horſeback, which is ſaid to be the reverſe that was firſt in uſe; then of Victory, or one of the gods, or the perſon to whoſe honour the medal was ſtruck, driving a chariot with two or four horſes, whence the Denarii with theſe reverſes were diſtinguiſhed into *bigati* and *quadrigati*. The *ratis* alſo, or ſhip, or perhaps the prow of the ſhip, as the emblem of the naval power, was no uncommon reverſe on the conſular coins; whence the pieces with this impreſſion were called *ratiti*. Beſides theſe, ſuch conſular medals as bore on the face the impreſs of their ancient kings, often preſerved on the reverſe the memory of ſome worthy action they had performed; as that of king Ancus has, on the reverſe, the famous Aqueduct, with the equeſtrian ſtatue upon it, by which the aqua martia was brought nine miles to Rome, and which was begun by this Ancus. Medals ſtruck on the occaſion of founding colonies, have ſometimes, on the reverſe, a prieſt following a yoke of oxen, and perhaps with a plough, ſignifying the manner in which the boundaries of the colonies were marked out; or ſome ſay the oxen are deſigned to intimate, that the colony was planted by the common people, whereas the trophies we ſometimes ſee on the reverſes of theſe medals ſignify they were planted by the veteran ſoldiers.

The reverſes of imperial medals are ſo different and various, according to the humours or fancies of the princes or mint-maſters by whoſe direction they were ſtruck, that one knows not how to range them into any claſs or order. However, the chief of them may be reduced to three heads, viz. figures, or perſonages; public monuments, or buildings; and inſcriptions.

1. The figures or perſonages, which we ſo commonly ſee on the reverſes of medals, are ſometimes of princes; ſometimes the ſame in miniature, whoſe portrait is more at large on the face: as on the reverſes of the emperors of the family of Conſtantine, one often ſees the emperor ſtanding with a labarum in his right hand, and a globe ſurmounted with a Victory in his left. The labarum was the imperial ſtandard, embroidered and ſet with precious ſtones; which in the time of the Chriſtian emperors, inſtead of an eagle formerly embroidered upon it, had the monogram of Jeſus Chriſt; viz. the two firſt letters of the word χριςος expreſſed in a cipher thus ☧. Sometimes the emperor appears in the reverſe, diſguiſed under the figure of ſome god; as on the reverſe of a Diocleſian, who had aſſumed the name of *Jovius*, he appears in the figure of Jupiter ſitting in a chair with a globe in his hand ſurmounted with a Victory: the legend, Jovi, H. U. CC. i. e. *Hoc voluerunt conſules*. Sometimes the figure on the reverſe, is ſome relation of that on the face; as Auguſtus on the reverſe of Julius, and Claudius on the reverſe of his mother Antonia. We ſometimes ſee on the reverſe the figure of ſome god, either of him to whoſe worſhip the emperor was more eſpecially devoted; or of him whoſe protection and bleſſing was in a peculiar manner ſupplicated for him: as Minerva on the reverſe of a Domitian; and on the reverſe of a Mar. Aurelius, the goddeſs Salus, with a patera in her hand, ſacrificing to Æſculapius, who was worſhipped in the form of a ſerpent. Again, the virtues for which the emperor was or deſired to be celebrated, are not uncommonly expreſſed by the figures on reverſes; as Virtue, or Courage, on the reverſe of a Domitian, repreſented

Medal.

by a bold armed woman with a ſpear in her right hand and a parazonium in her left; the legend, *Virtuti Auguſti. Liberty* on the reverſe of a Commodus, carrying in her right hand the cap of liberty, and in her left the wand called *rudis vindicta*, which was laid on the head of a ſlave when he was made free: *Equity*, on the reverſe of a Veſpaſian, with a ſpear in her right hand and a balance in her left.

The virtues of the ladies are alſo celebrated on the reverſes of their medals; as *Piety* on the reverſe of a Fauſtina, in the habit of a veſtal virgin, ſtrewing frankincenſe on an altar; *Fæcunditas* on the reverſe of another medal of the ſame lady: *Spes Reipublicæ* on the reverſe of Maximiana Fauſta, ſecond wife of Conſtantine the Great; expreſſed by a female figure, with a helmet on to repreſent the Republic, and two children at her breaſts. Mr Addiſon has given us a collection of theſe ſorts of figures in his firſt Series.

Provinces are alſo repreſented by figures and perſonages; to ſignify either the emperor's conqueſts, or his care of them: as *Judea*, on the reverſe of a Veſpaſian, ſitting in a melancholy poſture at the bottom of a pillar adorned with trophies, to ſignify her captive ſtate. *Dacia*, on the reverſe of Hadrianus, ſitting on a rock, holding an eagle in her right hand, and a branch in her left. *Italia*, on the reverſe of Commodus, with a cornucopia in her right hand, to denote her fruitfulneſs; a crown of towers on her head, to figure out the many cities that ſtand upon her; a ſceptre in her left hand, and ſitting on a globe, to ſhew ſhe is ſovereign of nations. See a collection of theſe ſort of figures in Mr Addiſon's third Series.

Sometimes the figure is intended to immortalize ſome worthy action of the emperor. As his enriching the nation, or his care about the public coin, is ſignified, on the reverſe of a Domitian, by the goddeſs *Moneta*, with a cornucopia in her left hand, and a balance in her right. On reverſes we have not only a variety of ſingle figures; but ſometimes two, three, or more; as *Honos* and *Virtud* on the reverſe of Galba, in Mr Addiſon's firſt Series, medal the ſecond. And on a medal of Trajan's are ſeen three kings, and the emperor crowning them. On one of Hadrian's there are eight figures, but without any legend to explain them; and on one of Commodus there are ten.

Before we diſmiſs this head concerning the figures of medals, it will be proper to take notice of other animals, often met with on reverſes, which have alſo their ſignification; as the eagle and the peacock denote the conſecration of princes and princeſſes, when they are admitted into the number of the gods; the crocodile is the ſymbol of Egypt; a ſerpent, of Æſculapius; Arabia is marked by a camel; Spain by a rabbit, (a creature which abounds in that country); Mauritania is known by a horſe and ſwitch, ſignifying the ſwiftneſs of its courſers; elephants in trappings are to be ſeen on the reverſe of an Antoniuus Pius and a Severus, which imports that theſe emperors procured thoſe creatures to entertain the people at the public ſhews. We have alſo fabulous animals and monſters; as the griffon on the reverſe of a medal of Gallienus; a centaur on another of the ſame emperor; and a phœnix on ſome medals of Conſtantine and his ſons; to denote, what it ſeems they hoped for and expected, the perpetuity of the Empire.

Medal.

2. The ſecond ſort of reverſes are public monuments and buildings; as the temple of Janus ſhut, on the reverſe of a Nero, to ſignify the univerſal peace he gave to the empire; the macellum, (or a view of the ſhambles which he cauſed to be built for the convenience of the public), on another of the ſame emperor; the ſumptuous bridge which Trajan built over the Tiber, adorns the reverſe of one of his medals; the amphitheatre of Titus, and his naval column, are to be ſeen on his. The port, or gate of a city, which is found on the reverſe of ſome medals, with the legend *PROVIDENTIA AUGUSTI*, or *CÆSARIS*, is a monument of the emperor's munificence and care in providing a magazine of corn for the people in a time of ſcarcity. If a ſtar appears over the gate, it denotes Conſtantinople. Such a reverſe we have on the emperor Conſtantinus junior, the legend *PROVIDENTIÆ CÆSS.*

2. The third ſort of reverſes are inſcriptions on the table or field of the medal. Of this ſort there are ſeveral Latin and Greek imperial medals, which have nothing on the reverſe but S. C. or Δ. E. for δημαρχικης εξυσιας, incloſed in a crown. Others ſet forth great occurrences, as *VICTORIA GERMANICA*, IMP. VI. COS. III. on the reverſe of M. Aurelius. Others have titles of honour granted to the princes; as S. P. Q. R. *OPTIMO PRINCIPI*, on the reverſe of a Trajan, and alſo of an Antoninus Pius. Other inſcriptions have reſpect to public vows, which were made for the emperor every ten years; or (ſometimes in the lower empire) every five years; which, according to Mr Du Cange, had their riſe from Auguſtus's pretending to be deſirous of quitting the empire: but, at the requeſt of the ſenate, he twice conſented to continue the government for ten years longer; upon which it became a cuſtom at every ten years, to make public prayers, ſacrifices, and games, for the preſervation of the emperor. Hence we ſee on the reverſe of a Conſtantius, *VOTIS* XXX, *MULTIS* XXXX. importing (probably) not only that he might reign 30 years, or 10 years more, from the time when the vows were made; namely, when he had already reigned 20 years; but that they engaged to make new vows at the expiration of 30 years, that he might reign 40 years; for it cannot mean that he had reigned 30 years at the time when the vows were made, ſince he died in the 26th year of his reign. This cuſtom laſted until Theodoſius; after whom no ſuch epocha is to be found.

Value uſe.

Beſides the reverſes which we have ranged into theſe three claſſes, there are many others which canot be reduced to any of them; ſuch as Addiſon calls *riddles*. For inſtance, on the reverſe of an Auguſtus, Mercury in the form of a Terminus, ſtanding on a thunderbolt; which was probably intended for a rebus, to expreſs the ſenſe of that emperor's motto, *Feſtina lente*. The Terminus was a figure, without either arms, hands, or feet; ſignifying, ſays Polybius, that all quarrels and conteſts about the limits and boundaries were determined. Inſtruments of religion were ſymbols of the *Pontifex Maximus*, and ſignified the piety of the prince on whoſe coin they were borne: thus upon a reverſe of Nerva, we ſee the *lituus*, the *ſimpulum*, the *aſperſorium*, &c. Two hands joining one another, holding two ears of corn, and a caduceus betwixt them, on the reverſs of a Titus, import the good harmony and union between the prince and the public; the peace ariſing from ſuch an union, and the plenty which is the fruit of ſuch a peace. See a collection of this ſort of reverſes in Addiſon's ſecond Series.

The value of medals, in common computation, is rated not by the metal, or ſize, nor merely by their antiquity, but by their rarity. The metal is of ſo little conſideration, that a copper medal is ſometimes valued at a much higher rate than a ſilver or a gold one: for inſtance, the copper Otho, of the larger ſize, called a *ſingular medal*, becauſe there is ſuppoſed to be but *one*, or however very few of them in the world, is of almoſt ineſtimable value; while a gold one ſhall not ſell for above two or three guineas more than its weight: and if a piece of king Numa's leather money could now be found, it would, no doubt, be valued above any gold one. Such a *ſingular* coin is a ſilver Greek medallion of Peſcennius, which is in the French king's cabinet. Hence the medals of thoſe emperors who reigned a ſhorter time, are generally more valued than thoſe that reigned longer; becauſe there were fewer of them ſtruck, and they are therefore the rarer. Yet ſometimes an uncommon reverſe ſhall give a great value to a medal, whoſe head, with another reverſe, is very common.

In collecting of medals great caution is to be uſed that we are not impoſed upon by counterfeits; eſpecially of ſuch medals as are ſcarce and rare. For that purpoſe we muſt attend to the field, and obſerve whether it is ſmooth, and free from marks of the ſand which may commonly be ſeen on caſt medals: to the letters and figures, which are never ſo ſharp and clean in caſt medals as in ſtamped ones; to the edges, to obſerve whether there be any marks of the file, which has been uſed in a caſt medal, eſpecially in that part where the metal ran into the mould. We are to obſerve again, whether there be any cracks in the edges; for though the abſence of them be no certain ſign of a counterfeit; yet, when they are found, they are looked upon as pretty good indications of the medal's being genuine. But nothing is more to be regarded than the colour and varniſh, eſpecially of copper medals; many of which have a certain inimitable varniſh and politure; ſome green, ſome blue, others of a reddiſh brown; which, whether it was given them by art, or has been contracted by age, is not abſolutely determined: though the latter ſeems more probable, ſince all the art of the falſifiers, whether by ſal ammoniac, vinegar, burning paper upon them, burying them in the earth, or any other way, has by no means equalled it. There is indeed a green varniſh which is commonly uſed for this purpoſe, that is pretty enough; but it is too bright and glaring; ſo that a little experience will enable a perſon to diſtinguiſh it from the antique.

Secondly, As to the uſe of ancient medals, beſides a thouſand little impertinences, as Addiſon calls them, that are very gratifying to curioſity, ſuch as the dreſs of the moſt celebrated ladies of antiquity, the flattering titles affected by this and the other emperor, and the honours he paid to his family and friends; they ſerve eſpecially to repreſent to us the features and lineaments of many illuſtrious perſonages. But beſides theſe and many other like matters of mere, yet very entertaining curioſity, they are capable of ſeveral more ſubſtantial uſes; concerning which the learned Spanheim has publiſhed a large volume, *De Preſtantia et uſu Numiſmatum Antiquorum*: for inſtance, they are of very conſiderable ſervice in hiſtory; for beſides, that many facts and events not recorded by any of the ancient hiſtorians may be collected from them, they throw great light on ſeveral obſcure paſſages in thoſe writers. And indeed there is hardly any conſiderable event in the Grecian or Roman hiſtory, to which ſome reference may not be found in the coins of thoſe nations. So that a cabinet of medals may be conſidered as in a manner a body of hiſtory; being converſant with which will fix hiſtorical facts and circumſtances upon the memory with more eaſe, as well as give a greater degree of certainty concerning them than, books alone will ordinarily do.

Chronology receives not a little aid from medals, as they not only perpetuate the memory of illuſtrious actions, but often mark the year when they were performed.

Geography has been greatly beholden to this ſcience, for aſcertaining the names of ancient places; the founders of cities and colonies; and ſometimes their ſituation, by their neighbourhood of ſome noted river, mountain, &c. expreſſed by ſome device on a medal.

By the help of medals we diſcover what honours and privileges certain cities were anciently poſſeſſed of. For inſtance, we learn from them what cities, beſides Rome, had the privilege of Roman citizens. The honour of a city's being νεωχορος, is celebrated on many Grecian medals; which imports that it had a temple in it, where the ſolemn ſacrifices of the whole province were performed for their prince, and public games were exhibited to his honour, as often as his permiſſion could be obtained for that purpoſe. Hence we ſee on ſome medals ΔIC, TPIC. TETPAKIC, &c. NEΩKOPΩN. for though the word νεωχορος, derived from ναος, *templum*, and χωρεω, *verro, purgo*, doubtleſs imported originally a mean office, namely, that of *ſacriſtan*, or *ſexton*; yet in time it came to be a term or title of honour, importing not only the celebration of the games (as we have ſaid before), but alſo the religious devotion of a city to ſome deity: which ſenſe it is applied to the city of Epheſus, *Acts* xix. 35. ſaid to be νεωκορον της μελαγης Θεας Αρτεμιδος, και του Διοπετους: and therefore more properly rendered in that place *cultricem* in the vulgate, and *worſhipper* in our Engliſh tranſlation, than *æditum*, as in Beza and in ſome others.

We learn alſo from medals, in many caſes, which was the chief city or metropolis of a province; and in what ſenſe a city is called ϖρωτε when it was not the metropolis, as Philippi is ſaid to be πρωτη της μεριδος της Μακεδονιας πολις, κολωνια, *Acts* xvi. 12. That Philippi was a Roman colony, appears from a medal ſtruck in the reign of Claudius, with this legend, COL. AUG. IVL. PHILIP. that is *Colonia Auguſta Julia Philippi*, or *Philippenſis*. And in what ſenſe this city was πρωτη πολις, though Theſſalonica was undoubtedly the metropolis or chief city of the province, may be gathered from the uſe of the word ϖρωτη, as applied to ſeveral other cities on ancient coins: as in the pro-conſular Aſia, not only Epheſus which was the chief city, but Smyrna and Pergamus, have the title πρωτη: and in

Medallion, Mede.

in Bithynia, not only Nicomedia, which was the metropolis, but Nicea is alſo called πρωτη. Now, Spanheim ſhews, that this title, when thus applied to inferior cities, refers to the games which ſeveral cities joined in ſupporting, and of which one was the πρωτη. In this ſenſe Philippi was the πρωτη πολις, (not της επαρχιας, but της μεριδος,) of a particular diſtrict of Macedonia.

We have not yet mentioned all the arts and ſciences which receive light and aid from medals. Sculpture and painting have revived, in later ages, along with this ſtudy; to which thoſe arts are greatly indebted for noble hints and patterns. The ſame may be ſaid of architecture, which now borrows its fineſt ornaments from the plans and models of ancient temples, ports, triumphal arches, and other public edifices, preſerved on medals. Mr Addiſon has abundantly convinced us of their uſe to explain numerous paſſages in the claſſics. By their means the natural philoſopher alſo acquaints himſelf with a great variety of foreign plants and animals. And the divine not only finds the uſefulneſs of medals, for explaining and illuſtrating ſeveral texts of Scripture, as we have ſeen above; but hereby he informs himſelf of the ancient theology of the Greeks and Romans: here he ſees the gods they worſhipped, and their attributes expreſſed in ſignificative emblems; here he ſees their altars and adorations, and the inſtruments with which they performed their ſacred rites. Upon the whole, therefore, though it cannot be denied that ſome perſons have carried the ſtudy of medals to a ridiculous extravagance, yet it by no means deſerves to be treated with the contempt it is by others, or to be wholly neglected.

Impreſſion of MEDALS. See CASTING.

MEDALLION, or MEDALION, a medal of an extraordinary ſize, ſuppoſed to be anciently ſtruck by the emperors for their friends, and for foreign princes and ambaſſadors. But, that the ſmallneſs of their number might not endanger the loſs of the devices they bore, the Romans generally took care to ſtamp the ſubject of them upon their ordinary coins.

Medallions, in reſpect of the other coins, were the ſame as modern medals in reſpect of modern money: they were exempted from all commerce, and had no other value than what was ſet upon them by the fancy of the owner. Medallions are ſo ſcarce, that there cannot be any ſet made of them, even though the metals and ſizes ſhould be mixed promiſcuouſly.

MEDE (Joſeph), a very learned Engliſh divine of the 17th century, was educated at Cambridge, and ſoon diſtinguſhed himſelf to great advantage; for by the time he had taken the degree of maſter of arts in 1610, he had made an uncommon progreſs in all academical ſtudies. His firſt appearance as a writer was by an addreſs to Dr Andrews, then biſhop of Ely, in a Latin tract *De Sanctitate Relativa*, which was highly approved of by that prelate, who deſired him to be his domeſtic chaplain. This Mr Mede very civilly refuſed; valuing the liberty of his ſtudies above any hopes of preferment, and eſteeming that freedom which he enjoyed in his cell, ſo he uſed to call it, as the haven of all his wiſhes. And indeed theſe thoughts had poſſeſſed him betimes; for when he was a ſchool-boy, he was ſent to by his uncle, Mr Richard Mede, a merchant, who, being then without children, offered to adopt him for his ſon if he would live with him: but he refuſed the offer, preferring, as it ſhould ſeem, a life of ſtudy to a life of gain.

Mede.

He was not choſen fellow of his college till after he was maſter of arts, and then not without the aſſiſtance of his friend biſhop Andrews: for he had been paſſed over at ſeveral elections, on account of a cauſeleſs ſuſpicion which Dr Cary, then maſter of the college, afterwards biſhop of Exeter, had conceived of him, that "he looked to much towards Geneva." Being made fellow, he became an eminent and faithful tutor. After he had well grounded his pupils in humanity, logic, and philoſophy, ſo that they were able to walk as it were alone, he uſed to ſet every one his daily taſk; which he rather choſe, than to confine himſelf and them to preciſe hours for lectures. In the evening they all came to his chamber; and the firſt queſtion he put to each was, *Quid dubitas?* "What doubts have you met with in your ſtudies to-day?" For he ſuppoſed, that to doubt nothing and to underſtand nothing was juſt the ſame thing. This was right, and the beſt method to make young men exerciſe their rational powers, and not acquieſce in what they learn mechanically, and by rote, with an indolence of ſpirit which prepares them to receive and ſwallow implicitly whatever is offered to them. As to himſelf, he was ſo entirely devoted to the ſtudy of all excellent knowledge, that he made even the time he ſpent in his amuſements ſerviceable to his purpoſe. He allowed himſelf little or no exerciſe but walking; and often, in the fields or college garden, would take occaſion to ſpeak of the beauty, ſignatures, virtues, or properties of the plants then in view: for he was a curious floriſt, an accurate herbaliſt, and thoroughly verſed in the book of nature. The chief delight he took in company was to diſcourſe with learned friends.

Mr Mede was a curious inquirer into the moſt abſtruſe parts of learning, and endeavoured after the knowledge of thoſe things which were moſt remote from the vulgar track. Among other things, he ſpent no ſmall pains and time in ſounding the depths of aſtrology, and blotted much paper in calculating the nativities of his near relations and fellow-ſtudents: but this was in his younger years, and he afterwards diſcovered the vanity and weakneſs of this fanciful art. He applied himſelf to the more uſeful ſtudy of hiſtory and antiquities; particularly to thoſe myſterious ſciences which made the ancient Chaldeans, Egyptians, and other nations, ſo famous; tracing them, as far as he could have any light to guide him in their oriental ſchemes and figurative expreſſions, as likewiſe in their hieroglyphics, not forgetting to inquire alſo into the oneirocritics of the ancients: which he did the rather, becauſe of that affinity he conceived they might have with the language of the prophets. He was a curious and laborious ſearcher of antiquities relating to religion, ethnic, Jewiſh, Chriſtian, and Mahometan: to which he added other attendants, neceſſary for underſtanding the more difficult parts of Scripture.

In 1620, he refuſed the provoſtſhip of Trinity-college, Dublin, into which he had been elected at the recommendation of archbiſhop Uſher, who was his particular friend; as he did alſo when it was offered to him a ſecond time, in 1630. The height of his ambition was, only to have had ſome ſmall donative ſinecure

cure added to his fellowſhip, or to have been thrown into ſome place of quiet; where, retired from the noiſe and tumults of the world, and poſſeſſed of a competency of fortune, he might havs been intirely at leiſure for ſtudy and acts of piety. In the mean time, although his circumſtances were ſcanty, for he had nothing but his fellowſhip and a college lecture, his charity was diffuſive and uncommon; and, ſtrange as it may now ſeem, he devoted the tenth of his income to pious and charitable uſes. But his frugality and temperance always afforded him plenty. His prudence or moderation, either in declaring or defending his private opinions, was very remarkable; as was alſo his freedom from partiality, prejudice or prepoſſeſſion, pride, anger, ſelfiſhneſs, flattery, and ambition. He was meek, patient, equally remote from ſuperſtition and licentiouſneſs of thinking; and, in ſhort, poſſeſſed every virtue. This great and good man died in 1638, in his 52d year, having ſpent above two-thirds of his time in college.

MEDEA, in fabulous hiſtory, daughter of Aetas king of Colchis, who poſſeſſed the golden fleece, A. M. 2741. She fell in love with Jaſon, helped him to the fleece, and then went away with him. She is ſaid to have been a great ſorcereſs, and by her art reſtored the age of Æſon her father-in-law. Jaſon afterwards forſaking her, in revenge ſhe married Egeus; but was baniſhed Athens, of which he was king.

MEDIA, now the province of Ghilan in Perſia, once the ſeat of a potent empire, was bounded, according to Ptolemy, on the north by part of the Caſpian Sea; on the ſouth by Perſis, Suſiana, and Aſſyria; on the eaſt by Parthia and Hyrcania; and on the weſt by Armenia Major. It was anciently divided into ſeveral provinces, *viz.* Tropatene, Charomithrene, Darites, Marciane, Amariace, and Syro-Media. By a later diviſion, however, all theſe were reduced to two; the one called *Media Magna*, the other *Media Atropatia*, or ſimply *Atropatene.* Media Magna was bounded by Perſis, Parthia, Hyrcania, the Hyrcanian Sea, and Atropatene, and contained the cities of Ecbatan, Laodicea, Apamea, Raga, Rageia, or Ragea, &c. Atropatene lay between the Caſpian mountains and the Caſpian Sea.

This country originally took its name from Madai, the third ſon of Japhet; as is plain from Scripture, where the Medes are conſtantly called *Madai.* Among profane authors, ſome derive the name *Media*, from one Medus the ſon of Jaſon and Medea; others from a city called *Media.* Sextus Rufus tells us that in his time it was called *Medena*, and from others we learn that it was alſo called *Aria.* The moſt probable hiſtory of the Medes is as follows.

This people lived in ſubjection to the Aſſyrians till the reign of Sennacherib, when they threw off the yoke, and lived for ſome time in a ſtate of anarchy. But at laſt, rapine and violence, the natural conſequences of ſuch a ſituation, prevailed ſo much that they were conſtrained to have recourſe to ſome kind of government that they might be enabled to live in ſafety. Accordingly, about 699 B. C. one Dejoces having procured himſelf to be choſen king, united the ſcattered tribes into which the Medes were at that time divided, and having applied himſelf as much as poſſible to the civilization of his barbarous ſubjects, left the throne to his ſon Phraortes, after a reign of 53 years.

The new king, who was of a warlike and enterpriſing diſpoſition, ſubdued almoſt all the Upper Aſia lying between Mount Taurus and the river Halys which runs through Cappadocia into the Euxine Sea. Elated with this good ſucceſs, he invaded Aſſyria, the empire of which was now much declined, and greatly weakened by the revolt of many nations which had followed the example of the Medes. Nebuchodonoſor, or Chyniladan, however, the reigning prince, having aſſembled what forces he could, engaged Phraortes, defeated, took him priſoner, and put him to death; after which, entering Media, he laid waſte the country, took the metropolis of Ecbatan itſelf, and levelled it with the ground.

On the death of Phraortes, his ſon Cyaxares was placed on the throne. He was no leſs valiant and enterpriſing than his father, and had better ſucceſs againſt the Aſſyrians. With the remains of that army which had been defeated under his father, he not only drove the conquerors out of Media, but obliged Chyniladan to ſhut himſelf up in Nineveh. To this place he immediately laid cloſe ſiege; but was obliged to give over the enterprize on account of an irruption of the Scythians into his own country. Cyaxares engaged theſe new enemies with great reſolution; but was utterly defeated; and the conquerors over-ran not only all Media, but the greateſt part of Upper Aſia, extending their conqueſts into Syria, and as far as the confines of Egypt. They continued maſters of all this vaſt track of country for 28 years, till at laſt Media was delivered from their yoke by a general maſſacre at the inſtigation of Cyaxares.

After this deliverance the Medes ſoon repoſſeſſed themſelves of the territories they had loſt; and once more extended their frontiers to the river Halys, their ancient boundary to the weſtward. After this we find the Medes engaged in a war with the Lydians; which, however, ended without any remarkable tranſaction: but on the concluſion of it, Cyaxares having entered into a ſtrict alliance with Nebuchadnezzar king of Babylon, returned in conjunction with the Babylonians before Nineveh; which they took and levelled with the ground, putting moſt of the inhabitants to the ſword.

After this victory the Babylonian and Median empires ſeem to have been united: however, after the death of Nebuchadnezzar, or rather in his lifetime, a war enſued, which was not extinguiſhed but by the diſſolution of the Babylonian empire. The Medes, under Aſtyages the ſon of Cyaxares I. withſtood the power of the Babylonian monarchs; and under Cyrus and Cyaxares II. utterly deſtroyed their empire by the taking of Babylon, as is related under that article. After the death of Cyaxares, the kingdom fell to Cyrus, by whom the ſeat of the empire was transferred to Persia, under which article the hiſtory of Media now falls to be conſidered, as alſo the manners, &c. of the inhabitants.

MEDIASTINUM, in anatomy. See there, n° 377, d.

MEDIATE, or Intermediate, ſomething that ſtands between and connects two or more terms conſidered as extremes; in which ſenſe it ſtands oppoſed to *immediate.*

Medicago.

MEDICAGO, Snail-trefoil; a genus of the decandria order, belonging to the diadelphia claſs of plants. There are nine ſpecies, though only five are commonly cultivated in this country. They are low trailing plants, adorned with ſmall yellow flowers, ſucceeded by ſmall, round, ſnail-ſhaped fruit, which are downy, and armed with a few ſhort ſpines. They are all eaſily propagated by ſeeds.

Medicat Medicin

MEDICATED waters. See Water; and Air, n° 8, 50—53.

MEDICINAL, any thing belonging to medicine.

Medicinal *Springs*, a general name for any fountain, the waters of which are of uſe for removing certain diſorders. They are commonly either chalybeate or ſulphureous. See Springs.

MEDICINE.

MEDICINE is the art of preventing and curing diſeaſes.

History *of Medicine.*

This art is in itſelf ſo noble, and ſo generally uſeful to mankind, that many have thought it came originally from God by expreſs revelation; and, accordingly, we find the heathens with one voice aſcribing the origin of the medicinal art to their gods. Moſt people, however, are now of opinion, that it is of human invention; and that mankind were naturally led to it from caſual obſervations on the diſeaſes to which they found themſelves ſubject.

At what time medicine was firſt reduced to rules, and began to be practiſed as an art, is not known. The moſt ancient phyſicians we read of were thoſe who embalmed the patriarch Jacob by order of his ſon Joſeph. The ſacred writer ſtyles theſe phyſicians *ſervants* to Joſeph: from whence we may be aſſured that they were not *prieſts*, as the firſt phyſicians are generally ſuppoſed to have been; for in that age we know the Egyptian prieſts were in ſuch high favour, that they retained their liberty, when, through a public calamity, all the reſt of the people were made ſlaves to the prince.

1 Phyſicians not originally prieſts.

It is not probable, therefore, that among the Egyptians religion and medicine were originally conjoined; and if we ſuppoſe this people not to have invented the art, but received it from ſome other nation, it is as little probable that the prieſts of that nation were their phyſicians, any more than thoſe of Egypt already mentioned.

That the Jewiſh phyſicians were abſolutely diſtinct from their prieſts is very certain. Yet as the Jews reſided for ſuch a long time in Egypt, it is probable they would retain many of the Egyptian cuſtoms, from which it would be very difficult to free them. We read, however, that when king Aſa was diſeaſed in his feet, "he ſought not to the Lord, but to the phyſicians." Hence we may conclude, that among the Jews the medicinal art was looked upon as a mere human invention; and it was thought that the Deity never cured diſeaſes by making people acquainted with the virtues of this or that herb, but only by his miraculous power; which indeed ſeems moſt becoming his exalted character. That the ſame opinion prevailed among the heathens who were neighbours to the Jews, is alſo probable from what we read of Ahaziah king of Judah, who having ſent meſſengers to inquire of Baal-zebub God of Ekron concerning his diſeaſe, he did not deſire any remedy from him or his prieſts, but ſimply to know whether he ſhould recover or not.

2 How re gion an medicin came to mixed gether.

What ſeems moſt probable on this ſubject therefore is, that religion and medicine came to be mixed together only in conſequence of that degeneracy into ignorance and ſuperſtition, which ſome time or other hath taken place among all nations. The Egyptians, we know, came at laſt to be ſunk in the moſt ridiculous and abſurd ſuperſtition; and then, indeed, it is no wonder to find their prieſts commencing phyſicians, and mingling charms, incantations, &c. with their remedies. That this was the caſe, tho' long after the days of Joſeph, we are very certain; and indeed it ſeems as natural for ignorance and barbariſm to combine religion with phyſic, as it for a civilized and enlightened people to keep them ſeparate. Hence we ſee, that among all modern barbarians their prieſts or conjurors are their only phyſicians.

3 Of th Egypti phyſic.

We are ſo little acquainted with the ſtate of phyſic among the Egyptians, that it is needleſs to ſay much concerning them. They attributed the invention of medicine, as they did alſo that of many other arts, to Thoth, the Hermes or Mercury of the Greeks. He is ſaid to have wrote many things in hieroglyphic characters upon certain pillars, in order to perpetuate his knowledge, and render it uſeful to others. Theſe were tranſcribed by Agathodemon, or the ſecond Mercury, the father of Tat, who compoſed books of them, that were kept in the moſt ſacred places of the Egyptian temples. The exiſtence of ſuch a perſon, however, is very dubious, and many of the books aſcribed to him were accounted forgeries as long ago as the days of Galen; there is alſo great reaſon to ſuſpect that theſe books were wrote many ages after Hermes, and when phyſic had made conſiderable advances. Many of his books are quite trifling and ridiculous; and though ſometimes he is allowed to have all the honour of inventing the art, he is on other occaſions obliged to ſhare it with Oſiris, Iſis, and Apis, or Serapis.

4 Ther ſurd t ries.

After all, the Egyptian phyſic appears to have been little elſe than a heap of abſurd ſuperſtitions. Origen informs us, that they believed there were 36 demons, or gods of the air, who divided the human body among them; that they had names for all of them; and that by invoking them according to the part affected, the patient was cured. Of natural medicines we hear of none recommended by the father of Egyptian phyſic; except the herb *moly*, which he gave to Ulyſſes in order to ſecure him from the enchantments of Circe; and the herb *mercury*, whoſe uſe he firſt diſcovered. His ſucceſſors made uſe of veneſection, cathartics, emetics, and clyſters. There is no proof, however, that this practice was eſtabliſhed by Hermes; on the contrary, the Egyptians themſelves pretended, that the firſt hint of theſe remedies was taken from ſome obſervations on brute

5 His Meth cur

brute animals. Veneſection was taught them by the hippopotamus, which is ſaid to perform this operation upon itſelf. On theſe occaſions, he comes out of the river, and ſtrikes his leg againſt a ſharp-pointed reed. As he takes care to direct the ſtroke againſt a vein, the conſequence muſt be a conſiderable effuſion of blood; and this being ſuffered to run as long as the creature thinks proper, he at laſt ſtops up the orifice with mud. The hint of clyſters was taken from the ibis, a bird which is ſaid to give itſelf clyſters with its bill, &c. They uſed veneſection, however, but very little, probably on account of the warmth of the climate; and the exhibition of the remedies abovementioned, joined with abſtinence, formed the moſt of their practice.

The Geeeks too had ſeveral perſons to whom they attributed the invention of phyſic, particularly Prometheus, Apollo or Pæan, and Æſculapius; which laſt was the moſt celebrated of any. But here we muſt obſerve, that as the Greeks were a very warlike people, their phyſic ſeems to have been little elſe than what is now called *ſurgery*, or the cure of wounds, fractures, &c. Hence, Æſculapius, and his pupils Chiron, Machaon, and Podalirius, are celebrated by Homer only for their ſkill in curing theſe, without the leaſt mention of their attempting the cures of internal diſeaſes. We are not, however, to ſuppoſe, that they confined themſelves entirely to ſurgery. They no doubt would occaſionally preſcribe for internal diſorders; but as they were moſt frequently converſant with wounds, we may naturally ſuppoſe the greateſt part of their ſkill to have conſiſted in knowing how to cure theſe. If we may believe the poets, indeed, the knowledge of medicine ſeems to have been very generally diffuſed. Almoſt all the heroes of antiquity are reported to have been phyſicians as well as warriors. Moſt of them were taught phyſic by the centaur Chiron. From him Hercules received inſtructions in the medicinal art, in which he is ſaid to have been no leſs expert than in feats of arms. Several plants were called by his name; from whence ſome think it probable that he found out their virtues, though others are of opinion that they bore the name of this renowned hero on account of their great efficacy in removing diſeaſes. Ariſtæus king of Arcadia was alſo one of Chiron's ſcholars; and is ſuppoſed to have diſcovered the uſe of the drug called *ſilphium*, by many thought to be aſafœtida. Theſeus, Telamon, Jaſon, Peleus, and his ſon Achilles, were all renowned for their knowledge in the art of phyſic. The laſt is ſaid to have diſcovered the uſe of verdegriſe in cleanſing foul ulcers. All of them, however, ſeem to have been inferior in knowledge to Palamedes, who hindered the plague from coming into the Grecian camp after it had ravaged moſt of the cities of Helleſpont, and even Troy itſelf. His method was to confine his ſoldiers to a ſpare diet, and to oblige them to uſe much exerciſe.

The practice of theſe ancient Greek phyſicians, notwithſtanding the praiſes beſtowed on them by their poets, ſeems to have been very limited, and in ſome caſes even pernicious. All the external remedies applied to Homer's wounded heroes were fomentations; while inwardly their phyſicians gave them wine, ſometimes mingled with cheeſe ſcraped down. This laſt we know muſt have been pernicious in many caſes by increaſing the inflammation; and it is very probable, that ſuch an improper exhibition was merely a conſequence of their ignorance; as we ſee old women in this country will give ardent ſpirits to thoſe who are ſeized with inflammatory fevers, in order to prevent their patients from fainting. A great deal of their phyſic alſo conſiſted in charms, incantations, amulets, &c. of which, as they are common to all ſuperſtitious and ignorant nations, it is ſuperfluous to take any farther notice.

9 Art of medicine originally empiric.

In this way the art of medicine continued among the Greeks for many ages. As its firſt profeſſors knew nothing of the animal œconomy, and as little of the theory of diſeaſes, it is plain, that whatever they did muſt have been in conſequence of mere random trials, or empiriciſm, in the moſt ſtrict and proper ſenſe of the word. Indeed, it is evidently impoſſible that this or almoſt any other art could originate from another ſource than trials of this kind. Accordingly, we find, that ſome ancient nations were accuſtomed to expoſe their ſick in temples, and by the ſides of highways, that they might receive the advice of every one that paſſed. Among the Greeks, however, Æſculapius, as he was reckoned the moſt eminent practitioner of his time, ſo his name continued to be revered after his death; he was ranked amongſt the gods; and the principal knowledge of the medicinal art remained with his family to the time of Hippocrates, who reckoned himſelf the ſeventeenth in a lineal deſcent from Æſculapius, and who was truly the firſt who treated of medicine in a regular and rational manner.

10 Pythagoras introduces his theory into medicine.

At laſt, the Grecian philoſophers attempted to introduce particular theories into the medicinal art. Pythagoras, who lived about the 60th Olympiad, and founded the Italic ſchool, is the firſt we read of who began to take theſe things into conſideration. He believed, that, at the time of conception, a certain ſubſtance deſcended from the brain, which contained a warm vapour, from whence the ſoul and all the ſenſes derived their original; while the fleſh, the nerves, tendons, bones, hair, and all the body in general, were made of the blood and other humours which meet in the matrix. According to him, the body of the infant was formed, and became ſolid in 40 days: but eleven, nine, or more generally ten months, according to the rules of harmony, were requiſite to make him perfectly complete, and that all that happened to him during the whole courſe of his life was then regulated; and that he carried it along with him in a ſeries or chain proportioned to the laws of the ſame harmony, every thing neceſſarily falling out afterwards in its own time. He aſſerted, that the veins, the arteries, and the nerves, are the cords of the ſoul. According to him, the ſoul ſpreads from the heart to the brain; and that part of it which is in the heart is the ſame from whence the paſſions proceed, whereas reaſon and underſtanding reſide in the brain. This is what may be called the *Pythagorean phyſiology*; and if we pleaſe we may call the following *his pathology*. "The air (ſays he) is all filled with ſouls, or demons, and heroes, that ſend dreams, ſigns, and diſeaſes to men, and even to beaſts." As to his practice, we know of no other remedy he eſteemed beſides *cabbage*; all his other cures conſiſted of charms or other ſuperſtitions. His doctrine concerning abſtinence from fleſh are too well known, and too abſurd to be inſiſted on here.

11 Heraclitus's ſtrange method of curing himſelf.

A ſhort time after Pythagoras, the philoſopher Heraclitus applied himſelf to the ſtudy of phyſic. The only patient of his we hear of was himſelf; and indeed, if we may judge of his practice by the method he took to cure himſelf, it ſeems to have been for the good of mankind that he had no more. Being a man of a very auſtere and moroſe temper, which occaſioned the report that he always wept, he retired into a ſolitary place to avoid the converſation of mankind; where, living only upon water and herbs, he fell into a dropſy. This obliged him to return to inhabited places, where he ſent for phyſicians, not with a deſign to follow their advice, but to expoſe their ignorance to the world, and to make them witneſſes of the cure he intended to perform upon himſelf. Accordingly, he ſhut himſelf up in a ſtable, where he covered all his body with dung, hoping by that means to conſume the ſuperfluous moiſture in his entrails: but in this he did not ſucceed; for he died of the diſeaſe ſoon after.

12 State of the art as left by Hippocrates.

This may be a ſufficient ſpecimen of the ancient philoſophic medicine, of which we ſhall now take no farther notice, but proceed to give an account of the ſtate in which the art was left by Hippocrates, whoſe name has been celebrated through ſo many ages. According to Soranus, Hippocrates was born in the iſland of Cos, in the firſt year of the 88th Olympiad; but others make him older, ſo that the exact time in which he lived cannot be aſcertained.

13 Some books falſely attributed to him.

The works attributed to him are very voluminous, but evidently done by different perſons, as many of them are contradictory to each other, ſo that it is difficult to determine thoſe which are really his writings, and thoſe which are not. Some indeed are ſo ſceptical on this head, as to deny that we have proper evidence that any of thoſe works really belong to Hippocrates, except a ſingle aphoriſm. Be this, however, as it will, in moſt of the writings aſcribed to Hippocrates, we find a general principle acknowledged which is called *nature*.

14 He acknowledges one general principle called *Nature*.

To this principle he aſcribes a mighty power. "Nature (ſays he) is of itſelf ſufficient to every animal. She performs every thing that is neceſſary to them, without needing the leaſt inſtruction from any one how to do it." Upon this footing, as if nature had been a principle endowed with knowledge, he gives her the title of *juſt;* and aſcribes virtues or powers to her, which are her ſervants, and by means of which ſhe performs all her operations in the bodies of animals: they diſtribute the blood, ſpirits, and heat, through all parts of the body, which by this means receive life and ſenſation. And in other places he tells us, that it is this faculty which gives nouriſhment, preſervation, and growth, to all things.

15 This principle acts by attraction.

The manner in which nature acts, or commands her ſubſervient powers to act, is by attracting what is good and agreeable to each ſpecies, and in retaining, preparing, and changing it; and on the other ſide in rejecting whatever is ſuperfluous or hurtful, after ſhe has ſeparated it from the good. This is the foundation of the doctrine of depuration, concoction, and criſis in fevers, ſo much inſiſted upon by Hippocrates and moſt other phyſicians. He ſuppoſes alſo, that every thing has an inclination to be joined to what agrees with it, and to remove from every thing contrary to it; and likewiſe that there is an affinity between the ſeveral parts of the body, by which they mutually ſympathize with each other. When he comes to explain what this principle called *nature* is, he is obliged to reſolve it into *heat*, which, he ſays, appears to have ſomething immortal in it.

With regard to the anatomical doctrines of Hippocrates, as they muſt neceſſarily have been very erroneous, we ſhall not ſpend time in recounting them.

16 His doc trineof four hu mours o the body

The health or ſickneſs of the body he reckoned to conſiſt in the ſtate of the four humours. Theſe are the blood, phlegm, the yellow bile, and the melancholy or black bile. The blood, he ſays, is naturally hot and moiſt, of colour red, and ſweet to the taſte: the phlegm is cold and moiſt, white, viſcid, and ſaltiſh; the bile yellow, dry, viſcid, bitter, and drawn from the fat part of the blood or aliments; the melancholy, black bile, he ſaid, was cold and dry, very viſcid, windy, and fermentative.

17 Health ſickneſs, how pro duced.

On theſe four humours, as already mentioned, depend health and ſickneſs. Men are well when the humours are in their natural ſtate, or while they balance one another in quality, quantity, and mixture. On the contrary, they are ſick when the quantity of any of theſe is leſs or greater than it ought to be, or when it is diſcharged from the reſt upon any particular part of the body, and eſpecially when they are not mixed together as they ought to be. Of ſickneſs, however, he gives no definition except in one place, where he calls it *all that incommodes man.* He thought that the blood in good condition, nouriſhed; that it was the fountain of the vital heat; that it cauſed a freſh colour, and good health. The yellow bile, he thought, preſerved the body in its natural ſtate, hindering the ſmall veſſels from being ſtopped, and keeping open the drain of the excrements: it alſo actuated the ſenſes, and helped to the concoction of the aliment. The black bile was a ſort of ground which ſerved as a ſupport and foundation for other humours. The phlegm ſerved to lubricate and facilitate the motion of the nerves, membranes, cartilages, joints, and other parts.

Beſides theſe four qualities of moiſture, dryneſs, heat, and cold, which Hippocrates attributed to the humours, he believed that they had, or might have, abundance of others which all had their uſe, and were never hurtful but when one prevailed over the reſt or was ſeparated from them. In other paſſages, however, he aſſigns different cauſes for diſeaſes. In one of his books, entitled, "Of winds, or ſpirits," he ſays, that the air and ſpirits are the true cauſes of health and diſeaſes, even in preference to the humours, which are only collateral cauſes as the ſpirits mix with them. Hence, health and ſickneſs in general are made to depend on the following cauſes, viz. On the air which ſurrounds us; on what we eat and drink; on ſleep, watching, exerciſe; on what goes out of our bodies, and what is kept in; and upon the paſſions.

18 Differe diſeaſe produ in diff ages a climate

The four humours he compares with the four ages of man, with the four ſeaſons, and with the climates. Infancy, the ſpring, and temperate countries, ought, according to him, to produce blood, and conſequently more ſanguine diſtempers than bilious, pituitous, or melancholic ones. Youth, ſummer, and hot and dry countries, produce bile, and all the maladies which ſpring from it. Middle age, autumn, and places of a heavy unequal

equal air, cauſe melancholy and melancholic diſtempers. Old age, winter, and cold moiſt countries, produce phlegm and phlegmatic diſtempers. He carefully examines what ſorts of food produce blood, bile, &c. He treats alſo of the effects of ſleep, watchings, exerciſe, and reſt, and all the benefit or miſchief we may receive from them. Of all the cauſes of diſeaſes, however, mentioned by Hippocrates, the moſt general are diet and air. On the ſubject of diet he has compoſed ſeveral books, and in the choice of this he was exactly careful; and the more ſo, as his practice turned almoſt wholly upon it. He alſo conſidered the air very much; he examined what winds blew ordinarily or extraordinarily; he conſidered the irregularity of the ſeaſons, the riſing and ſetting of ſtars, or the time of certain conſtellations; alſo the time of the ſolſtices, and of the equinoxes; thoſe days, in his opinion, producing great alterations in certain diſtempers.

Hence it may be inferred that Hippocrates looked upon the knowledge of aſtronomy to be neceſſary to a phyſician, and believed that the ſtars had ſome influence over our bodies. Some of his ancient commentators alſo believed that he thought diſeaſes were occaſioned by the wrath of the gods. But theſe commentators are contradicted by Galen, who aſſures us, that when Hippocrates ſpoke of ſomething *divine* in diſeaſes, he meant no more than that the cauſe of them depended on ſome latent conſtitution of the atmoſphere.

Hippocrates lays down three principles of which the human body is compoſed; viz. the ſolid, the liquid, and the ſpirits, which he ſometimes explains by "that which contains," "that which is contained," and "that which gives the motion." By that which contains is meant the ſolid parts, as bones, nerves, tendons, ligaments, &c. By that which is contained, he means the four humours already mentioned; and by that which gives the motion, he means the ſpirits.—The humours and ſpirits being, as we have already ſeen, the cauſes of health and ſickneſs, the ſolid or containing parts muſt be the ſubject of them; becauſe they are ſound or unſound according to the good or ill diſpoſition which the humours and ſpirits produce in them, and as the impreſſions made upon them by foreign bodies is beneficial or miſchievous.

He does not, however, pretend to explain how, from theſe cauſes, that variety of diſtempers ariſes which is daily to be obſerved. All that can be gathered from him with regard to this is, that the different cauſes above-mentioned, when applied to the different parts of the body, produce a great variety of diſtempers. Some of theſe diſtempers he accounted *mortal*, other *dangerous*, and the reſt eaſily *curable*, according to the cauſe from whence they ſpring, and the parts on which they fall. In ſeveral places alſo he diſtinguiſhes diſeaſes, from the time of their duration, into *acute* or *ſhort*, and *chronical* or *long*: this likewiſe is referred to the different cauſes before mentioned; acute diſeaſes being caught by the bile and the blood, in the flower of man's age, or in ſpring-time, and ſummer. The chronical ones, on the contrary, are produced by the phlegm, or melancholy, in old age, and in winter. He likewiſe diſtinguiſhes diſeaſes by the particular places where they prevail, whether ordinary or extraordinary. The firſt, that is, thoſe that are frequent and familiar to certain places, he called *endemic* diſeaſes; and the latter which ravaged extraordinarily ſometimes in one place, ſometimes in another, which ſeized great numbers at certain times, he called *epidemic*, that is, *popular* diſeaſes; and of this kind the moſt terrible is the plague. He likewiſe mentions a third kind, the oppoſite of the former; and theſe he calls *ſporadic*, or ſtraggling diſeaſes: theſe laſt include all the different ſorts of diſtempers which invade at any one ſeaſon, which are ſometimes of one ſort, and ſometimes of another. He diſtinguiſhed between thoſe diſeaſes which are hereditary, or born with us, and thoſe which are contracted afterwards; and likewiſe between thoſe of a *kindly* and ſuch as are of a *malignant* nature, the former of which are eaſily and frequently cured, but the latter give the phyſicians a great deal of trouble, and are ſeldom overcome by all their care.

22 Remarks four ſtages in diſtempers.

Hippocrates remarked four ſtages in diſtempers; viz. the beginning of the diſeaſe, its augmentation, its ſtate or height, and its declination. In ſuch diſeaſes as terminate fatally, death comes in place of the declination. In the third ſtage, therefore, the change is moſt conſiderable, as it determines the fate of the ſick perſon; and this is moſt commonly done by means of a *criſis*. By this word he underſtood any ſudden change in ſickneſs, whether for the better or for the worſe, whether health or death ſucceed immediately. Such a change, he ſays, is made at that time by *nature*, either abſolving or condemning the the patient. Hence we may conclude, that Hippocrates imagined diſeaſes to be only a diſturbance of the animal oeconomy, with which Nature was perpetually at variance, and uſing her utmoſt endeavours to expel the enemy. Her manner of acting on theſe occaſions is to reduce to their natural ſtate thoſe humours whoſe diſcord occaſions the diſturbance of the whole body, whether in relation to their quantity, quality, mixture, motion, or any other way in which they become offenſive. The principal means employed by nature for this end is what Hippocrates calls *concoction*. By this we can only underſtand the bringing the morbific matter lodged in the humours to ſuch a ſtate, as to be eaſily fitted for expulſion by whatever means nature thinks moſt proper. When matters are brought to this paſs, whatever is ſuperfluous or hurtful immediately empties itſelf, or nature points out to phyſicians the way by which ſuch an evacuation is to be accompliſhed. The criſis takes place either by bleeding, ſtool, vomit, ſweat, urine, tumours or abſceſſes, ſcabs, pimples, ſpots, &c. But we muſt take notice that theſe evacuations are not to be looked upon as the effects of a true criſis, unleſs they are in conſiderable quantity; ſmall diſcharges not being ſufficient to make a criſis. On the contrary, ſmall diſcharges are a ſign that nature is depreſſed by the load of humours, and that ſhe lets them go through weakneſs and continual irritation. What comes forth in this manner is crude, becauſe the diſtemper is yet too ſtrong; and while matters remain in this ſtate, nothing but a bad or imperfect criſis is to be expected. This ſhews that the diſtemper triumphs, or at leaſt is

23 A criſis, what.

is equal in ſtrength to nature, which prognoſticates death, or a prolongation of the diſeaſe. In this laſt caſe, however, nature often has an opportunity of attempting a new criſis more happy than the former, after having made freſh efforts to advance the concoction of the humours.—It muſt here be obſerved, however, that, according to Hippocrates, concoction cannot be made but in a certain time, as every fruit has a limited time to ripen; for he compares the humours which nature has digeſted to fruits come to maturity.

24
Different times required for concocting the humours.

The time required for concoction depends on the differences among diſtempers mentioned above. In thoſe which Hippocrates calls *very acute*, the digeſtion or criſis happens every fourth day; in thoſe which are only *acute*, it happens on the ſeventh, eleventh, or fourteenth day; which laſt is the longeſt period generally allowed by Hippocrates in diſtempers that are truly acute: though in ſome places he ſtretches it to the twentieth or one-and-twentieth, nay, ſometimes to the fortieth or ſixtieth days. All diſeaſes that exceed this laſt term are called *chronical.* And whereas in thoſe diſeaſes that exceed fourteen days, every fourth day is critical, or at leaſt remarkable, by which we may judge whether the criſis on the following fourth day will be favourable or not; ſo in thoſe which come from twenty to forty he reckons only the ſevenths, and in thoſe that exceed forty he begins to reckon by twenties; as appears by the following progreſſion, which contains the days particularly marked by Hippocrates. He begins with the fourth; and then he proceeds to the eleventh, the fourteenth, ſeventeenth, twentieth, ſeven-and-twentieth, thirty-fourth, the fortieth, the ſixtieth, the eightieth, the hundredth, and the hundred-and-twentieth. Beyond this laſt term the number of days has no power over the criſis. They are then referred to the general changes of the ſeaſons; ſome terminating about the equinoxes; others about the ſolſtices; others about the riſing or ſetting of the ſtars of certain conſtellations; or if numbers have yet any place, he reckons by months, or even whole years. Thus, he ſays, certain diſeaſes in children have their criſis in the ſeventh month after their birth, and others in their ſeventh, or even their fourteenth year.

Though Hippocrates mentions the one-and-twentieth as one of the critical days in acute diſtempers, as already mentioned; yet, in other places of his works, he mentions alſo the twentieth. The reaſon he gives for this in one of thoſe places of his works is, that the days of ſickneſs were not entire. In general, however, he is prodigiouſly attached to the odd days: inſomuch that in one of his aphoriſms he tells us, "The ſweats that come out upon the third, fifth, ſeventh, ninth, eleventh, fourteenth, ſeventeenth, twenty-firſt, twenty-ſeventh, thirty-firſt, or thirty-fourth days, are beneficial; but thoſe that come out upon other days ſignify that the ſick ſhall be brought low, that his diſeaſe ſhall be very tedious, and that he ſhall be ſubject to relapſes." He further ſays, "That the fever which leaves the ſick upon any but an odd day is uſually apt to relapſe." Sometimes, however, he confeſſes that it is otherwiſe; and he gives an inſtance of a ſalutary criſis happening on the ſixth day. But theſe are very rare inſtances, and therefore cannot overthrow the general rule.

Beſides the criſis, however, or the change which determines the fate of the patient, Hippocrates often ſpeaks of another which only changes the ſpecies of the diſtemper, without reſtoring the patient to health; as when a pleuriſy turns to an inflammation of the lungs, a vertigo to an epilepſy, a tertian fever to a quartan, or to a continual, &c.

25
His re-
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accuracy
making
ſervatio

But what hath chiefly contributed to procure the vaſt reſpect generally paid to Hippocrates, is his induſtry in obſerving the moſt minute circumſtances of diſeaſes, and his exactneſs in nicely deſcribing every thing that happened before, and every accident that appeared at the ſame time with them; as alſo what appeared to give eaſe, and what to increaſe the malady, which is what we call *writing the hiſtory of a diſeaſe.*—Thus he not only diſtinguiſhed one diſeaſe from another by the ſigns which properly belonged to each; but by comparing the ſame ſort of diſtemper which happened to ſeveral perſons, and the accidents which uſually appeared before and after, he could eaſily foretel a diſeaſe before it came, and afterwards give a right judgment of the event of it. In one place, he inſinuates, that he is the greateſt phyſician who can put this in practice, or who can tell the patient what ſhall happen to him in the courſe of the diſtemper; which is what we call *giving the prognoſtics of a diſeaſe.* By this way of prognoſticating, he came to be exceedingly admired: and this he carried to ſuch a height, that it may juſtly be ſaid to be his maſter-piece; and Celſus, who lived after him, remarks, that ſucceeding phyſicians, though they found out ſeveral new things relating to the management of diſeaſes, yet were obliged to the writings of Hippocrates for all that they knew of ſigns."

26
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patient
looks.

The firſt thing Hippocrates conſidered when called to a patient, was his looks.—It was a good ſign with him to have a viſage reſembling that of a perſon in health, and the ſame with what the ſick man had before he was attacked by the diſeaſe. As it varied from this, ſo much the greater danger was apprehended. The following is the deſcription which he gives of the looks of a dying man.—"When a patient (ſays he) has his noſe ſharp, his eyes ſunk, his temples hollow, his ears cold and contracted, the ſkin of his forehead tenſe and dry, and the colour of his face tending to a pale-green, or lead colour, one may give out for certain that death is very near at hand; unleſs the ſtrength of the patient has been exhauſted all at once by long watchings, or by a looſeneſs, or being a long time without eating.' This obſervation has been confirmed by thoſe of ſucceeding phyſicians, who have, from him, denominated it the *Hippocratic face.* The lips hanging relaxed and cold, are likewiſe looked upon by this author as a confirmation of the foregoing prognoſtic. He took alſo his ſigns from the diſpoſition of the eyes in particular. When a patient cannot bear the light; when he ſheds tears involuntarily; when, in ſleeping, ſome part of the white of the eye is ſeen; unleſs he uſually ſleeps after that manner, or has a looſeneſs upon him: theſe ſigns, as well as the foregoing ones, prognoſticate ill. The eyes deadened (as it were with a miſt ſpread over them, or their brightneſs loſt,) likewiſe preſage death, or is a ſign of great weakneſs. The eyes ſparkling, fierce, and fixed, denote the patient to be delirious, or that he is, or ſoon will be, ſeized with a frenzy. When the patient ſees any thing red, and like ſparks of fire and lightning paſs before his eyes, you may expect an hæmorrhage; and this often happens before thoſe criſes which are to be attended by a loſs of blood.

7 his re in

The condition of the patient is alſo ſhewn by his poſture in bed. If you find him lying on one ſide, his body, neck, legs, and arms, a little contracted, which is the poſture of a man in health, it is a good ſign: on the contrary, if he lies on his back, his arms ſtretched out, and his legs hanging down, it is a ſign of great weakneſs; and particularly when the patient ſlides or lets himſelf fall down towards the feet, it denotes the approach of death. When a patient in a burning fever is continually feeling about with his hands and fingers, and moves them up before his face and eyes as if he was going to take away ſomething that paſſed before them; or on his bed-covering, as if he was picking or ſearching for little ſtraws, or taking away ſome filth, or drawing out little flocks of wool; all this is a ſign that he is delirious, and that he will die. Amongſt the other ſigns of a preſent or approaching delirium, he alſo adds this: When a patient that naturally ſpeaks little begins to talk more than he uſed to do, or when one that talks much becomes ſilent, this change is to be reckoned a ſort of delirium, or is a ſign that the patient will ſoon fall into one. The frequent trembling or leaping up of the tendons of the wriſt, preſage likewiſe a delirium. As to the different ſorts of delirium, Hippocrates is much more afraid of thoſe that run upon doleful ſubjects, than ſuch as are accompanied with mirth.

8 his r of ing.

When a patient breathes faſt, and is oppreſſed, it is a ſign that he is in pain, and that the parts above the diaphragm are inflamed. Breathing long, or when the patient is a great while in taking his breath, ſhews him to be delirious; but eaſy and natural reſpiration is always a good ſign in acute diſeaſes. Hippocrates depended much on reſpiration in making his prognoſtics; and therefore has taken care in ſeveral places to deſcribe the different manner of a patient's breathing. Continual watchings in acute diſeaſes, are ſigns of preſent pain, or a delirium near at hand.

9 the ularly ine.

Hippocrates alſo drew ſigns from all excrements, whatever they are, that are ſeparated from the body of man. His moſt remarkable ones, however, were from the urine. The patient's urine, in his opinion, is beſt when the ſediment is white, ſoft to the touch, and of an equal conſiſtence. If it continues ſo during the courſe of the diſtemper, and till the time of the criſis, the patient is in no danger, and will ſoon be well. This is what Hippocrates called *concocted urine*, or what denotes the concoction of the humours; and he obſerved, that this concoction of the urine ſeldom appeared thoroughly, but on the days of the criſis which happily put an end to the diſtemper. "We ought (ſaid Hippocrates) to compare the urine with the purulent matter which runs from ulcers. As the pus, which is white, and of the ſame quality with the ſediment of the urine we are now ſpeaking of, is a ſign that the ulcer is on the point of cloſing; whereas that which is clear, and of another colour beſides white, and of an ill ſmell, is a ſign that the ulcer is virulent, and by conſequence difficult to be cured: ſo the urines that are like this we have deſcribed are only thoſe which may be named good; all the reſt are ill, and differ from one another only in the degrees of more and leſs. The firſt never appear but when nature has overcome the diſeaſe; and are a ſign of the concoction of humours, without which you cannot hope for a certain cure. On the contrary, the laſt are made as long as the crudity remains, and the humours continue unconcocted. Amongſt the urines of this laſt ſort the beſt are reddiſh, with a ſediment that is ſoft, and of an equal conſiſtence; which denotes, that the diſeaſe will be ſomewhat tedious, but without danger. The worſt are thoſe which are very red, and at the ſame time clear and without ſediment; or that are muddy and troubled in the making. In urine there is often a ſort of cloud hanging in the veſſel in which it is received; the higher this riſes, or the farther diſtant it is from the bottom, or the more different from the colour of the laudable ſediment abovementioned, the more there is of crudity. That which is yellow, or of a ſandy colour, denotes abundance of bile; that which is black is the worſt, eſpecially if it has an ill ſmell, and is either altogether muddy or altogether clear. That whoſe ſediment is like large ground wheat, or little flakes or ſcales ſpread one upon another, or bran, preſages ill, eſpecially the laſt. The fat or oil that ſometimes ſwims upon the top of the urine, and appears in a form ſomething like a ſpider's web, is a ſign of a conſumption of the fleſh and ſolid parts. The making of a great quantity of urine is the ſign of a criſis, and ſometimes the quality of it ſhews how the bladder is affected. We muſt alſo obſerve, that Hippocrates compared the ſtate of the tongue with the urine; that is to ſay, when the tongue was yellow, and charged with choler, the urine he knew muſt of courſe be of the ſame colour; and accordingly, when the tongue was red and moiſt, the urine was of its natural colour.

30 From the excrements by ſtool.

His prognoſtics from the excretions by ſtool are as follow. Thoſe that are ſoft, yellowiſh, of ſome conſiſtence, and not of an extraordinary ill ſmell, that anſwer to the quantity of what is taken inwardly, and that are voided at the uſual hours, are the beſt of all. They ought alſo to be of a thicker conſiſtence when the diſtemper is near the criſis; and it ought to be taken for a good prognoſtic, when ſome worms, round and long, are evacuated at the ſame time with them. The prognoſis, however, may ſtill be favourable, though the matter excreted be thin and liquid, provided it make not too much noiſe in coming out, and the evacuation be not in a ſmall quantity nor too often; nor in ſo great abundance, nor ſo often, as to make the patient faint. All matter that is watery, white, of a pale green, or red, or frothy and viſcous, is bad. That which is black like greaſe, or livid like the colour of verdegriſe, is the moſt pernicious. That which is pure black, and nothing elſe but a diſcharge of *choler aduſt*, or black bile, always prognicates very ill; this humour, from what part ſoever it comes, never appearing, but it ſhews at the ſame time the ill diſpoſition of the inteſtines. The matter that is of ſeveral different colours, denotes the length of the diſtemper; and, at the ſame time, that it may be of dangerous conſequence.

Hippocrates places in the ſame claſs the matter that is bilious or yellow, and mixed with blood, or green and black, or like the dregs or ſcrapings of the guts. The ſtools that conſiſt of pure bile, or entirely of phlegm, he alſo looked upon to be very bad.

31 From the matter thrown up by vomit.

Matter caſt up by vomiting ought to be mixed with choler and phlegm; where one of theſe humours only is obſerved, it is worſe. That which is black, livid, green, or of the colour of a leek, is of diſmal conſequence. The ſame is to be ſaid of that which ſmells very ill; and if at the ſame time it is livid, death is not far off. The vomiting of blood is very often mortal.

32 From different kinds of ſpittings.

The ſpittings that give eaſe in diſeaſes of the lungs and in pleuriſies, are thoſe that come up readily and without difficulty; and it is good if they are mixed at the beginning with much yellow: but if they appear of the ſame colour, or are red, a great while after the beginning of the diſtemper, are ſalt and acrimonious, and cauſe violent coughings, they are not good. Spittings purely yellow are bad; and thoſe that are white, viſcous, and frothy, give no eaſe. Whiteneſs is a tolerable good ſign of concoction in regard to ſpittings; but they ought not at all to be viſcous, nor too thick, nor too clear. We may make the ſame judgment of the excrements of the noſe according to their concoction and crudity. Spittings that are black, green, and red, are of very bad conſequence. In inflammations of the lungs, thoſe that are mixed with choler and blood preſage well if they appear at the beginning, but are bad if they ariſe not about the ſeventh day. But the worſt ſign in theſe diſtempers is, when there is no expectoration at all, and the too great quantity of matter that is ready to be diſcharged this way makes a rattling in the breaſt. After ſpitting of blood next follows the diſcharge of purulent matter, which brings on a conſumption, and at laſt death.

33 From the ſweat.

A kind good ſweat is that which ariſes on the day of the criſis, and is diſcharged in abundance all over the body, and at the ſame time from all parts of the body, and thus carries off the fever: A cold ſweat is bad, eſpecially in acute fevers, for in others it is only a ſign of long continuance. When the patient ſweats no where but in the head and neck, it is a ſign that the diſeaſe will be long and dangerous. A gentle ſweat in ſome particular part, of the head and breaſt, for inſtance, gives no relief, but denotes the ſeat of the diſtemper, or the weakneſs of the part. This kind of ſweat was called by Hippocrates *ephidroſis*.

34 From the ſtate of the hypochondria.

The hypochondria, or the abdomen in general, ought always to be ſoft and even as well on the right ſide as on the left. When there is any hardneſs or unevenneſs in thoſe parts, or heat and ſwellings, or when the patient cannot endure to have it touched, it is a ſign the inteſtines are indiſpoſed.

35 He underſtood ſomething of the pulſe.

Hippocrates alſo inquired into the ſtate of the pulſe, or the beating of the arteries. According to Galen, he was the firſt phyſician that made uſe of the word *pulſe* in the ſenſe in which it is now commonly taken; that is to ſay, for the natural and ordinary beating of the arteries. For the moſt ancient phyſicians, and even Hippocrates himſelf, for a long time, by this word underſtood the violent pulſation that is felt in an inflamed part, without putting the fingers to it. It is obſerved, however, by Galen, and other phyſicians, that Hippocrates touches on the ſubject of the pulſe more ſlightly than any other on which he treats. But that our celebrated phyſician underſtood ſomething even on this ſubject, is eaſily gathered from ſeveral paſſages in his writings; as when he obſerves, that in acute fevers the pulſe is very quick and very great; and when he makes mention, in the ſame place, of trembling pulſes, and thoſe that beat ſlowly; when he obſerves, that in ſome diſeaſes incident to women, when the pulſe ſtrikes the finger faintly, and in a languiſhing manner, it is a ſign of approaching death. He remarks alſo, in the *Coacæ Prænotiones*, that he whoſe vein, that is to ſay, whoſe artery of the elbow beats, is juſt going to run mad, or elſe that the perſon is at that time in a very great paſſion of anger.

36 Was bu little ta up with ſoning.

From this account of Hippocrates, it will appear, that he was not near ſo much taken up with reaſoning on the phænomena of diſeaſes, as of reporting them. He was content to obſerve theſe phænomena exactly, to diſtinguiſh diſeaſes by them, and judged of the event by comparing them exactly together. For his ſkill in prognoſtics he was indeed very remarkable, as we have already mentioned, inſomuch that he and his pupils were looked upon by the vulgar as prophets. What adds very much to his reputation is, that he lived in an age when phyſic was altogether buried in ſuperſtition, and yet he did not ſuffer himſelf to be carried away by it; on the contrary, on many occaſions, he expreſſes his abhorrence of it.

37 His methods the pre vation health.

Having thus ſeen in what Hippocrates makes the difference between health and ſickneſs to conſiſt, and likewiſe the moſt remarkable ſigns from whence he drew his prognoſtics, we muſt now conſider the means he preſcribed for the preſervation of health, and the cure of diſeaſes. One of his principal maxims was this, That, to preſerve health, we ought not to overcharge ourſelves with too much eating, nor neglect the uſe of exerciſe and labour. In the next place, That we ought by no means to accuſtom ourſelves to too nice and exact a method of living; becauſe thoſe that have once begun to act by this rule, if they vary in the leaſt from it, find themſelves very ill; which does not happen to thoſe who take a little more liberty, and live ſomewhat more irregularly. Notwithſtanding this, he does not neglect to inquire diligently into what thoſe who were in health uſed for food in his time.

38 Fleſh dogs, aſſes, ancien uſed food.

Here we cannot help taking notice of the prodigious diſparity between the delicacy of the people in our days, and in thoſe of Hippocrates: for he takes great pains to tell the difference between the fleſh of a dog, a fox, a horſe, and an aſs; which he would not have done if at that time they had not been uſed for victuals, at leaſt by the common people. Beſides theſe, however, Hippocrates ſpeaks of all other kinds of proviſions that are now in uſe; for example, ſalads, milk, whey, cheeſe, fleſh as well of birds as of four-footed beaſts, freſh and ſalt fiſh, eggs, all kinds of pulſe, and the different kinds of grain we feed on, as well as the different ſorts of bread that are made of it. He alſo ſpeaks very often of a ſort of liquid food, or broth, made of barley-meal, or ſome other grain, which they ſteeped for ſome time, and then boiled in water. With regard to drink, he takes a great deal of pains to diſtinguiſh the good waters from the bad.

The beſt, in his opinion, ought to be clear, light, without ſmell or taſte, and taken out of the fountains that turn towards the eaſt. The ſalt-waters, thoſe that he calls hard, and thoſe that riſe out of fenny ground, are the worſt of all; as alſo thoſe that come from melted ſnow. But though Hippocrates makes all theſe diſtinctions, he adviſes thoſe who are in health to drink of the firſt water that comes in their way. He ſpeaks alſo of alum waters, and thoſe that are hot; but does not enlarge upon their qualities. He adviſes to mix wine with an equal quantity of water: and this, he ſays, is the juſt proportion; by uſing which the wine will expel what is hurtful to the body, and the water will ſerve to temper the acrimony of the humours.

For thoſe that are in health, and likewiſe for ſuch as are ſick, Hippocrates adviſes exerciſe. The books, however, which treat on this ſubject, M. Le Clerc conjectures to have been written by Herodicus, who firſt introduced gymnaſtic exerciſe into medicine, and who is ſaid by Hippocrates himſelf to have killed ſeveral people by forcing them to walk while they were afflicted with fevers and other inflammatory diſorders. The advices given in them conſiſt moſtly in directions for the times in which we ought to walk, and the condition we ought to be in before it; when we ought to walk ſlowly, and when to run, &c.; and all this with reſpect to different ages and temperaments, and with deſign to bring the body down, or diſſipate the humours. Wreſtling, although a violent exerciſe, is numbered with the reſt. In the ſame place alſo, mention is made of a play of the hands and fingers, which was thought good for health, and called *chironomie*; and of another diverſion which was performed round a ſort of ball hung up, which they called *corycus*, and which they ſtruck forward with both their hands.

With regard to thoſe things which ought to be ſeparated from, or retained in the human body, Hippocrates obſerves, that people ought to take great care not to load themſelves with excrements, or keep them in too long; and beſides the exerciſe abovementioned, which carries off one part of them, and which he preſcribed chiefly on this account, he adviſes people to excite and rouſe up nature when ſhe flagged, and did not endeavour to expel the reſt, or take care of the impediments by which ſhe was reſiſted. For this reaſon he preſcribed meats proper for looſening the belly; and when theſe were not ſufficient, he directed the uſe of clyſters and ſuppoſitories. For thin and emaciated perſons he directed clyſters compoſed only of milk and oily unctuous ſubſtances, which they mixed with a decoction of chick-peaſe; but for ſuch as were plethoric, they only made uſe of ſalt, or ſea-water.

As a preſervative againſt diſtempers, Hippocrates alſo adviſed the uſe of vomits, which he directed to be taken once or twice a month during the time of winter and ſpring. The moſt ſimple of theſe were made of a decoction of hyſſop, with an addition of a little vinegar and ſalt. He made thoſe that were of a ſtrong and vigorous conſtitution take this liquor in a morning faſting; but ſuch as were thin and weakly took it after ſupper.—Venery, in his opinion, is wholeſome, provided people conſult their ſtrength, and do not purſue it to exceſs; which he finds fault with on all occaſions, and would have it avoided alſo in relation to ſleep and watching. In his writings are likewiſe to be found ſeveral remarks concerning good and bad air; and he makes it appear that the good or bad diſpoſition of this element does not depend ſolely on the difference of the climate, but on the ſituation of every place in particular. He ſpeaks alſo of the good and bad effects of the paſſions, and would have us uſe a great deal of moderation in regard to them.

From what we have already related concerning the opinions of Hippocrates, it may naturally be concluded, that for the moſt part he would be contented with obſerving what the ſtrength of nature is able to accompliſh without being aſſiſted by the phyſician. That this was really the caſe, may be eaſily perceived from a peruſal of his books entitled, "Of epidemical diſtempers;" which are, as it were, journals of the practice of Hippocrates: for there we find him often doing nothing more than deſcribing the ſymptoms of a diſtemper, and informing us what has happened to the patient day after day, even to his death or recovery, without ſpeaking a word of any kind of remedy. Sometimes, however, he did indeed make uſe of remedies; but theſe were exceedingly ſimple and few, in compariſon of what have been given by ſucceeding practitioners. Theſe remedies we ſhall preſently conſider, after we have given an abridgement of the principal maxims on which his practice is founded.

39
He generally contented himſelf with obſerving the operations of nature.

40
General maxims of his practice.

Hippocrates aſſerted in the firſt place, That contraries, or oppoſites, are the remedies for each other; and this maxim he explains by an aphoriſm, where he ſays, that evacuations cure thoſe diſtempers which come from repletion, and repletion thoſe that are cauſed by evacuation. So heat is deſtroyed by cold, and cold by heat, &c. In the ſecond place, he aſſerted that phyſic is an addition of what is wanting, and a ſubtraction or retrenchment of what is ſuperfluous: an axiom which is explained by this, viz. that there are ſome juices or humours, which in particular caſes ought to be evacuated, or driven out of the body, or dried up; and ſome others which ought to be reſtored to the body, or cauſed to be produced there again. As to the method to be taken for this addition or retrenchment, he gives this general caution, That you ought to be careful how you fill up, or evacuate, all at once, or too quickly, or too much; and that it is equally dangerous to heat or cool again on a ſudden: or rather, you ought not to do it; every thing that runs to an exceſs being an enemy to nature. In the fourth place, Hippocrates allowed that we ought ſometimes to dilate, and ſometimes to lock up: to dilate, or open the paſſages by which the humours are voided naturally, when they are not ſufficiently opened, or when they are cloſed; and, on the contrary, to lock up or ſtraiten the paſſages that are relaxed, when the juices that paſs there ought not to paſs, or when they paſs in too great quantity. He adds, that we ought ſometimes to ſmooth, and ſometimes to make rough; ſometimes to harden, and ſometimes to ſoften again; ſometimes to make more fine or ſupple; ſometimes to thicken; ſometimes to rouſe up, and at other times to ſtupify or take away the ſenſe; all in relation to the ſolid parts of the body, or to the humours. He gives alſo this fifth leſſon, That we ought to have regard to the courſe the humours take, from whence they come, and whither they go; and in conſequence of that, when they go where they ought not, that we make them take a turn about, or carry them another way, almoſt like the turning the courſe of a river: or, upon other occaſions, that we endeavour if poſſible to recal, or make the ſame humours return back again; drawing upward ſuch as have a tendency downward, and drawing downward ſuch as tend upward. We ought alſo to carry off, by convenient ways, that which is neceſſary to be carried off; and not let the humours once evacuated, enter into the veſſels again. Hippocrates gives alſo the following inſtruction, That when we do any thing according to reaſon, though the ſucceſs be not anſwerable, we ought not too eaſily, or too haſtily, to alter the manner of acting, as long as the reaſons for it are yet good. But as this maxim might ſometimes prove deceitful, he gives the following as a corrector to it: "We ought (ſays he) to mind with a great deal of attention what gives eaſe, and what creates pain; what is eaſily ſupported, and what cannot be endured." We ought not to do any thing raſhly; but ought to pauſe, or wait, without doing any thing: by this way, if you do the patient no good, you will at leaſt do him no hurt. In extreme illneſs we ought to uſe medicines of the ſame nature: That which medicines cure not, the ſword does; what the ſword does not, the fire does; but what the fire cannot cure ought to be looked upon as incurable: And laſtly, we ought not to undertake the cure of deſperate diſeaſes which are beyond the power of phyſic.

Theſe are the principal and moſt general maxims of the practice of Hippocrates, and which proceed upon the ſuppoſition laid down at the beginning, viz. that nature cures diſeaſes. We next proceed to conſider particularly the remedies employed by him, which will ſerve to give us further inſtructions concerning his practice.

41 Diet his principal remedy.

Diet was the firſt, the principal, and oftentimes the only remedy made uſe of by this great phyſician to anſwer the greateſt part of the intentions above-mentioned: by means of it he oppoſed moiſt to dry, hot to cold, &c.; and what he looked upon to be the moſt conſiderable point was, that thus he ſupported nature, and aſſiſted her to overcome the malady. The dietetic part of medicine was ſo much the invention of Hippocrates himſelf, that he was very deſirous to be accounted the author of it; and the better to make it appear that it was a new remedy in his days, he ſays expreſsly, that the ancients had wrote almoſt nothing concerning the diet of the ſick, having omitted this point, though it was one of the moſt eſſential parts of the art. That he ſpoke the truth in this reſpect is plain from what we have already obſerved concerning the treatment of the wounded heroes by the pupils of Æſculapius.

42 Diets for patients in acute diſtempers.

The diet preſcribed by Hippocrates for patients labouring under acute diſtempers, differed from that which he ordered for thoſe afflicted with chronical ones. In the former, which require a more particular exactneſs in relation to diet, he preferred liquid food to that which was ſolid, eſpecially in fevers. For theſe he uſed a ſort of broths made of cleanſed barley; and to theſe he gave the name of *ptiſan*, which was common as well to theſe broths as to the flower of the grain of which they were made. The manner in which the ancients prepared a ptiſan was as follows. They firſt ſteeped the barley in water till it was plumped up; and afterwards they dried it in the ſun, and beat it to take off the huſk. They next ground it; and having let the flower boil a long time in the water, they put it out into the ſun, and when it was dry they preſſed it cloſe. It is properly this flower ſo prepared that is called *ptiſan*. They did almoſt the ſame thing with wheat, rice, lentils, and other grain: but they gave theſe ptiſans the name of the grain from whence they were extracted, as *ptiſan of lentils*, *rice*, &c.; whereas the ptiſan of barley was called ſimply *ptiſan*, on account of the excellency of it. When they had a mind to uſe it, they boiled one part of it in 10 or 15 of water; and when it began to grow plump in boiling, they added a drop of vinegar, and a very ſmall quantity of aniſe or leek, to keep it from clogging, or filling the ſtomach with wind. Hippocrates preſcribes this broth for women that have pains in their belly after being brought to bed. "Boil ſome of this ptiſan, (ſays he), with ſome leek, and the fat of a goat, and give it to the woman in bed." This will not be thought very odd, if we reflect on what has been hinted above, concerning the indelicate manner of living in thoſe times. He preferred the ptiſan to all other food in fevers, becauſe it ſoftened and moiſtened much, and was beſides of eaſy digeſtion. If he was concerned in a continual fever, he would have the patient begin with a ptiſan of a pretty thick conſiſtence, and go on by little and little, leſſening the quantity of barley-flower as the height of the diſtemper approached; ſo that he did not feed the patient but with what he called the *juice of the ptiſan*; that is, the ptiſan ſtrained, where there was but very little of the flower remaining, in order that nature being diſcharged in part from the care of digeſting the aliments, ſhe might the more eaſily hold out to the end, and overcome the diſtemper, or the cauſe of it. With regard to the quantity, he cauſed the ptiſan to be taken twice a day by ſuch patients as in health uſed to take two meals a-day, not thinking it convenient that thoſe who were ſick ſhould eat oftener than when they were well. He alſo would not allow eating twice a-day to thoſe who eat but once in that time when in health. In the paroxyſm of a fever he gave nothing at all; and in all diſtempers where there are exacerbations, he forbid nouriſhment while the exacerbations continued. He let children eat more; but thoſe who were grown up to man's eſtate, or were of an advanced age, leſs; making allowance, however, for the cuſtom of each particular perſon, or for that of the country.

43 Did n prove long a nence.

But though he was of opinion that too much food ought not to be allowed to the ſick, he was not of the mind of ſome phyſicians who preſcribed long abſtinence, eſpecially in the beginning of fevers. The reaſon he gave for this was, that the contrary practice weakened the patients too much during the firſt days of the diſtemper, by which means their phyſicians were obliged to allow them more food when the illneſs was at its height, which in his opinion was improper. He complained that "they dried up their patients like herrings, before there was any occaſion for it, and deſtroyed them for want of nouriſhment." Beſides, in acute diſtempers, and particularly in fevers, Hippocrates made choice of refreſhing and moiſtening nouriſhment; and amongſt other things preſcribed orange, melon, ſpinach, gourd, and dock. This ſort of food he gave to thoſe that were in a condition to eat, or could take ſomething more than a ptiſan.

44 drink ribed im.

The drink he commonly gave to his patients was made of eight parts of water, and one of honey. In ſome diſtempers they added a little vinegar; but beſides theſe, they had another ſort named κυκεων, or *mixture*. One preſcription of this ſort we find intended for a conſumptive perſon; it conſiſted of rue, aniſe, celery, coriander, juice of pomegranate, the rougheſt red wine, water, flour of wheat and barley, with old cheeſe made of goats milk. Hippocrates did not approve of giving plain water to the ſick; but though he generally preſcribed the drinks above-mentioned, he did not abſolutely forbid the uſe of wine, even in acute diſtempers and fevers, provided the patients were not delirious nor had pains in their head. The quantity of water he would have them put into it in health, made him judge that it would not be hurtful to ſuch as were ſick if taken after the ſame manner. Beſides, he took care to diſtinguiſh the wines proper in theſe caſes: preferring to all other ſorts, white-wine that is clear and has a great deal of water, with neither ſweetneſs nor flavour.

Theſe are the moſt remarkable particulars concerning the diet preſcribed by Hippocrates in acute diſtempers: in chronical ones he made very much uſe of milk and whey; though we are not certain whether this was done on account of the nouriſhment expected from them, or that he accounted them medicines.

5 tions rning ng.

There were many diſeaſes for which he judged the bath was a proper remedy; and he takes notice of all the circumſtances that are neceſſary in order to cauſe the patient receive benefit from it, among which the following are the principal. The patient that bathes himſelf muſt remain ſtill and quiet in his place without ſpeaking, while the aſſiſtants throw water over his head or are wiping him dry; for which laſt purpoſe he deſired them to keep ſponges, inſtead of that inſtrument called by the ancients *ſtrigil*, which ſerved to rub off from the ſkin the dirt and naſtineſs left upon it by the unguents and oils with which they anointed themſelves. He muſt alſo take care not to catch cold; and muſt not bathe immediately after eating and drinking, nor eat or drink immediately after coming out of the bath. Regard muſt alſo be had whether the patient has been accuſtomed to bathe while in health, and whether he has been benefited or hurt by it. Laſtly, he muſt abſtain from the bath when the body is too open, or too coſtive, or when he is too weak; or if he has an inclination to vomit, a great loſs of appetite, or bleeds at the noſe. The advantage of the bath, according to Hippocrates, conſiſts in moiſtening and refreſhing, taking away wearineſs, making the ſkin ſoft and the joints pliant; in provoking urine, making the noſtrils open, and opening the other excretories. He allows two baths in a-day to thoſe who have been accuſtomed to it in their health.

ves rciſe nical pers

In chronical diſtempers Hippocrates approved very much of exerciſe, though he did not allow it in acute ones: but even in theſe he did not think that a patient ought always to lie a-bed; but tells us, that "we muſt ſometimes puſh the timorous out of bed, "and rouſe up the lazy."

27 On what occaſions he uſed purgation.

When our phyſician found that diet and exerciſe were not ſufficient to eaſe nature of a burden of corrupted humours, he was obliged to make uſe of other means, of which *purgation* was one. By this word he underſtood all the contrivances that are made uſe of to diſcharge the ſtomach and bowels; though it properly ſignifies only the evacuation of the belly by ſtool. This evacuation he imagined to be occaſioned by the purgative medicines attracting the humours to themſelves. When firſt taken into the body, he thought they attracted that humour which was moſt ſimilar to them, and then the others, one after another.—The purgatives uſed in his time were moſtly emetics alſo, or at leaſt were very violent in their operation downwards. Theſe were the white and black hellebore; the firſt of which is now reckoned among the poiſons. He uſed alſo the Cnidian berries, which are nothing elſe but the ſeeds of thymalæa or chamælea; cneorum, peplium, which is a ſort of milk-thiſtle; theſia, the juice of hippophae, a ſort of rhamnus; elaterium, or or juice of the wild cucumber; flowers of braſs, coloquintida, ſcammony, the magneſian ſtone, which is a ſort of limeſtone, &c.

48 On what occaſions he uſed them.

As theſe purgatives were all very ſtrong, Hippocrates was extremely cautious in their exhibition. He did not preſcribe them in the dog-days; nor did he ever purge women with child, and very ſeldom children or old people. He principally uſed purgatives in chronical diſtempers; but was much more wary in acute ones. In his books entitled "Of epidemical diſtempers," there are very few patients mentioned to whom he gave purgative medicines. He alſo takes notice expreſsly, that theſe medicines having been given in caſes of the diſtempers of which he was treating, had produced very bad effects.—We are not, however, from this to conclude that Hippocrates abſolutely condemned purging in acute diſtempers; for in ſome places he expreſsly mentions his having given them with ſucceſs. He was of opinion, for inſtance, that purging was good in a pleuriſy when the pain was ſeated below the diaphragm; and in this caſe he gave black hellebore, or ſome peplium mixed with the juice of *laſerpitium*, which is ſuppoſed to have been our aſafœtida.

49 His rule concerning their uſe.

The principal rule Hippocrates gives with relation to purging is, that we ought only to purge off the humours that are concocted, and not thoſe that are yet crude, taking particular care not to do it at the beginning of the diſtemper, leſt the humours ſhould be diſturbed or ſtirred up, which happens pretty often. He was not, however, the firſt who remarked that it would be of ill conſequence to ſtir the humours in the beginning of an acute diſtemper. The Egyptian phyſicians had before obſerved the ſame thing.—By the *beginning* of a diſtemper, Hippocrates underſtood all the time from the firſt day to the fourth complete.

50 Gives another rule contrary to the former.

Notwithſtanding this, however, it is certain that Hippocrates did ſometimes exhibit purgatives at the beginning of acute diſtempers; and he has an aphoriſm directly contrary to the precedent one, where he ſays, That in the beginning of diſtempers we ought to ſtir the humours, and to purge what we think we have ſtirred. This aphoriſm has occaſioned no ſmall trouble to phyſicians of ſucceeding ages, who have found a great deal of difficulty in reconciling it with the foregoing. Galen has got off by commenting on the phraſe *to ſtir up*. This, he ſays, ſignifies uſing all the remedies that are neceſſary for the eaſe of the patient; among which he reckons particularly bleeding and purging. According to him, therefore, the ſtirring up mentioned by Hippocrates conſiſts chiefly in bleeding: that is to ſay, purgation might be admitted at the beginning of diſtempers ſometimes, but very rarely; and in fact we find, that Hippocrates himſelf did purge ſome people at the beginning of diſtempers, though very ſeldom.

51
Hydragogue, &c medicines whence denominated.

Hippocrates imagined that each purgative medicine was adapted to the carrying off ſome particular humour; and hence the diſtinction of purgatives into hydragogue, cholagogue, &c. which is now juſtly exploded. In conſequence of this notion, which prevailed long after his time, he pretended that we knew if a purgative had drawn from the body what was fit to be evacuated according as we found ourſelves well or ill upon it. If we found ourſelves well, it was a ſign that the medicine had effectually expelled the offending humour. On the contrary, if we were ill, he imagined, whatever quantity of humour came away, that the humour which cauſed the illneſs ſtill remained; not judging of the goodneſs or badneſs of a purge by the quantity of matters that were voided by it, but by their quality and the effect that followed after it.

52
His practice with regard to vomits.

Vomits were alſo pretty much uſed as medicines by Hippocrates. We have already ſeen what thoſe were which he preſcribed to people in health by way of preventatives. With regard to the ſick, he ſometimes adviſed them to the ſame, when his intentions were only to cleanſe the ſtomach. But when he had a mind to recall the humours, as he termed it, from the inmoſt receſſes of the body, he made uſe of briſker remedies. Among theſe was white hellebore; and this indeed he moſt frequently uſed to excite vomiting. He gave this root particularly to melancholy and mad people; and from the great uſe made of it in theſe caſes by Hippocrates and other ancient phyſicians, the phraſe *to have need of hellebore*, became a proverbial expreſſion for being out of one's ſenſes. He gave it alſo in defluxions, which come, according to him, from the brain, and throw themſelves on the noſtrils or ears, or fill the mouth with ſaliva, or that cauſe ſtubborn pains in the head, and a wearineſs or an extraordinary heavineſs, or a weakneſs of the knees, or a ſwelling all over the body. He gave it to conſumptive perſons in broth of lentils, to ſuch as were afflicted with the dropſy called *leucophlegmatia*, and in other chronical diſorders. But we do not find that he made uſe of it in acute diſtempers, except in the cholera morbus, where he ſays he preſcribed it with benefit. Some took this medicine faſting; but moſt took it after ſupper, as was commonly practiſed with regard to vomits taken by way prevention. The reaſon why he gave this medicine moſt commonly after eating was, that by mixing with the aliments, its acrimony might be ſomewhat abated, and it might operate with leſs violence on the membranes of the ſtomach. With the ſame intention alſo he ſometimes gave a plant called *ſeſamoides*, and ſometimes mixed it with hellebore. Laſtly, in certain caſes he gave what he called *ſoft* or *ſweet* hellebore. This term had ſome relation to the quality of the hellebore, or perhaps to the quantity he gave of it.

53
His leni-
tives, c
ſters, a
ſuppoſi
ries.

When Hippocrates had a mind only to keep the body open, or evacuate the contents of the inteſtines, he made uſe of ſimples; as for example, the herb mercury, or cabbage; the juice or decoction of which he ordered to be drank. For the ſame purpoſe he uſed whey, and alſo cows' and aſſes milk; adding a little ſalt to it, and ſometimes letting it boil a little. If he gave aſſes milk alone, he cauſed a great quantity of it to be taken, ſo that it muſt of neceſſity looſen the body. In one place he preſcribes no leſs than nine pounds of it to be taken as a laxative, but does not ſpecify the time in which it was to be taken. With the ſame intention he made uſe of ſuppoſitories and clyſters. The former were compounded of honey, the juice of herb mercury, of nitre, powder of colocynth, and other ſharp ingredients to irritate the anus. Theſe they formed into a ball, or into a long cylindrical maſs like a finger. The clyſters he made uſe of for ſick people were ſometimes the ſame with thoſe already mentioned as preventatives for people in health. At other times, he mixed the decoction of herbs with nitre, honey, and oil, or other ingredients, according as he imagined he could by that means attract, waſh, irritate, or ſoften. The quantity of liquor he ordered was about 36 ounces; from which it is probable he did not intend that it ſhould all be uſed at one time.

54
Medici
to purg
head.

At ſome times Hippocrates propoſed to purge the head alone. This remedy he made uſe of, after purging the reſt of the body, in an apoplexy, inveterate pains of the head, a certain ſort of jaundice, a conſumption, and the greateſt part of chronical diſtempers. For that purpoſe he made uſe of the juices of ſeveral plants, as celery; to which he ſometimes added aromatic drugs, making the patients ſnuff up this mixture into their noſtrils. He uſed alſo powders compounded of myrrh, the flowers of braſs, and white hellebore, which he cauſed them put up into the noſe, to make them ſneeze, and to draw the phlegm from the brain. For the ſame purpoſe alſo he uſed what he calls *tetragonon*, that is, "ſomething having four angles;" but what this was, is now altogether unknown, and was ſo even in the days of Galen. The latter phyſician, however, conjectures it to be antimony, or certain flakes found in it.

55
His re
dy for
empye

In the diſtemper called *empyema*, (or a collection of matter in the breaſt), he made uſe of a very rough medicine. He commanded the patient to draw in his tongue as much as he was able; and when that was done, he endeavoured to put into the hollow of the lungs a liquor that irritated the part, which, raiſing a violent cough, forced the lungs to diſcharge the purulent matter contained in them. The materials that he uſed for this purpoſe were of different ſorts; ſometimes he took the root of arum, which he ordered to be boiled with a grain of ſalt, in a ſufficient quantity of water and oil, diſſolving a little honey in it. At other times, when he intended to purge more ſtrongly, he took the flowers of copper and hellebore: after that he ſhook the patient violently by the ſhoulders, the better to looſen the pus. This remedy, according to Galen, he received from the Cnidian phyſicians; and it has never been uſed by the ſucceeding ones, probably becauſe the patients could not ſuffer it.

56
od-let-
, when
ſcribed.

Blood-letting was another method of evacuation pretty much uſed by Hippocrates. Another aim he had in this, beſides the mere evacuation, was to divert or recal the courſe of the blood when he imagined it was going where it ought not. A third end of bleeding was to procure a free motion of the blood and ſpirits, as we may gather from the following paſſage: "When any one becomes ſpeechleſs of a ſudden, (ſays he), it is cauſed by the ſhutting of the veins, eſpecially when it happens to perſons otherwiſe in good health, without any outward violence. In this caſe the inward vein of the right-arm muſt be opened, and more or leſs blood taken away, according to the age or conſtitution of the patient. Thoſe that loſe their ſpeech thus have great fluſhings in their face, their eyes are ſtiff, their arms are diſtended, their teeth gnaſh, they have palpitations of the arteries, cannot open their jaws, the extremities are cold, and the ſpirits are intercepted in the veins. If pain enſues, it is by the acceſſion of the black bile and ſharp humours. For the internal parts being vellicated or irritated by theſe humours, ſuffer very much; and the veins, being alſo irritated and dried, diſtend themſelves extraordinarily, and are inflamed, and draw all that can flow to them; ſo that the blood corrupting, and the ſpirits not being able to paſs through the blood by their ordinary paſſages, the parts grow cold by reaſon of this ſtagnation of the ſpirits. Hence come giddineſs, loſs of ſpeech, and convulſions, if this diſorder reaches to the heart, the liver, or to the great veins. From hence come alſo epilepſies and palſies, if the defluxions fall upon the parts laſt mentioned; and that they dry up, becauſe the ſpirits are denied a paſſage through them. In this caſe, after fomentation, a vein muſt be opened, while the ſpirits and humours are yet ſuſpended and unſettled."

Hippocrates had alſo a fourth intention for bleeding, and this was refreſhment. So in the iliac paſſion, he orders bleeding in the arm and in the head; to the end, ſays he, that the ſuperior venter, or the breaſt, may ceaſe to be overheated. With regard to this evacuation, his conduct was much the ſame as to purging, in reſpect of time and perſons. We ought, ſays he, to let blood in acute diſeaſes, when they are violent, if the party be luſty and in the flower of his age. We ought alſo to have regard to the time, both in reſpect to the diſeaſe and to the ſeaſon in which we let blood. He alſo informs us, that blood ought to be let in great pains, and particularly in inflammations. Among theſe he reckons ſuch as fall upon the principal viſcera, as the liver, lungs, and ſpleen, as alſo the quinſy and pleuriſy, if the pain of the latter be above the diaphragm. In theſe caſes he would have the patients blooded till they faint, eſpecially if the pain is very acute; or rather he adviſes that the orifice ſhould not be cloſed till the colour of the blood alters, ſo that from livid it turn red, or from red, livid. In a quinſey he blooded in both arms at once. Difficulty of breathing he alſo reckons among the diſtempers that require bleeding; and he mentions another ſort of inflammation of the lungs, which he calls a ſwelling, or tumours of the lungs ariſing from heat; in which caſe he adviſes to bleed in all parts of the body; and directs particularly to the arms, tongue, and noſtrils. To make bleeding the more uſeful in all pains, he directed to open the vein neareſt the part affected; in a pleuriſy he directs to take blood from the arm of the ſide affected; and for the ſame reaſon, in pains of the head, he directs the veins of the noſe and forehead to be opened. Theſe directions, however, we now know to be almoſt entirely ſuperfluous, and to have proceeded from Hippocrates's ignorance of the blood's circulation. When the pain was not urgent, and bleeding was adviſed by way of prevention, he directed the blood to be taken from the parts fartheſt off, with a deſign to divert the blood inſenſibly from the ſeat of pain. The higheſt burning fevers which ſhew neither ſigns of inflammation nor pain, he does not rank among thoſe diſtempers that require bleeding. On the contrary, he maintains that a fever itſelf is in ſome caſes a reaſon againſt bleeding. If any one, ſays he, has an ulcer in the head, he muſt bleed, *unleſs he has a fever*. He ſays further, thoſe that loſe their ſpeech of a ſudden muſt be blooded, unleſs they have a fever. Perhaps he was afraid of bleeding in fevers becauſe he ſuppoſes that they were produced by the bile and pituita, which grew hot, and afterwards heated the whole body, which is, ſays he, what we call *fever*, and which, in his opinion, cannot well be evacuated by bleeding. In other places alſo he looks upon the preſence or abundance of bile to be an objection to bleeding; and he orders to forbear veneſection even in a pleuriſy, if there is bile. To this we muſt add, that Hippocrates diſtinguiſhed very particularly between a fever which followed no other diſtemper, but was itſelf the original malady, and a fever which came upon inflammation. In the early ages of phyſic, the firſt were only properly called *fevers*: the others took their names from the parts affected; as *pleuriſy*, *peripneumony*, *hepatitis*, *nephritis*, &c. which names ſignify that the pleura, the lungs, the liver, or the kidneys, are diſeaſed, but do not intimate the fever which accompanies the diſeaſe. In this latter ſort of fever Hippocrates conſtantly ordered bleeding, but not in the former. Hence, in his books Of Epidemic Diſtempers, we find but few directions for bleeding in the acute diſtempers, and particularly in the great number of continual and burning fevers there treated of. In the firſt and third book we find but one ſingle inſtance of bleeding, and that in a pleuriſy; in which, too, he ſtaid till the eighth day of the diſtemper. Galen, however, and moſt other commentators on Hippocrates, are of opinion that the latter did generally blood his patients plentifully in the beginning of acute diſorders, though he takes no notice of it in his writings. But had this been the caſe, he would not perhaps have had the opportunity of ſeeing ſo many fevers terminate by criſes, or natural evacuations, which happen of themſelves on certain days. Hippocrates, in fact, laid ſo much weight upon the aſſiſtance of nature and the method of diet, which was his favourite medicine, that he thought if they took care to diet the patients before-mentioned, according to rule, they might leave the reſt to nature. Theſe are his true principles, from which he never deviates; ſo that his pieces Of Epidemical Diſeaſes ſeem to have been compoſed only with an intention to leave to poſterity an exact model of management in purſuance of theſe principles.

With regard to the rules laid down by Hippocrates for bleeding, we muſt further take notice, that in all diſeaſes which had their ſeat above the liver, he blooded in the arm, or in ſome of the upper parts of the body; but for thoſe that were ſituated below it, he opened the veins of the foot, ankle, or ham. If the belly was too laxative, and bleeding was thought neceſſary, he ordered the looſeneſs to be ſtopped before bleeding.

Almoſt all theſe inſtances, however, regard ſcarce any thing but acute diſtempers; but we find ſeveral concerning chronical diſeaſes. "A young man complained of great pain in his belly, with a rumbling while he was faſting, which ceaſed after eating: this pain and rumbling continuing, his meat did him no good; but, on the contrary, he daily waſted and grew lean. Several medicines, as well purges as vomits, were given him in vain. At length it was reſolved to bleed him, by intervals, firſt in one arm and then in the other, till he had ſcarce any blood left, and by this method he was perfectly cured."

Hippocrates let blood alſo in a dropſy, even in a tympany; and in both caſes he preſcribes bleeding in the arm. In a diſeaſe occaſioned by an overgrown ſpleen, he propoſes bleeding ſeveral times repeated at a vein of the arm which he calls the *ſplenetic;* and in a kind of jaundice, he propoſes bleeding under the tongue. On ſome occaſions he took away great quantities of blood, as appears from what we have already obſerved. Sometimes he continued the bleeding till the patient fainted: at other times he would blood in both arms at once; at others, he did it in ſeveral places of the body, and at ſeveral times. The veins he opened were thoſe of the arm, the hands, the ankles on both ſides, the hams, the forehead, behind the head, the tongue, the noſe, behind the ears, under the breaſts, and thoſe of the arms; beſides which, he burnt others, and opened ſeveral arteries. He likewiſe uſed cupping-veſſels, with intent to recall or withdraw the humours which fell upon any part. Sometimes he contented himſelf with the bare attraction made by the cupping-veſſels, but ſometimes alſo he made ſcarifications.

57
His diuretic and ſudorific medicines.

When bleeding and purging, which were the principal and moſt general means uſed by Hippocrates for taking off a plethora, proved inſufficient for that purpoſe, he had recourſe to diuretics and ſudorifics. The former were of different ſorts, according to the conſtitution of the perſons: ſometimes baths, and ſometimes ſweet wine, provoke urine; ſometimes the nouriſhment which we take contributes to it: and amongſt thoſe herbs which are commonly eaten, Hippocrates recommends garlic, leeks, onions, cucumbers, melons, gourds, fennel, and all other things which have a biting taſte and a ſtrong ſmell. With theſe he numbers honey, mixed with water or vinegar, and all ſalt meats. But, on ſome occaſions, he took four cantharides, and, pulling off their wings and feet, gave them in wine and honey. Theſe remedies were given in a great number of chronical diſtempers after purging, when he thought the blood was overcharged with a ſort of moiſture which he calls *ichor;* or in ſuppreſſions of urine, and when it was made in leſs quantity than it ought. There were alſo ſome caſes in which he would force ſweat as well as urine; but he neither mentions the diſeaſes in which ſudorifics are proper, nor lets us know what medicines are to be uſed for this purpoſe, except in one ſingle paſſage, where he mentions ſweating, by pouring upon the head a great qantity of water till the feet ſweat; that is, till the ſweat diffuſes itſelf over the whole body, running from head to foot. After this he would have them eat boiled meat, and drink thereupon pure wine, and, being well covered with clothes, lay themſelves down to reſt. The diſeaſe for which he propoſes the above-mentioned remedy is a fever; which is not, according to him, produced by bile or pituita, but by mere laſſitude, or ſome other like cauſe; from whence we may conclude that he did not approve of ſweating in any other kind of fever.

58
He ſome-times uſe hypnotic

Other remedies which Hippocrates tells us he made uſe of were thoſe that purged neither bile nor phlegm, but act by cooling, drying, heating, moiſtening, or by cloſing and thickening, reſolving and diſſipating. Theſe medicines, however, he does not particularly mention; and it is probable they were only ſome particular kinds of food. To theſe he joined *hypnotics*, or ſuch things as procure ſleep; but theſe laſt were uſed very ſeldom, and, it is moſt probable, were only different preparations of poppies.

59
And ſpe fics.

Laſtly, beſides the medicines already mentioned, which acted in a ſenſible manner, Hippocrates made uſe of others called *ſpecifics;* whoſe action he did not underſtand, and for the uſe of which he could give no reaſon beſides his own experience, or that of other phyſicians. Theſe he had learned from his predeceſſors the deſcendants of Æſculapius, who, being *empirics*, did not trouble themſelves about inquiring into the operation of their remedies, provided their patients were cured.

60
His exter nal appl tions.

Of the external remedies preſcribed by Hippocrates, fomentations were the chief. Theſe were of two kinds. The one was a ſort of bath, in which the patient ſat in a veſſel full of a decoction of ſimples appropriated to his malady; ſo that the part affected was ſoaked in the decoction. This was chiefly uſed in diſtempers of the womb, of the arms, the bladder, the reins, and generally all the parts below the diaphragm. The ſecond way of fomenting was, to take warm water and put it into a ſkin or bladder, or even into a copper or earthen veſſel, and to apply it to the part affected; as, for example, in a pleuriſy. They uſed likewiſe a large ſponge, which they dipped in the water, or other hot liquor, and ſqueezed out part of the liquor before they applied it. The ſame uſe they made of barley, vetches, or bran, which were boiled in ſome proper liquor, and applied in a linen bag. Theſe are called *moiſt* fomentations. The dry ones were made of ſalt or millet, heated conſiderably, and applied to the part. Another kind of fomentation was the vapour of ſome hot liquor; an inſtance of which we find in his firſt book of *Womens diſtempers*. He caſt, at ſeveral times, bits of red-hot iron into urine, and, covering up the patient cloſe, cauſed her to receive the ſteam below. His deſign in theſe kinds of fomentations was to warm the part, to reſolve or diſſipate, and draw out the peccant matter, to mollify and aſſuage pain, to open the paſſages, or even to ſhut them, according as the fomentations were emollient or aſtringent.

Fumigations were likewiſe very often uſed by Hippocrates. In the quinſey, he burned hyſſop with ſulphur and pitch, and cauſed the ſmoke to be drawn into the throat by a funnel; and by this means he brought away abundance of phlegm through the mouth, and through the noſe. For this purpoſe he took nitre, marjoram, and creſs-ſeeds, which he boiled in water, vinegar, and oil, and, while it was on the fire, cauſed the patient to draw in the ſteam by a pipe. In his works we find a great number of fumigants for the diſtempers of women, to promote the menſtrual flux, to check it, to help conception, and to eaſe pains in the matrix, or the ſuffocation of it. On theſe occaſions he uſed ſuch aromatics as were then known, viz. cinnamon, caſſia, myrrh, and ſeveral odoriferous plants; as likewiſe ſome minerals, ſuch as nitre, ſulphur, and pitch, and cauſed them to receive the vapours through a funnel into the uterus.

Gargles, a kind of fomentations for the mouth, were alſo known to Hippocrates. In the quinſey he uſed a gargle made of marjoram, ſavory, celery, mint, and nitre, boiled with water and a little vinegar. When this was ſtrained, they added honey to it, and waſhed their mouths frequently with it.

Oils and ointments were likewiſe much uſed by Hippocrates, with a view to mollify and abate pain, to ripen boils, reſolve tumours, refreſh after wearineſs, make the body ſupple, &c. For this purpoſe, ſometimes pure oil of olives was uſed; ſometimes certain ſimples were infuſed in it, as the leaves of myrtle and roſes; and the latter kind of oil was in much requeſt among the ancients. There were other ſorts of oils ſometimes in uſe, however, which were much more compounded. Hippocrates ſpeaks of one called *ſuſinum*, which was made of the flowers of the iris, of ſome aromatics, of an ointment of narciſſus made with the flowers of narciſſus and aromatics infuſed in oil. But the moſt compounded of all his ointments was that called *netopum*, which he made particularly for women; and conſiſted, according to Heſychius, of a great number of ingredients. Another ointment, to which he gave the name of *ceratum*, was compoſed of oil and wax. An ointment which he recommends for the ſoftening of a tumour, and the cleanſing of a wound, was made by the following receipt: "Take the quantity of a nut of the marrow or fat of a ſheep, of maſtic or turpentine the quantity of a bean, and as much wax; melt theſe over a fire, with oil of roſes, for a ceratum." Sometimes he added pitch and wax, and, with a ſufficient quantity of oil, made a compoſition ſomewhat more conſiſtent than the former, which he called *cerapiſſus*.

Cataplaſms were a ſort of remedies leſs conſiſtent than the two former. They were made of powders or herbs ſteeped or boiled in water or ſome other liquor, to which ſometimes they added oil. They were uſed with a view to ſoften or reſolve tumours, ripen abſceſſes, &c. though they had alſo cooling cataplaſms made of the leaves of beets or oak, fig or olive-trees, boiled in water.

Laſtly, to complete the catalogue of the external remedies uſed by Hippocrates, we ſhall mention a ſort of medicine called *collyrium*. It was compounded of powders, to which was added a ſmall quantity of ſome ointment, or juice of a plant, to make a ſolid or dry maſs; the form of which was long and round, which was kept for uſe. Another compoſition of much the ſame nature was a ſort of lozenge of the bigneſs of a ſmall piece of money, which was burnt upon coals for a perfume, and powdered for particular uſes. In his works we find likewiſe deſcriptions of powders for ſeveral uſes, to take off fungous fleſh, and to blow into the eyes in ophthalmies, &c.

61
His compound medicines.

Theſe were almoſt all the medicines uſed by Hippocrates for external purpoſes. The compound medicines given inwardly were either liquid, ſolid, or *lambitive*. The liquid ones were prepared either by decoction or infuſion in a proper liquor, which, when ſtrained, was kept for uſe; or by macerating certain powders in ſuch liquors, and ſo taking them together, or by mixing different kinds of liquors together. The ſolid medicines conſiſted of juices inſpiſſated; of gums, reſins, or powders, made up with them or with honey, or ſomething proper to give the neceſſary conſiſtence to the medicine. Theſe were made up in a form and quantity fit to be ſwallowed with eaſe. The lambitive was of a conſiſtence between ſolid and fluid; and the patients were obliged to keep it for ſome time to diſſolve in the mouth, that they might ſwallow it leiſurely. This remedy was uſed to take off the acrimony of thoſe humours which ſometimes fall upon this part, and provoke coughing and other inconveniences. The baſis of this laſt compoſition was honey. It is worth our obſervation, that the compound medicines of Hippocrates were but very few, and compoſed only of four or five ingredients at moſt; and that he not only underſtood pharmacy, or the art of compounding medicines, but prepared ſuch as he uſed himſelf, or cauſed his ſervants prepare them in his houſe by his directions.

62
Praxagoras the firſt who differed from Hippocrates.

The firſt phyſician of eminence who differed conſiderably in his practice from Hippocrates was Praxagoras. From ſome authors we learn that he accounted for diſeaſes from the qualities of the humours, of which he reckoned ten ſorts, whereas Hippocrates ſuppoſed only four. Cœlius Aurelianus acquaints us, that he made great uſe of vomits in his practice, inſomuch as to exhibit them in the iliac paſſion till the excrements were diſcharged by the mouth. In this diſtemper he alſo adviſed, when all other means failed, to open the belly, cut the inteſtine, take out the indurated fæces, and then to ſew up all again; but this practice hath not been followed by any ſubſequent phyſician.

63
Phyſicians divided into Dogmatiſts and Empirics.

We muſt now take notice of a capital diſtinction among the ancient phyſicians into the two claſſes of *dogmatiſts* and *empirics*; or into thoſe who proceeded according to rules derived from reaſoning, and thoſe who, without paying any regard to theory or reaſoning, truſted ſolely to the obſervations ariſing from their own experience, or that of others. From what has already been ſaid concerning the theories of Hippocrates, it is very eaſy to ſee that the dogmatiſts were in very great danger of committing errors, if they reaſoned from ſuch falſe and abſurd hypotheſes as were invented by the philoſophers in thoſe ages. The natural fondneſs of mankind, however, for their own theories, prompted the philoſophers to explode experience as much as poſſible; and accordingly we find, that in the time of Philip, father of Alexander the Great, one Chryſippus, a phyſician of Cnidos, attempted

64
Chryſippus attempts to explode the ancient practice.

tempted to overthrow the practice which had been eſtabliſhed on the experience of all the ancient phyſicians, merely by his talent at declamation and reaſoning. He diſapproved of veneſection and purgatives, though he ſometimes made uſe of purgatives and clyſters; but the reaſons he had for his conduct cannot now be known, as his books are totally loſt.

65 Doctrines of Eraſiſtratus.

66 Why he diſapproved of veneſection,

Eraſiſtratus, the ſcholar of Chryſippus, was a phyſician of great eminence, and flouriſhed in the time of Seleucus Nicator. According to Galen, he entirely baniſhed veneſection from medicine; though ſome affirm that he did not totally diſcard it, but only uſed it leſs frequently than other phyſicians. His reaſons for diſapproving of veneſection are as follow: "It is difficult to ſucceed in veneſection, becauſe we cannot always ſee the vein we intend to open, and becauſe we are not ſure but we may open an artery inſtead of a vein. We cannot aſcertain the true quantity to be taken. If we take too little, the intention is by no means anſwered. If we take too much, we run a riſk of deſtroying the patient. The evacuation of the venous blood alſo is ſucceeded by that of the ſpirits, which on that occaſion paſs from the arteries into the veins. It muſt likewiſe be obſerved, that as the inflammation is formed in the arteries by the blood coagulated in their orifices, veneſection muſt of courſe be uſeleſs and of no effect."

67 And purging.

68 Recommends abſtinence.

As Eraſiſtratus did not approve of veneſection, ſo neither did he of purgatives, except very rarely, but exhibited clyſters and vomits; as did alſo his maſter Chryſippus. He was of opinion, however, that the clyſters ſhould be mild; and condemned the large quantity and acrid quality of thoſe uſed by the ancients. The reaſon why purgatives were not much uſed by him was, that he imagined purging and veneſection could anſwer no other purpoſe than diminiſhing the fulneſs of the veſſels, and for this purpoſe he aſſerted that there were more effectual means than either phlebotomy or purging. He aſſerted that the humours diſcharged by cathartics were not the ſame in the body that they appeared after the diſcharge; but that the medicines changed their nature, and produced a kind of corruption in them. This opinion has ſince been embraced by a great number of phyſicians. He did not believe that purgatives acted by attraction; but ſubſtituted in the place of this principle what Mr Le Clerc imagines to be the ſame with Ariſtotle's *fuga vacui*. The principal remedy ſubſtituted by him in place of purging and veneſection was abſtinence. When this, in conjunction with clyſters and vomits, was not ſufficient to eradicate the diſeaſe, he then had recourſe to exerciſe. All this was done with a view to diminiſh the plenitude, which, according to him, was the moſt frequent cauſe of all diſeaſes. Galen alſo informs us, that Eraſiſtratus had ſo great an opinion of the virtues of ſuccory in diſeaſes of the viſcera and lower belly, and eſpecially in thoſe of the liver, that he took particular pains to deſcribe the method of boiling it, which was, "to boil it in water till it was tender; then to put it into boiling water a ſecond time, in order to deſtroy its bitterneſs; afterwards to take it out of the water, and preſerve it in a veſſel with oil; and laſtly, when it is to be uſed, add a little weak vinegar to it." Nay, ſo minute and circumſtantiate was Eraſiſtratus with regard to the preparation of his favourite ſuccory, that he gave orders to tie ſeveral of the plants together, becauſe that was the more commodious method of boiling them. The reſt of Eraſiſtratus's medicines conſiſted almoſt entirely of regimen; to which he added ſome topical remedies, ſuch as cataplaſms, fomentations, and unctions. In ſhort, as he could neither endure compounded medicines, nor ſuperſtitious and fine-ſpun reaſonings, he reduced medicine to a very ſimple and compendious art. But, though hitherto Eraſiſtratus ſeems to have been a dogmatiſt, he agreed with the empirics in aſſerting that we cannot always diſcover the ſpecific or latent cauſes of diſtempers, yet he maintained that in many caſes we could diſcover the immediate cauſes; and that where we could do ſo, we ought to employ our reaſon in order to remove the cauſe, and thus to cure the diſtemper.

69 Was a bo ſurgeon.

With regard to ſurgery, Eraſiſtratus appears to have been very bold; and as an anatomiſt he is ſaid to have been exceedingly cruel, inſomuch that he diſſected criminals while yet alive *. In a ſcirrhous liver, or in tumours of that organ, Cœlius Aurelianus obſerves, that Eraſiſtratus made an inciſion thro' the ſkin and integuments, and having opened the abdomen he applied medicines immediately to the part affected. But though he was thus bold in performing operations on the liver, yet he did not approve of the paracenteſis or tapping in the dropſy; becauſe (ſaid he) the waters being evacuated, the liver, which is inflamed and become hard like a ſtone, is more preſſed by the adjacent parts which the waters kept at a diſtance from it, ſo that by this means the patient dies. He declared alſo againſt drawing teeth which were not looſe, and uſed to tell thoſe who talked with him on this operation, That in the temple of Apollo there was to be ſeen an inſtrument of lead for drawing teeth; in order to inſinuate that we muſt not attempt the extirpation of any but ſuch as are looſe, and call for no greater force for their extirpation than what may be ſuppoſed in an inſtrument of lead.

70 Herophil made gre uſe of me dicines.

Herophilus, the diſciple of Praxagoras, and cotemporary of Eraſiſtratus, is ſaid to have been the firſt phyſician of the dogmatic ſect who made ſo great an uſe of medicines both ſimple and compound, that neither he nor his diſciples would undertake the cure of any diſorder without them. He ſeems alſo to have been the firſt who treated accurately of the doctrine of pulſes, of which Hippocrates, as already obſerved, had but a ſuperficial knowledge. Galen, however, affirms, that on this ſubject he involved himſelf in difficulties and advanced abſurdities; which indeed we are not greatly to wonder at, conſidering the time in which he lived. He took notice of a diſeaſe at that time pretty rare, and to which he aſcribes certain ſudden deaths. He calls it a *palſy of the heart;* and perhaps it may be the ſame diſeaſe with what is now termed the *angina pectoris*.

71 Medicine divided i to three branches.

According to Celſus, it was about this time that medicine was firſt divided into three branches, viz. the dietetic, the pharmaceutical, and the chirurgical medicine. The firſt of theſe employed a proper regimen in the cure of diſeaſes; the ſecond, medicines; and the third, the operation of the hands: and the ſame author informs us, that theſe three branches became now the buſineſs of as many diſtinct claſſes of men; ſo that from this time we may

* See An tomy, Hiſ

may date the origin of the three profeſſions of phyſicians, apothecaries, and ſurgeons.—Before this diviſion, thoſe called *phyſicians* diſcharged all the ſeveral offices belonging to the three profeſſions; and there were only two kinds of them, viz. one called αρχιτεκτονικοι, who only gave their advice to the patients, and directions to thoſe of an inferior claſs, who were called δημιουργοι, and worked with their hands either in the performing operations, or in the compoſition and application of remedies.

The firſt grand revolution which happened in the medicinal art after the days of Herophilus and Eraſiſtratus was occaſioned by the founding of the empiric ſect by Serapion of Alexandria about 287 years before Chriſt. The diviſion into dogmatiſts and empirics had indeed ſubſiſted before, as already mentioned; but about this time the latter party began to grow ſtrong, and to have champions publicly aſſerting its cauſe. Galen informs us, that Serapion uſed Hippocrates very ill in his writings, in which he diſcovered an exceſs of pride, ſelf-ſufficiency, and contempt for all the phyſicians that went before him. We have ſome ſketches of his practice in Cælius Aurelianus, from which we may infer that he retained the medicines of Hippocrates and the other phyſicians who went before him, though he rejected their reaſoning. We know not what arguments he advanced for the ſupport of his ſentiments, ſince his works are loſt, as well as thoſe of the other empirics; and we ſhould know nothing at all of any of them, if their adverſaries had not quoted them in order to confute them.

The empirics admitted only one general method of obtaining ſkill in the medical art, which was by experience, called by the Greeks εμπειρια. From this word they took their name, and refuſed to be called after the founder or any champion of their ſect. They defined experience "a knowledge derived from the evidence of ſenſe." It was either fortuitous, or acquired by deſign. For acquiring practical ſkill they recommended what they called τηρησις, or one's own obſervation, and the reading of hiſtories or caſes faithfully related by others. Hence they thought that we are enabled to know a diſeaſe by its reſemblance to others; and, when new diſeaſes occurred, to conclude what was proper to be done from the ſymptoms they had in common with others that were before known. They aſſerted, that obſervation ought principally to be employed in two different ways; firſt in diſcovering what things are ſalutary, and what are of an indifferent nature; and, ſecondly, what particular diſeaſe is produced by a certain concurrence of ſymptoms; for they did not call every ſymptom a diſeaſe, but only ſuch a combination of them as from long experience they found to accompany each other, and produced ſuch diſorders as began and terminated in the ſame manner.

On the other hand, the dogmatiſt affirmed, that there was a neceſſity for knowing the latent as well as the evident cauſes of diſeaſes, and that the phyſician ought to underſtand the natural actions and functions of the human body, which neceſſarily preſuppoſes a knowledge of the internal parts. By ſecret or latent cauſes they meant ſuch as related to the elements or principles of which our bodies are compoſed, and which are the origins of a good or bad ſtate of health. They aſſerted that it was impoſſible to know how to cure a diſeaſe without knowing the cauſe whence it proceeded; becauſe undoubtedly it behoved them to vary prodigiouſly in themſelves according to the different cauſes by which they were produced.

75 Doctrine of Aſclepiades.

The next remarkable perſon in the hiſtory of phyſic is Aſclepiades, who flouriſhed in the century immediately preceding the birth of Chriſt. He introduced the philoſophy of Democritus and Epicurus into medicine, and ridiculed the doctrines of Hippocrates. He aſſerted, that matter conſidered in itſelf was of an unchangeable nature; and that all perceptible bodies were compoſed of a number of ſmaller ones, between which there were interſperſed an infinity of ſmall ſpaces totally void of all matter. He thought that the ſoul itſelf was compoſed of theſe ſmall bodies. He laughed at the principle called *nature* by Hippocrates, and alſo at the imaginary faculties ſaid by him to be ſubſervient to her; and ſtill more at what he called *attraction*. This laſt principle Aſclepiades denied in every inſtance, even in that of the loadſtone and ſteel, imagining that this phænomenon proceeded from a concourſe of corpuſcles, and a particular diſpoſition or modification of their pores. He alſo maintained, that nothing happened or was produced without ſome cauſe; and that what was called *nature* was in reality no more than *matter* and *motion*. From this laſt principle he inferred that Hippocrates know not what he ſaid when he ſpoke of nature as an intelligent being, and aſcribed qualities of different kinds to her. For the ſame reaſon he ridiculed the doctrine of Hippocrates with regard to criſes; and aſſerted that the termination of diſeaſes might be as well accounted for from mere matter and motion. He maintained, that we were deceived if we imagined that nature always did good; ſince it was evident that ſhe often did a great deal of harm. As for the days particularly fixed upon by Hippocrates for criſes, or thoſe on which we uſually obſerve a change either for the better or the worſe, Aſclepiades denied that ſuch alterations happened on thoſe days rather than on others. Nay, he aſſerted that the criſis did not happen at any time of its own accord, or by the particular determination of nature for the cure of the diſorder, but that it depended rather on the addreſs and dexterity of the phyſician; that we ought never to wait till a diſtemper terminates of its own accord, but that the phyſician by his care and medicines muſt haſten on and advance the cure.—According to him, Hippocrates and other ancient phyſicians attended their patients rather with a view to obſerve in what manner they died than in order to cure them; and this under pretence that nature ought to do all herſelf, without any aſſiſtance.

76 Contradicts Hippocrates.

The phyſiology of Aſclepiades, or what we may call ſuch, is as follows. "The particular aſſemblage, (ſays he), of the various corpuſcles above-mentioned, and repreſented as of different figures, is the reaſon why there are ſeveral pores or interſtices within the common maſs, formed by theſe corpuſcles; and why theſe pores are of a different ſize. This being taken for granted, as theſe pores are in all the bodies we obſerve, it muſt of courſe follow that the human body has ſome peculiar to itſelf, which, as well as thoſe of all other bodies, contain other minute bodies, which paſs and repaſs by thoſe pores that communicate with each other; and as theſe pores or interſtices are larger or ſmaller, ſo the corpuſcles which paſs through them differ proportionably as to largeneſs and minuteneſs. The blood conſiſts of the largeſt of theſe corpuſcles, and the ſpirits, or the heat, of the ſmalleſt."

From theſe principles the following pathology is deducible: "As long as the corpuſcles are freely received by the pores, the body remains in its natural ſtate; and, on the contrary, it begins to recede from that ſtate, when the corpuſcles find any obſtacle to their paſſage. Health therefore depends on the juſt proportion between the pores and the corpuſcles they are deſtined to receive and tranſmit; as diſeaſes, on the contrary, proceed from a diſproportion between theſe pores and the corpuſcles. The moſt uſual obſtacle on this occaſion proceeds from the corpuſcles embracing each other, and being retained in ſome of their ordinary paſſages, whether theſe corpuſcles arrive in too large a number, are of irregular figures, move too faſt or too ſlow, &c.

Among the diſorders produced by the corpuſcles ſtopping of their own accord, Aſclepiades reckoned phrenſies, lethargies, pleuriſies, and burning fevers. Pains, in particular, are claſſed among the accidents which derive their origin from a ſtagnation of the largeſt of all the corpuſcles of which the blood conſiſts. Among the diſorders produced by the bad ſtate and diſpoſition of the pores, he placed deliquiums, languors, extenuations, leanneſs, and dropſies, &c. Theſe laſt diſorders he thought proceeded from the pores being too much relaxed and opened: the dropſy in particular proceeds from the fleſh being perforated with various ſmall holes, which convert the nouriſhment received into them into water. Hunger, and eſpecially that ſpecies of it called *fames canina*, proceeds from the opening the large pores of the ſtomach and belly; and thirſt from an opening of their ſmall ones. Upon the ſame principles he accounted for intermittent fevers. Quotidian fevers are cauſed by a retention of the largeſt corpuſcles, thoſe of the tertian kind by a retention of corpuſcles ſomewhat ſmaller, and quartan fevers are produced by a retention of the ſmalleſt corpuſcles of all.

77 Account of his practice.

The practice of Aſclepiades was ſuited to remove theſe imaginary cauſes of diſorders. He compoſed a book concerning common remedies, which he principally reduced to three, viz. geſtation, friction, and the uſe of wine. By various exerciſes he propoſed to render the pores more open, and to make the juices and ſmall bodies, which cauſe diſeaſes by their retention, paſs more freely; and whereas the former phyſicians had not recourſe to geſtation till towards the end of long-continued diſorders, and when the patients, tho' entirely free from fever, were yet too weak to take ſufficient exerciſe by walking, Aſclepiades uſed geſtation from the very beginning of the moſt burning fevers. He laid it down as a maxim, that one fever was to be cured by another; that the ſtrength of the patient was to be exhauſted by making him watch and endure thirſt to ſuch a degree, that, for the two firſt days of the diſorder, he would not allow them to cool their mouths with a drop of water. Celſus alſo obſerves, that though Aſclepiades treated his patients like a butcher during the firſt days of the diſorder, he indulged them ſo far afterwards as even to give directions for making their beds in the ſofteſt manner. On ſeveral occaſions Aſclepiades uſed frictions to open the pores. The dropſy was one of the diſtempers in which this remedy was uſed; but the moſt ſingular attempt was, by this means, to lull phrenetic patients aſleep. But though he enjoined exerciſe ſo much to the ſick, he denied it to thoſe in health; a piece of conduct not a little ſurpriſing and extraordinary. He allowed wine freely to patients in fevers, provided the violence of the diſtemper was ſomewhat abated. Nor did he forbid it to thoſe who were afflicted with a phrenzy: nay, he ordered them to drink it till they were intoxicated, pretending by that means to make them ſleep; becauſe, he ſaid, wine had a narcotic quality and procured ſleep, which he thought abſolutely neceſſary for thoſe who laboured under that diſorder. To lethargic patients he uſed it on purpoſe to excite them, and rouſe their ſenſes: he alſo made them ſmell ſtrong-ſcented ſubſtances, ſuch as vinegar, caſtor, and rue, in order to make them ſneeze; and applied to their heads cataplaſms of muſtard made up with vinegar.

Beſides theſe remedies, Aſclepiades enjoined his patients abſtinence to an extreme degree. For the firſt three days, according to Celſus, he allowed them no aliment whatever; but on the fourth began to give them victuals. According to Cœlius Aurelianus, however, he began to nouriſh his patients as ſoon as the acceſſion of the diſeaſe was diminiſhed, not waiting till an entire remiſſion; giving, to ſome, aliments on the firſt, to others on the ſecond, to others on the third, and ſo on to the ſeventh day. It ſeems almoſt incredible to us, that people ſhould be able to faſt till this laſt mentioned term; but Celſus aſſures us, that abſtinence till the ſeventh day was enjoined by the predeceſſors of Aſclepiades, and by Heraclides Tarentinus.

78 Method ſect foun ed by T miſſon.

The next great revolution which happened in the medicinal art, was brought about by Themiſon, the diſciple of Aſclepiades, who lived not long before the time of Celſus, during the end of the reign of Auguſtus, or beginning of that of Tiberius. The ſect founded by him was called *methodic*, becauſe he endeavoured to find a method of rendering medicine more eaſy than formerly.

79 Their d trines.

He maintained, that a knowledge of the cauſes of diſeaſes was not neceſſary, provided we have a due regard to what diſeaſes have in common and analogous to one another. In conſequence of this principle, he divided all diſeaſes into two, or at moſt three, kinds. The firſt included diſeaſes ariſing from ſtricture; the ſecond, thoſe ariſing from relaxation; and the third, thoſe of a mixed nature, or ſuch as partook both of ſtricture and relaxation.

Themiſon alſo aſſerted, that diſeaſes are ſometimes acute, and ſometimes chronical; that for a certain time they increaſe; that at a certain time they are at their height; and that at laſt they were obſerved to diminiſh. Acute diſeaſes, therefore, according to him, muſt be treated in one way, and chronical ones in another; one method muſt be followed with ſuch as are in their augmentation, another with ſuch as are at their height, and a third with ſuch as are in their declenſion. He aſſerted, that the whole of medicine conſiſted in the obſervation of that ſmall number of rules which are founded upon things altogether evident. He ſaid, that all diſorders, whatever their nature was, if included under any of the kinds abovementioned, ought to be treated preciſely in the ſame way, in whatever country and with whatever ſymptoms they happen to ariſe. Upon theſe principles, he defined medicine to be "a method of conducting to the knowledge of what diſeaſes have in common with each other, and which at the ſame time is evident."

80 ſect eſta- ed by ſſalus.

Themiſon was old when he laid the foundation of the Methodic ſect; and it was only brought to perfection by Theſſalus, who lived under the emperor Nero. Galen and Pliny accuſe this phyſician of intolerable inſolence and vanity; and report, that he gave himſelf the air of deſpiſing all other phyſicians: and ſo intolerable was his vanity, that he aſſumed the title of *the conqueror of phyſicians*, which he cauſed to be put upon his tomb in the Appian way. "Never was mountebank (ſays Pliny) attended by a greater number of ſpectators than Theſſalus had generally about him; and this circumſtance is the leſs to be wondered at, if we conſider that he promiſed to teach the whole art of medicine in leſs than ſix months. In reality, the art might be learned much ſooner if it comprehended no more than what the methodiſts thought neceſſary: for they cut off the dogmatics examination of the cauſes of diſeaſes; and ſubſtituted in the room of the laborious obſervations of the empirics, indications drawn from the analogy of diſeaſes, and the mutual reſemblance they bear to each other. The moſt ſkilful of all the methodic ſect, and he who put the laſt hand to it, was Soranus. He lived under the emperors Trajan and Adrian, and was a native of Epheſus.

ine of

One of the moſt celebrated medicinal writers of antiquity was the Celſus whom we have already had occaſion to mention. Moſt writers agree, that he lived in the time of Tiberius, but his country is uncertain. It is even diſputed whether or not he was a profeſſed phyſician. Certain it is, however, that his books on medicine are the moſt valuable of all the ancients next to thoſe of Hippocrates. From the latter, indeed, he hath taken ſo much, as to acquire the name of the *Latin Hippocrates*; but he hath not attached himſelf to him ſo cloſely as to reject the aſſiſtance of other authors. In many particulars he has preferred Aſclepiades. With him he laughs at the critical days of Hippocrates, and aſcribes the invention of them to a fooliſh and ſuperſtitious attachment to the Pythagorean doctrine of numbers. He alſo rejected the doctrine of Hippocrates with regard to veneſection, of which he made a much more general uſe; but did not take away ſo much at a time, thinking it much better to repeat the operation than weaken the patient by too great an evacuation at one time. He uſed cupping alſo much more frequently, and differed from him with regard to purgatives. In the beginning of diſorders, he ſaid, the patients ought to endure hunger and thirſt: but afterwards they were to be nouriſhed with good aliments; of which, however, they were not to take too much, nor fill themſelves all of a ſudden, after having faſted. He does not ſpecify how long the patient ought to practiſe abſtinence; but affirms, that in this particular it is neceſſary to have a regard to the diſeaſe, the patient, the ſeaſon, the climate, and other circumſtances of a like nature.—The ſigns drawn from the pulſe he looked upon to be very precarious and uncertain. "Some (ſays he) lay great ſtreſs upon the beating of the veins or the arteries; which is a deceitful circumſtance, ſince that beating is ſlow or quick, and varies very much, according to the age, ſex, and conſtitution of the patient. It even ſometimes happens that the pulſe is weak and languid when the ſtomach is diſordered, or in the beginning of a fever, though in other reſpects the body be in a good ſtate; ſo that we might, in this latter caſe, be induced to believe, that a man is very weak, when he is juſt entering into a violent paroxyſm, has ſtrength enough left, and may be eaſily recovered from it. On the contrary, the pulſe is often high, and in a violent commotion, when one has been expoſed to the ſun, or comes out of a bath, or from uſing exerciſe; or when one is under the influence of anger, fear, or any other paſſion. Beſides, the pulſe is eaſily changed by the arrival of the phyſician, in conſequence of the patient's anxiety to know what judgment he will paſs upon his caſe. To prevent this, the phyſician muſt not feel the patient's pulſe on his firſt arrival: he muſt firſt ſit down by him, aſſume a cheerful air, inform himſelf of his condition; and if he is under any dread, endeavour to remove it by encouraging diſcourſe; after which he may examine the beating of the artery. This nevertheleſs does not hinder us from concluding, that if the ſight of the phyſician alone can produce ſo remarkable a change in the pulſe, a thouſand other cauſes may produce the ſame effect."

83 Account of Galen.

About the 131ſt year after Chriſt, in the reign of the emperor Adrian, lived the celebrated Galen, a native of Pergamus, whoſe name makes ſuch a conſpicuous figure in the hiſtory of phyſic. At this time the dogmatic, empiric, methodic, and other ſects, had each their abettors. The methodics were held in great eſteem, and looked upon to be ſuperior to the dogmatics, who were ſtrangely divided among themſelves, ſome of them following Hippocrates, others Eraſiſtratus, and others Aſclepiades. The empirics made the leaſt conſiderable figure of any. Galen undertook the reformation of medicine, and reſtored dogmatiſm. He ſeems to have been of that ſect which was called *eclectic*, from their chooſing out of different authors what they eſteemed good in them, without being particularly attached to any one more than the reſt. This declaration he indeed ſets out with; but, notwithſtanding this, he follows Hippocrates much more than any of the reſt, or rather follows nobody elſe but him. Though before his time ſeveral phyſicians had commented on the works of Hippocrates, yet Galen pretends that none of them had underſtood his meaning beſides himſelf. His firſt attempt therefore was to explain the works of Hippocrates; with which view he wrote a great deal, and after this ſet about compoſing a ſyſtem of his own. In one of his books entitled, "Of the eſtabliſhment of medicine," he defines the art to be one which teaches to preſerve health and cure diſeaſes. In another book, however, he propoſes the following definition: "Medicine (ſays he) is a ſcience which teaches what is ſound, and what is not ſo; and what is of an indifferent nature, or holds a medium between what is ſound and what is the reverſe." He affirmed, that there are three things which conſtitute the object of medicine, and which the phyſician ought to conſider as ſound, as not ſound, or of a neutral and indifferent nature. Theſe are the body itſelf, the ſigns, and the cauſes. He eſteems the human body ſound, when it is in a good ſtate or habit with regard to the ſimple parts of which it is compoſed, and when beſides there is a juſt proportion between the organs formed of theſe ſimple parts. On the contrary, the body is reckoned to be unſound, when it recedes from that ſtate, and the juſt proportion abovementioned. It is in a ſtate of neutrality or indifference, when it is in a medium between ſoundneſs and its oppoſite ſtate. The ſalutary ſigns are ſuch as indicate preſent health, and prognoſticate that the man may remain in that ſtate for the time to come. The inſalubrious ſigns, on the contrary, indicate a preſent diſorder, or lay a foundation for ſuſpecting the approach of one. The neutral ſigns, or ſuch as are of an indifferent nature, denote neither health nor indiſpoſition, either for the preſent, or for the time to come. In like manner he ſpeaks of cauſes ſalutary, unſalutary, and indifferent.

Theſe three diſpoſitions of the human body, that is, ſoundneſs, its reverſe, and a neutral ſtate, comprehend all the differences between health, and diſorder, and indiſpoſition: and each of theſe three ſtates or diſpoſitions has a certain extent peculiar to itſelf. A ſound habit of body, according to the definition of it already given, is very rare, and perhaps never to be met with; but this does not hinder us to ſuppoſe ſuch a model for regulating our judgment with reſpect to different conſtitutions. On this principle Galen eſtabliſhes eight other principal conſtitutions, all of which differ more or leſs from the perfect model abovementioned. The four firſt are ſuch as have one of the four qualities of hot, cold, moiſt, or dry, prevailing in too great a degree; and accordingly receive their denomination from that quality which prevails over the reſt. The four other ſpecies of conſtitutions receive their denominations from a combination of the abovementioned; ſo that, according to his definition, there may be a hot and dry, a hot and moiſt, a cold and moiſt, and a cold and dry conſtitution. Beſides theſe differences, there are certain others which reſult from occult and latent cauſes, and which, by Galen, are ſaid to ariſe from an *idioſyncraſy* of conſtitution. It is owing to this idioſyncraſy, that ſome have an averſion to one kind of aliment and ſome to another, that ſome cannot endure particular ſmells, &c. But though theſe eight laſt mentioned conſtitutions fall ſhort of the perfection of the firſt, it does not thence follow, that thoſe to whom they belong are to be claſſed among the valetudinary and diſeaſed. A diſeaſe only begins when the deviation becomes ſo great as to hinder the action of the parts.

Galen deſcribes at great length the ſigns of a good or bad conſtitution, as well as thoſe of what he calls a *neutral habit*. Theſe ſigns are drawn from the original qualities of cold, hot, moiſt, and dry, and from their juſt proportion or diſproportion with reſpect to the bulk, figure, and ſituation, of the organical parts. With Hippocrates he eſtabliſhes three principles of an animal body; the parts, the humours, and the ſpirits. By the parts he properly meant no more than the ſolid parts; and theſe he divided into ſimilar and organical. Like Hippocrates he alſo acknowledged four humours; the blood, the phlegm, the yellow and black bile; and of theſe he gave the ſame definitions with thoſe already taken notice of under Hippocrates. He eſtabliſhed three different kinds of ſpirits; the vital, the animal, and the natural. The firſt of theſe are, according to him, nothing elſe but a ſubtle vapour ariſing from the blood, which draws its origin from the liver, the organ, or inſtrument of ſanguification. After theſe ſpirits are conveyed to the heart, they, in conjunction with the air we draw into the lungs, become the matter of the ſecond ſpecies, that is, of the vital ſpirits, which are again changed into thoſe of the animal kind in the brain. He ſuppoſed that theſe three ſpecies of ſpirits ſerved as inſtruments to three kinds of faculties, which reſide in the reſpective parts where theſe faculties are formed. The natural faculty is the firſt of theſe, which he placed in the liver, and imagined to preſide over the nutrition, growth, and generation, of the animal. The vital faculty he lodged in the heart, and ſuppoſed that by means of the arteries it communicated warmth and life to all the body. The animal faculty, the nobleſt of all the three, and with which the reaſoning or governing faculty was joined, according to him, has its ſeat in the brain; and, by means of the nerves, diſtributes a power of motion and ſenſation to all the parts, and preſides over all the other faculties. The original ſource or principle of motion in all theſe faculties, Galen, as well as Hippocrates, defines to be *Nature*.

Upon theſe principles Galen defined a diſeaſe to be "ſuch a preternatural diſpoſition or affection of the parts of the body, as primarily, and of itſelf, hinders their natural and proper action." He eſtabliſhed three principal kinds of diſeaſes: the firſt relates to the ſimilar parts; the ſecond, to the organical; and the third is common to both theſe parts. The firſt kind of diſeaſes conſiſts in the intemperature of the ſimilar parts; and this is divided into an intemperature *without matter*, and an intemperature *with matter*. The firſt diſcovers itſelf when a part has more or leſs heat or cold than it ought to have without that change of quality in the part being ſupported and maintained by any matter. Thus, for inſtance, a perſon's head may be overheated and indiſpoſed by being expoſed to the heat of the ſun, without that heat being maintained by the continuance or congeſtion of any hot humour in the part. The ſecond ſort of intemperature is when any part is not only rendered hot or cold, but alſo filled with a hot or cold humour, which are the cauſes of the heat or cold felt in the part. Galen alſo acknowledged a ſimple intemperature: that is, when one of the original qualities, ſuch as heat or cold, exceeds alone and ſeparately; and a compound intemperature, when two qualities are joined together, ſuch as heat and dryneſs, or coldneſs and humidity. He alſo eſtabliſhed an equal and unequal temperature. The former is that which is equally in all the body, or in any particular part of it, and which creates no pain, becauſe it is become habitual, ſuch as dryneſs in the hectic conſtitution. The latter is diſtinguiſhed from the former, in that it does not equally ſubſiſt in the whole of the body, or in the whole of a part. Of this kind of intemperature we have examples in certain fevers, where heat and cold, equally, and almoſt at the ſame time, attack the ſame part; or in other fevers, which render the ſurface of the body cold as ice, while the internal parts burn with heat; or laſtly, in caſes where the ſtomach is cold and the liver hot.

The ſecond kind of diſorders, relating to the organical parts, reſults from irregularities of theſe parts, with reſpect to the number, bulk, figure, ſituation, &c.; as when one has ſix fingers, or only four; when one has any part larger or ſmaller than it ought to be, &c. The third kind, which is common both to the ſimilar and the organical parts, is a ſolution of continuity, which happens when any ſimilar or compound part is cut, bruiſed, or corroded.

Like Hippocrates, Galen diſtinguiſhed diſeaſes into acute and chronical; and, with reſpect to their nature and genius, into benign and malignant; alſo into epidemic, endemic, and ſporadic.

After having diſtinguiſhed the kinds of diſeaſes, Galen comes to explain the cauſes; which he divides into external and internal. The external cauſes of diſeaſes, according to him, are ſix things, which contribute to the preſervation of health when they are well diſpoſed and properly uſed, but produce a contrary effect when they are imprudently uſed or ill diſpoſed. Theſe ſix things are, the air, aliments and drink, motion and reſt, ſleeping and watching, retention and excretion, and laſtly the paſſions. All theſe are called the *procataretic* or *beginning* cauſes, becauſe they put in motion the internal cauſes; which are of two kinds, the *antecedent* and the *conjunct*. The former is diſcovered only by reaſoning; and conſiſts for the moſt part in a peccancy of the humours, either by plenitude or cacochymy, *i. e.* a bad ſtate of them. When the humours are in too large a quantity, the caſe is called a *plethora*; but we muſt obſerve, that this word equally denotes too large a quantity of all the humours together, or a redundance of one particular humour which prevails over the reſt. According to theſe principles, there may be a ſanguine, a bilious, a pituitous, or a melancholy plenitude: but there is this difference between the ſanguine and the three other plenitudes, that the blood, which is the matter of the former, may far ſurpaſs the reſt: whereas, if any of the three laſt mentioned ones do ſo, the caſe is no longer called *plenitude*, but *cacochymy*; becauſe theſe humours, abounding more than they ought, corrupt the blood. The cauſes he alſo divides into ſuch as are manifeſt and evident, and ſuch as are latent and obſcure. The firſt are ſuch as ſpontaneouſly come under the cognizance of our ſenſes when they act or produce their effects: the ſecond are not of themſelves perceptible, but may be diſcovered by reaſoning: the third ſort, *i. e.* ſuch as he calls *occult* or *concealed*, cannot be diſcovered at all. Among this laſt he places the cauſe of the hydrophobia.

He next proceeds to conſider the ſymptoms of diſeaſes. A ſymptom he defines to be "a preternatural affection depending upon a diſeaſe, or which follows it as a ſhadow does a body." He acknowledged three kinds of ſymptoms: the firſt and moſt conſiderable of theſe conſiſted in the action of the parts being injured or hindered; the ſecond in a change of the quality of the parts, their actions in the mean time remaining entire; the third related to defects in point of excretion and retention.

After having treated of ſymptoms, Galen treats of the *ſigns* of diſeaſes. Theſe are divided into *diagnoſtic* and *prognoſtic*. The firſt are ſo called becauſe they enable us to know diſeaſes, and diſtinguiſh them from each other. They are of two ſorts, *pathognomic* and *adjunct*. The firſt are peculiar to every diſeaſe, make known its preciſe ſpecies, and always accompany it, ſo that they begin and end with it. The ſecond are common to ſeveral diſeaſes, and only ſerve to point out the difference between diſeaſes of the ſame ſpecies. In a pleuriſy, for inſtance, the pathognomic ſigns are a cough, a difficulty of breathing, a pain of the ſide, and a continued fever. The adjunct ſigns are the various ſorts of matter expectorated, which are ſometimes bloody, ſometimes bilious, &c. —The diagnoſtic ſigns were drawn from the defective or diſordered diſpoſition of the parts, or from the diſeaſes themſelves; ſecondly, from the cauſes of diſeaſes; thirdly, from their ſymptoms; and laſtly, from the particular diſpoſitions of each body, from things which prove prejudicial and thoſe that do ſervice, and from epidemical diſeaſes.—The prognoſtic ſigns he gathered from the ſpecies, virulence, and peculiar genius of the diſeaſe; but as we have already ſpoken ſo largely concerning the prognoſtics of Hippocrates, it is ſuperfluous to be particular on thoſe of Galen.—His method of cure differed little from that of Hippocrates: but from the ſpecimen already given of Galen's method of teaching the medicinal art, it is evident that his ſyſtem was little elſe than a heap of ſpeculations, diſtinctions, and reaſonings; whereas that of Hippocrates was founded immediately upon facts, which he had either obſerved himſelf, or had from the obſervation of others.

84
Difference between the Hippocratic and Galenic ſyſtems.

In conſequence of the eſtabliſhment of ſuch a ſyſtem, the medicinal art, as well as others during the dark ages of popery, came to be reduced to a heap of quibbling diſtinctions and metaphyſical nonſenſe.—After the days of Galen, however, the knowledge of medicine did not immediately decline. Dr Freind is of opinion that it continued to advance till the year 600. He cenſures Mr Le Clerc for placing the phyſicians Oribaſius, Aëtius, Alexander, and Paulus Ægineta, all without any diſtinction, in the fourth century; and ſtill more for placing Diocles Caryſtius 500 years after Chriſt, when he ſhould, according to him, have been placed 300 years before him.

85
Account of Oribaſius.

Oribaſius flouriſhed about the year 360, and was phyſician to the emperor Julian. He ſpeaks very fully of the effects of bleeding by way of ſcarification, a thing little taken notice of by former writers: from his own experience he aſſures us that he had found it ſucceſsful in a ſuppreſſion of the menſes, defluxions of the eyes, headach, and ſtraitneſs of breathing even when the perſon was extremely old. He tells his own caſe particularly, when the plague raged in Aſia, and he himſelf was taken ill, that the ſecond day he ſcarified his leg, and took away two pounds of blood; by which method he entirely recovered, as did ſeveral others who uſed it. In this author alſo we find the firſt deſcription of a ſurpriſing and terrible diſtemper called λυκανθρωπια, a ſpecies of melancholy and madneſs, which he deſcribes thus. "The perſons affected go out of their houſes in the night-time, and in every thing imitate wolves, and wander among the ſepulchres of the dead till day break. You may know them by theſe ſymptoms: Their looks are pale; their eyes heavy,

86
New diſtemper deſcribed by him.

heavy, hollow, dry, without the leaſt moiſture of a tear; their tongue exceedingly parched and dry, no ſpittle in their mouth, extreme thirſt; their legs, from the falls and the bruiſes they receive, full of incurable ſores and ulcers." Actuarius adds, that at day-break they return home, and come to their ſenſes. This deſcription reſembles that of the demoniac cured by our Saviour, and this man's *poſſeſſion* was probably a ſpecies of the ſame madneſs.

87 Aetius. Aëtius lived very near the end of the fifth, or in the beginning of the ſixth century. Many paſſages in his writings ſerve to ſhew us how much the actual and potential cautery were uſed by the phyſicians of that age. In a palſy, he ſays from the works of another phyſician, that he ſhould not at all heſitate to make an eſchar either way, and this in ſeveral places; one in the nape, where the ſpinal marrow takes its riſe, two on each ſide of it; three or four on the top of the head, one juſt in the middle, and the three others round it. He adds, that in this caſe, if the ulcers continue running a good while, he ſhould not doubt of a perfect recovery. He is ſtill more particular when he comes to order this application for an inveterate aſthma, after all other remedies have been tried in vain. One, he ſays, ſhould be made on each ſide near the middle of the joining of the clavicle, taking care not to touch the wind-pipe: two other little ones are then to be made near the carotids under the chin, one on each ſide, ſo that the cauſtic may penetrate no further than the ſkin; two others under the breaſts, between the third and fourth ribs; and again, two more backwards towards the fifth and ſixth ribs. Beſides theſe there ought to be one in the middle of the thorax near the beginning of the xiphoid cartilage over the orifice of the ſtomach; one on each ſide between the eighth and ninth ribes; and three others in the back, one in the middle, and the two others juſt below it, on each ſide of the vertebræ. Thoſe below the neck ought to be pretty large, not very ſuperficial, nor very deep: and all theſe ulcers ſhould be kept open for a very long time.

The uſe of iſſues was indeed known to Hippocrates. They uſed both the actual and potential cautery for making them; the former of which is preferred by many, becauſe the eſchar made by it ſeparates much ſooner than the other. The moſt conſiderable difference between the ancient and modern practice with regard to iſſues is, that the ancient phyſicians ſometimes made them near a bone, as in the nape, the clavicles, &c. where if any thing is put in to keep the iſſue open, it muſt preſs upon the perioſteum, and create great pain; beſides that in ſuch a part the diſcharge, on which the cure chiefly depends, can never be ſo conſiderable. As for that particular ſpecies of iſſues called *ſetons*, we find them plainly deſcribed by Langfranc, above 400 years ago; and if we examine into the writers before Langfranc, we ſhall find the practice ſtill more ancient. Roland, who lived in the 13th century, not only mentions the thing, but uſes the very word, and gives a deſcription how the needle with the thread ſhould be paſſed.

Aëtius takes notice of the worms bred in different parts of the body called *dracunculi*, which were unknown to Galen.—He ſeems alſo to be the firſt Greek writer among the Chriſtians who gives us any ſpecimen of medicinal ſpells and charms; ſuch as that of a finger of St Blaſius for removing a bone which ſticks in the throat, and another in relation to a fiſtula. He gives a remedy for the gout, which he calls the *grand drier:* the patient is to uſe it for a whole year, and obſerve the following diet each month. "In September, he muſt eat and drink milk: In October, he muſt eat garlic; in November, abſtain from bathing; in December, he muſt eat no cabbage; in January, he is to take a glaſs of pure wine in the morning; in February, to eat no beet; in March, to mix ſweet things both in eatables and drinkables; in April, not to eat horſe-radiſh, nor in May the fiſh called *polypus;* in June, to drink cold water in a morning; in July, to avoid venery; and laſtly, in Auguſt to eat no mallows." This may ſufficiently ſhew the quackery of thoſe times, and how ſuperſtition was beginning to mix itſelf with the art.

Alexander, who flouriſhed in the reign of Juſtinian, 88 Alexand is a more original author than either of the two former. He confines himſelf directly to the deſcribing the ſigns of diſeaſes, and the methods of cure, without meddling with anatomy, the materia medica, or ſurgery, as all the reſt did. He employs a whole book in treating of the gout. One method he takes of relieving this diſeaſe is by purging; and in moſt of the purges he recommends hermodactyls, of which he has a great opinion.—In a cauſus, or burning fever, where the bile is predominant, the matter fit for evacuation, and the fever not violent, he prefers purging to bleeding, and ſays that he has often ordered purging in acute fevers; which method, ſays Dr Freind, when uſed with judgment, is frequently attended with ſupriſing ſucceſs.—In the cauſus alſo, if a ſyncope happens from crude and redundant humours, he recommends bleeding. In a ſyncope ſucceeding the ſuppreſſion of any uſual evacuation, he recommends bleeding, with frictions. The diagnoſtics upon which he founds this practice are the following; viz. a face paler and more ſwelled than uſual, a bloated habit of body, with a little ſluggiſh pulſe, having long intervals between the ſtrokes.—In tertian, and much more in quartan fevers, he recommends vomits above all other remedies, and affirms that by this remedy alone he has cured the moſt inveterate quartans.—On the bulimus, or canine appetite, he makes a new obſervation, viz. that it is ſometimes cauſed by worms. He mentions the caſe of a woman who laboured under this ravenous appetite, and had a perpetual gnawing at her ſtomach and pain in her head: after taking *hiera*, ſhe voided a worm above a dozen of cubits long, and was entirely cured of her complaints.—He is alſo the firſt author who takes notice of *rhubarb;* which he recommends in a weakneſs of the liver and dyſentery.—Alexander is recommended by Dr Freind as one of the beſt practical writers among the ancients, and well worthy the peruſal of any modern.

89 Paulus Ægine Paulus was born in the iſland Ægina, and lived in the 7th century. He tranſcribes a great deal from Alexander and other phyſicians. His deſcriptions are ſhort and full. He treats particularly of womens diſorders; and ſeems to be the firſt inſtance upon record of a profeſſed *man-midwife*, for ſo he was called by the Arabians: and accordingly he begins his book,

with the diſorders incident to pregnant women. He treats alſo very fully of ſurgery; and gives ſome directions, according to Dr Freind, not to be found in the more ancient writers.

90 ount of Arabi- phyſici-

With this phyſician cloſes the period of the Greek claſſical phyſicians. As for the weſtern parts of the world, every art and ſcience had been long loſt in them, by the inundation of Goths and other barbarous nations who over-ran the Roman empire. The Arabians, who about this time over-ran the eaſtern parts of the world, were at firſt as great enemies to learning of all kinds as the Goths; but at length they applied themſelves to the ſtudy of ſeveral ſciences, particularly medicine. They were for the moſt part, indeed, only copiers of the Greeks; we are, however, indebted to them for ſome improvements. They were the firſt who introduced chemical remedies, though of theſe they uſed but few, nor did they make any conſiderable progreſs in the chemical art. Anatomy was not in the leaſt improved by them, nor did ſurgery receive any advancement till the time of Albucaſis, who lived, probably, in the 12th century. They added a great deal to botany and the materia medica, by the introduction of new drugs, of the aromatic kind eſpecially, from the eaſt, many of which are of conſiderable uſe. They alſo found out the way of making ſugar; and by help of that, ſyrups; which two new materials are of great uſe in mixing up compound medicines.

91 ute rning d let-

With regard to their practice, in ſome few particulars they deviated from the Greeks. Their purging medicines were much milder than thoſe formerly in uſe; and even when they did preſcribe the old ones, they gave them in a much leſs doſe than formerly. The ſame reflection may be made concerning their manner of bleeding, which was never to that exceſſive degree practiſed by the Greeks. They deviated from Hippocrates, however, in one very trivial circumſtance, which produced a terrible controverſy. The queſtion was, Whether blood in a pleuriſy ought to be drawn from the arm of the affected ſide, or the oppoſite. Hippocrates had directed it to be drawn from the arm of the affected ſide; but the Arabians, following ſome other ancient phyſicians, ordered it to be drawn from the oppoſite one. Such was the ignorance of thoſe ages, that the univerſity of Salamanca in Spain made a decree, that no one ſhould dare to let blood but in the contrary arm; and endeavoured to procure an edict from the emperor Charles V. to ſecond it; alleging that the other method was of no leſs pernicious conſequence to medicine, than Luther's hereſy had been to religion.

2 an ians y ap- d.

By reaſon of the general decay of learning in the weſtern parts of the world, the Greek writers became totally forgot, becauſe nobody could read the language; and the Arabians, though moſtly copiers from them, enjoyed all the reputation that was due to the others. The Arabian phyſic was introduced into Europe very early, with the moſt extravagant applauſe: and not only this, but other branches of their learning came into repute in the weſt; inſomuch that in the 11th century, the ſtudies of natural philoſophy and the liberal arts were called *the ſtudies of the Saracens*. This was owing partly to the cruſades undertaken againſt them by the European princes; and partly to the ſettlement of the Moors in Spain, and the intercourſe they and other Arabians had with the Italians. For, long before the time of the cruſades, probably in the middle of the 7th century, there were Hebrew, Arabic, and Latin profeſſors of phyſic ſettled at Salernum: which place ſoon grew into ſuch credit, that Charles the Great thought proper to found a college there in the year 802; the only one at that time in Europe. Conſtantine the African flouriſhed here towards the latter end of the 11th century. He was a native of Carthage; but travelled into the eaſt, and ſpent 30 years in Babylon and Bagdad, by which means he became maſter of the oriental languages and learning. He returned to Carthage; but being informed of an attempt againſt his life, made his eſcape into Apulia, where he was recommended to Robert Guiſcard, created, in 1060, duke of that country, who made him his ſecretary. He was reputed to be very well verſed in the Greek, as well as the eaſtern tongues; and ſeems to have been the firſt who introduced either the Greek or Arabian phyſic into Italy. His works, however, contain nothing that is new, or material; though he was then counted a very learned man, and for that age no doubt was ſo.

93 College of Salernum founded.

From this time to the end of the 15th and beginning of the 16th century, the hiſtory of phyſic furniſhes us with no intereſting particulars. This period, however, is famous for the introduction of chemiſtry into medicine, and the diſcovery of three new diſtempers, the ſweating ſickneſs, the venereal diſeaſe, and the ſcurvy. The ſweating ſickneſs began in 1483, in the army of Henry VII. upon his landing at Milford-haven, and ſpread itſelf at London from the 21ſt of September to the end of October. It returned here five times, and always in ſummer; firſt in 1485, then in 1506, afterwards in 1517, when it was ſo violent that it killed many in the ſpace of three hours, ſo that numbers of the nobility died, and of the commonalty in ſeveral towns often the one-half periſhed. It appeared the fourth time in 1528, and then proved mortal in ſix hours; many of the courtiers died of it, and Henry VIII. himſelf was in danger. In 1529, and only then, it infeſted the Netherlands and Germany, in which laſt country it did much miſchief. The laſt return of it was in 1551, and in Weſtminſter it carried off 120 in a day. Dr Caius deſcribes it as a peſtilent contagious fever, of the duration of one natural day: the ſweat he reckoned to be only a natural ſymptom, or criſis of the diſtemper. It firſt affected ſome particular part, attended with inward heat and burning, unquenchable thirſt, reſtleſſneſs, ſickneſs at ſtomach but ſeldom vomiting, head-ach, delirium, then faintneſs, and exceſſive drowſineſs. The pulſe was quick and vehement, and the breath ſhort and labouring. Children, poor and old people, were leſs ſubject to it. Of others, ſcarce any eſcaped the attack, and moſt of them died. Even by travelling into France or Flanders they did not eſcape; and, what is ſtill more ſtrange, the Scots were not affected: abroad the Engliſh only were ſeized, and foreigners in England were free. At firſt the phyſicians were much puzzled how to treat this diſeaſe. The only cure they ever found, however, was to carry on the ſweat for a long time; for, if ſtopped, it was dangerous or fatal. The way

94 Appearance of the ſweating ſickneſs.

therefore was to be patient and lie ſtill, and not catch cold. If nature was not ſtrong enough to force out the ſweat, it was neceſſary to aſſiſt her by art, with cloaths, wine, &c. The violence of the diſtemper was over in 15 hours; but there was no ſecurity for the patient till 24 were paſſed. In ſome ſtrong conſtitutions there was a neceſſity to repeat the ſweating; even to 12 times. The removing out of bed was attended with great danger; ſome who had not ſweated enough fell into very ill fevers. No fleſh-meat was to be allowed in all the time of the diſtemper; nor drink for the firſt five hours. In the ſeventh, the diſtemper increaſed; in the ninth the delirium came on, and ſleep was by all means to be avoided. However terrible this diſtemper appeared at firſt, it ſeldom proved obſtinate if treated in the above-mentioned manner.

95 Chemiſtry introduced into medicine by Paracelſus.

In the beginning of the 16th century, the famous chemiſt Paracelſus introduced a new ſyſtem into medicine, founded on the principles of his art. The Galenical ſyſtem had prevailed till his time; but their practice had greatly degenerated, and was become quite trifling and frivolous. The phyſicians rejected the uſe of opium, mercury, and other efficacious remedies. Paracelſus, who made uſe of theſe, had therefore greatly the advantage over them; and now all things relating to medicine were explained on imaginary chemical principles. It will eaſily be conceived that a practice founded in this manner could be no other than the moſt dangerous quackery. At this time, however, it was neceſſary; for now a new diſeaſe over-ran the world, and threatened greater deſtruction than almoſt all the old ones put together, both by the violence of its ſymptoms, and its baffling the moſt powerful remedies at that time known.—This was the venereal diſeaſe, which is ſaid to have been imported from the Weſt-Indies by the companions of Chriſtopher Columbus. Its firſt remarkable appearance was at the ſiege of Naples in 1494, from whence it was ſoon after propagated through Europe, Aſia, and Africa. The ſymptoms with which it made the attack at that time were exceedingly violent, much more ſo than they are at preſent; and conſequently were utterly unconquerable by the Galeniſts. The quacks and chemiſts, who boldly ventured on mercury, though they no doubt deſtroyed numbers by their exceſſive uſe of it, yet ſhewed that a remedy for this terrible diſtemper was at laſt found out, and that a proper method of treating it might ſoon be fallen upon. Shortly after, the Weſt-Indian ſpecific, guaiacum, was diſcovered: the materia medica was enriched with that and many other valuable medicines, both from the Eaſt and Weſt-Indies; which contributed conſiderably to the improvement of the practice of phyſic. The ſcurvy likewiſe began to ſpread during the courſe of this century. It had firſt appeared, in 1486, in Miſnia; where it not only proved very dangerous, but was alſo contagious. It probably owed its origin to an unwholeſome ſea-diet. The mariners of Saxony called it *ſcharbock*, which, in their language, ſignifies *inflammation*; and this it ſeems was one way in which it at firſt appeared, and terminated often in a gangrene. It broke out among the Portugueſe ſailors in ſome of their voyages to the Eaſt-Indies, and in 1600 ſpread itſelf through the moſt of Europe; nor were the proper remedies for it diſcovered till very lately.

96 Appearance of the venereal diſeaſe.

97 Of the ſc vy.

The revival of learning, which now took place throughout Europe, the appearance of theſe new diſtempers, and the natural fondneſs of mankind for novelty, contributed greatly to promote the advancement of medicine as well as other ſciences. It was not, however, till the year 1628 that a foundation was laid for a ſolid and rational ſyſtem. This was done by Dr Harvey, who diſcovered the circulation of the blood; which may juſtly be reckoned the moſt capital diſcovery that ever was made with regard to the practice of medicine. The immediate conſequences of it were, that all the vain and fanciful theories of the ancients were thrown aſide, and others more rational eſtabliſhed in their place. How far theſe have yet been aſcertained, ſo as to be ſafely taken for a direction to the practical phyſician in all caſes, we now proceed to inquire.

98 Circula of the blood di covered.

PART I. THEORY OF MEDICINE.

SECT. I. *General account of* Theories *to the time of* HOFFMAN.

99 Mathematical or mechanical theory.

BEFORE the time of Harvey, who diſcovered the circulation of the blood, though every phyſician had ſome kind of theory of his own, yet, as all of theſe were built upon principles in themſelves erroneous, and inconſiſtent with what has been ſince diſcovered concerning the ſtructure of the human body, they are now quite unworthy of notice. But, on the diſcovery of the circulation of the blood, matters took a different turn, and phyſicians began to aim at eſtabliſhing a theory of medicine upon more ſolid and conſiſtent principles. It was generally agreed, that the circulation was the capital and vital function of the body, and that upon it the life and health did immediately depend. The blood was conſidered as it were the *primum mobile* of the whole body; and to ſomething in the blood all the diſorders to which the human race are liable, were thought to be owing.

About this time, alſo, the laws of mechanics began to be better and more generally underſtood; and various theories were formed with a deſign to account for all the phenomena of the human body upon mathematical or mechanical principles. Calculations were made concerning the diameters of the veſſels, their gradual diminution, the friction of the blood againſt their ſides, the force of the heart, &c. Thus were mathematics introduced into phyſic, and every thing relative to the human body was thought to be performed by the mere force of ſuch mechanical powers as we are acquainted with, and whoſe effects we obſerve in pumps, ſteam-engines, and other hydraulic machines.

This conſequences of this doctrine, however, ſoon deſtroyed the principles on which it was founded; and ſuch prodigious powers were attributed to the action of ſome parts of the body, as were much more than ſufficient to deſtroy the texture of the parts themſelves. Digeſtion, for example, was thought to be accompliſhed by the mere mechanical preſſure of the ſtomach upon the aliments contained in it, and Dr Pitcairn calculated this preſſure at more than 5000 pounds weight: but, by a ſtrange and almoſt unaccountable overſight, he did not advert, that upon his hypotheſis the ſoft texture of the viſcus would have been totally deſtroyed by the hardneſs of ſome parts of the aliments ſwallowed even by the human ſpecies, and much more in other animals; as we ſee that dogs will ſwallow and digeſt even the hardeſt bones. The immenſe differences alſo between the calculations of different mathematicians, ſhewed evidently, that either ſome other power than mere mechaniſm was concerned in the operations of the human body, or that its mechaniſm was of a different kind from that which takes place in machines conſtructed by art.

The greateſt difficulty the mechanical phyſicians had to encounter aroſe from the phenomena of muſcular motion. The force of the muſcles in contraction is obſerved to be ſo great, that it ſeems ſcarce poſſible to account for it upon mechanical principles. Attempts were made indeed to overcome this difficulty. The muſcular fibres were ſuppoſed to be full of ſmall cells, which, being inflated by the animal-ſpirits derived from the brain through the nerves, ſhortened the length of the muſcle, and thus cauſed it to contract. But, even allowing this hypotheſis to be true, another difficulty, equally great, aroſe from it; namely, to account for the origin of this prodigious power attributed to the animal-ſpirits. To evade this difficulty, Stahl maintained, that the rational and immaterial ſoul itſelf was the ſource of all the motions of the human body; and that by the direction of this ſpiritual being every thing was conducted, both with relation to the motion of the muſcle, and to every function both vital and natural.

The conſequences of this ſyſtem were ſtill worſe than thoſe of the former; for now metaphyſics were ſuperadded to mathematics, and phyſicians were tempted to neglect the anatomy of the body, and to intermeddle with ſpiritual ſubjects which they could by no means comprehend. Neither could the moſt rigid Stahlians deny, that in many caſes the human body is ſubject to the common laws of mechaniſm; ſo that their ſyſtem, inſtead of explaining, tended to ſet aſide all kind of reaſoning, and to involve every thing in darkneſs.

But, beſides the mechanical theory, another was invented ſoon after Harvey's diſcovery of the circulation, by which every thing was aſcribed to an alteration in the quality of the blood itſelf. This took its riſe principally from ſome microſcopic obſervations of Lewenhoek; and was adopted by Boerhaave, who hath moſt fully explained it. He begins with conſidering the diſeaſes ariſing from a weakneſs and laxity of the ultimate and fineſt fibres of the human body. This, he ſays, is immediately owing to an obſtruction in the converſion of the aliments into healthy juices: and this again to too great a conſumption of good fluids, to the ſluggiſhneſs of the power of the ſolids over the fluids, or the too great viſcidity of the aliments themſelves; or it may ariſe from too weak a motion in the fluids, proceeding chiefly from a defect of muſcular motion, or from too great a pulling of the fibre, next to breaking.

Oppoſite to theſe are the diſeaſes ariſing from fibres too ſtiff and elaſtic. Theſe are produced by the uſe of ſtrong aliments, exerciſe, acid and auſtere medicines, and in ſhort by every thing that tends to increaſe the ſtrength of the body.

The ſimple fibres (or the ultimate and fineſt fibres of the body), interwoven with each other, according to our author, form the moſt ſimple membrane; and this formed into a hollow tube, makes one of the leaſt kind of veſſels. If many of the ſmalleſt fibres are twiſted together in the formation of the membrane, it will be proportionably thicker, and the veſſels formed of it will, in like manner, be ſo much ſtronger; and hence proceed the diſeaſes of weak and lax, and of too ſtiff and elaſtic, viſcera.

Our author next conſiders the moſt ſimple and ſpontaneous defects of our fluids. Theſe are either from the prevalence of an acid, which is again produced by the eating of acid vegetable food, or taking fermented liquors in too great quantity; or from a ſpontaneous gluten ariſing from the uſe of crude and farinaceous aliments, &c.; or from an alkali. This laſt is produced by the uſe of animal food, eſpecially ſuch as has a putrid taint, and the uſe of alkaleſcent vegetables, &c.

102 His account of diſorders from an increaſed circulation.

Beſides all theſe, however, he ſays, there are diſeaſes ariſing merely from a too great increaſe of circulatory motion. The immediate cauſe of this increaſe is the more frequent and ſtrong contraction of the heart. This again happens when the brain and cerebellum are ſo ſtrongly compreſſed, that they ſend forth too great a quantity of the nervous juice; as in paſſions of the mind, or in pains. It may ariſe alſo from an irritation of the heart itſelf, either by the blood returning more quickly to it, occaſioned by muſcular motion, or to ſome acrimony preſent in the blood itſelf.

103 From a plethora and deficiency in the circulation.

Oppoſite to theſe are the diſeaſes which proceed from a deficiency of the circulation, or from plethora. The firſt is produced by the ſpontaneous degeneracy of the humours already mentioned; the ſecond is a greater quantity of well-conditioned blood than what is capable of undergoing thoſe changes which muſt neceſſarily happen in life, unleſs diſtempers intervene and diſturb them. It is produced by every thing which makes a quantity of good chyle and blood, at the ſame time hindering their attenuation, conſumption, and perſpiration through the pores of the ſkin.

104 Of obſtructions and wounds.

He next goes on to conſider the diſeaſes proceeding from the leaſt compound obſtructions, and from wounds. An obſtruction is the ſhutting up of a canal, and denying the paſſage to a fluid which ſhould flow through the ſame. This may proceed from the narrowneſs of the veſſel, the bigneſs of the preſenting body, or from both taken together. The veſſel may become too narrow from outward preſſure, from its own contraction, or from its ſides growing thicker. The bulk of the ſmall bodies contained in the veſſels becomes too great, either by the ſlimineſs of the fluid, or their having miſtaken their paſſage; and when theſe two meet together, the obſtruction is more obſtinate and difficult to remove. The bulk of the fluid parts is increaſed to ſuch a degree as to render them incapable of flowing, 1. Either by changing their ſpherical figure into another, preſenting itſelf in a larger ſize to the mouth of the canal; or, 2. By the joining together, into one, ſeveral particles which were ſingle before. The figure is chiefly altered when that even preſſure of the ſmalleſt particles, now left to their own elaſticity which uſed to work and preſs together from all ſides equally, is ceaſed; that is, when the motion is become languid, or the veſſel relaxed; or when the quantity of liquid is leſſened. The particles run into one, by too much reſt; by cold; froſt; drying; heat; a violent circular motion, and the preſſure of a ſtrong veſſel; by an acid, auſtere, ſpirituous, and abſorbing coagulum; by a ſlime; or by an oil. The particles of fluids having miſtaken their paſſage, are ſtopped when a ſmall body of them runs into the dilated mouth of a canal, through the extremities of which they cannot paſs. This dilatation is chiefly occaſioned by a fullneſs, an increaſed motion, a rarefaction of the fluid, and relaxation of the veſſel; and moſt of all theſe are ſoon ſucceeded by their contraries: "Which is the immediate cauſe of all colds."

105 Of inflammation.

An inflammation he defines to be an attrition of the red arterial blood ſtagnating in the ſmalleſt veſſels; occaſioned by the motion of the blood circulating with greater force in the larger veſſels. This ſtagnation is occaſioned in the ſmalleſt arteries by whatever makes the ends of the veſſels in their cones and cylinders ſo narrow that the diameter of their orifices is made leſs than the globules of the blood; the cauſes whereof may be heat, violent motion, foreign bodies ſtuck in, ligatures, the taking inwardly, or applying to the ſurface of the body, ſharp ſubſtances of various kinds, cold, too great rubbing, &c. An inflammation is likewiſe produced by every thing that ſhuts up the paſſages, and at the ſame time applies to them either inwardly or outwardly ſuch acrimonious bodies as are both oily and ſaline: Alſo by ſuch things as occaſion the blood to ſettle and coagulate in the body; as too violent motions, a draining of the thinneſt parts by ſweating, urine, ſpitting, looſeneſs, ſerous eruptions, and all ſuch things as coagulate, whether medicines or poiſons. In the lymphatic arterial veſſels, an inflammation is produced, 1. By all the cauſes which render their mouths ſufficiently wide to admit the groſs parts of the blood, which, being driven in deeper, meet with narrow paſſages that give way; and, 2. By all the cauſes of inflammation in the blood-veſſels, ſo that this diſeaſe may take place in every conic veſſel through which the red blood flows from the wide to the narrow end.

106 Of fever.

Fever is inſeparably connected with inflammation. To have a juſt notion of the cauſe of it, Dr Boerhaave ſays, it will be neceſſary to chooſe from the innumerable ſymptoms that occur in all the variety of fevers, ſome general ones that are common to all; the preſence of which makes the phyſician ſenſible that his patient has a fever: then, from the conſideration of theſe, the individual and ſpecific nature of the fever is to be found out. In every fever produced by an internal cauſe, there are to be obſerved, at ſome times and in ſome degree, a ſhivering, a quick pulſe, and a heat. Theſe are preſent in all fevers; but of the three, there is only the quick pulſe which is preſent from the beginning to the end; ſo that the phyſician may from that ſingle phænomenon conclude whether a fever is preſent or not. The proximate or neareſt cauſe of this quickneſs is therefore alſo the proximate cauſe of the fever. The quickneſs of the pulſe is immediately produced by the quicker contraction of the heart; and that again by the too quick reciprocal influx of the nervous juice, and that of the cerebellum, into the muſcles and ventricles of the heart. Almoſt every fever begins, as already obſerved, with a ſenſe of coldneſs, ſhivering and ſhaking, greater or leſs, according to the different conſtitution of the patient, or the nature of the fever itſelf. At this time the pulſe is quick, ſmall, and often intermitting; the extremities frequently pale, cold, ſtiff, trembling, and void of feeling: whence it appears, that then the blood ſtagnates at the ends of the capillary veſſels, at the ſame time that there is preſent ſome cauſe which irritates the heart.

In all fevers, after the ſymptoms already mentioned, there ariſes a heat; which is greater or leſs, of a longer or ſhorter continuance, according to the different nature of the fever. This heat, as it follows the preexiſtent fever, ought rather to be taken for its effect than its cauſe, ſo that the too quick contraction of the heart, with an increaſed reſiſtance at the extremities of the capillary veſſels, is ſufficient to give us a juſt idea of all *acute* fevers; that is, ſuch as quickly paſs off, with danger to the patient. Either of theſe two (*viz.* the quick contraction of the heart, or the reſiſtance in the capillary veſſels) may be occaſioned, in a living animal, by an infinite number and variety of cauſes: which, however, are divided, according as they are either ſingular or proper to each, or as they are univerſal and common to many; and theſe laſt are generally owing to the uſe of the ſame air, diet, and manner of living, by thoſe who are ſeized with the fever.

107 Cauſes of fever.

The cauſes of fevers, then, are either ſingular, or univerſal, or epidemical. The ſingular proximate cauſes may be reduced under ſome heads. 1. The things received into the body being ſharp or pricking; whether theſe things are called *meat*, *drink*, *preſervatives*, or *poiſons*; provided they are endowed with ſuch properties that they cannot be digeſted, moved, or evacuated; or when taken in ſuch a quantity as to irritate the ſtomach, or to choak and obſtruct the paſſages, and putrefy within the body. 2. The things retained in the body which were wont to be evacuated each in their proper way; and theſe may be retained by means of cold, unctions, vapours, ſome thick and fat aliment, drink, medicines, poiſons, or air. The ſame effect will alſo follow from too long continued reſt, the omiſſion of ſome uſual exerciſe, obſtructions and compreſſions either from the contained or ſurrounding bodies. 3. From action; ſuch as the too great diſturbance of mind or body, occaſioning heat and toſſings. 4. From external, ſharp, pungent, tearing, burning, and inflaming applications. 5. From thoſe things which make a conſiderable change upon the humours and their motions: which may be done by many externals as well as internals; ſuch as hunger, great evacuations, collections of pus, water and watery blood, in dropſies and empyemas; or ſharp ſerum, inflamed and burnt choler, ſuppurations, gangrenes, too much waking, intenſe ſtudy, and exceſs of venery.

108 Effects of fever.

The effects of fever are, a too quick expulſion and propulſion of the circulating humours, too great an agitation of the ſtagnating ones, and a mixture of thoſe which ought to remain ſeparate; an overcoming and concocting of what reſiſts; a ſecretion of the concocted matter; and a critical evacuation of what has occaſioned the fever by its coagulum and irritation; a change of the ſound liquors into a diſeaſed ſtate; a change of the ſound parts into a condition able to bear many things which could not be borne before; an expreſſion of the moſt thin and liquid juices; a thickening of the remainder; a drought, heat, anxiety, pain, wearineſs, weakneſs, heavineſs, loſs of appetite, and nauſea.

The ſooner the irritation is allayed and the ſtagnating liquids reſolved, ſo much the ſlighter and ſhorter will be the fever, and the ſooner will it tend to health; and ſo on the contrary: and the fever will alſo vary according to the different degrees and concourſe of both. Hence we may learn that a fever may often be a medicine inſtrumental in the cure of other diſeaſes; ſuch as the palſy, &c. Hence the beginnings, full height, declenſion, criſes, changes, and cure of fevers, are various in the very acute fevers, and even in the ſingular kind.

cold
vers.

The cold fit, which happens in the beginning of acute fevers, ſuppoſes a ſmaller attrition of the liquors againſt each other and their veſſels; the leſſening of the circular motion; a ſtagnation of the liquids at the extremities; a leſs contraction of the heart, a leſs quantity of the blood forced out of it, and the animal ſpirits flowing in leſs quantity from the cerebellum to it. The ſhaking ſuppoſes a wavering of the muſcles between their tone and laxneſs; ſome cauſes now extending and ſoon after relaxing them; and theſe motions ſucceeding each other quickly, without the will of the patient, or even againſt his will; the influx of the arterial and nervous juices, ſometimes abſent, ſometimes preſent. The cold fit therefore argues, in the beginning of the diſeaſe, a reſt of both theſe liquids; towards the end, often too long an abſence of the ſame, after an extravagant expence of the one or both.

iſh.

The anguiſh in fevers is occaſioned by the blood being ſtopped in the heart itſelf, and conſequently hindered from paſſing thro' the lungs and aorta: whence a cramp of the contracted veſſels, or an impoſſibility of the inflamed matter paſſing through them. The ſame effect follows from the blood being hindered in its paſſage through the vena portarum in the liver by the ſame cauſes; whence all the venous blood, brought hither by the cæliac and meſenteric arteries, cannot return, but ſtagnates, extends the veſſels, reſiſts the approaching blood conveyed through the arteries, and produces all the evils deducible from theſe cauſes.

Thirſt in fevers owns for its cauſes a thickneſs of the liquids, and their inability to flow; a ſalt, alkaline, or a bilious and oleous acrimony.

Another very common ſymptom in fevers is loathing. The proximate cauſe of this is a ſlight convulſion of the muſcular fibres of the fauces, gullet, ſtomach, inteſtines, and abdominal muſcles. Its cauſes are, 1. A ſharp, putrid, bilious matter derived into the empty ſtomach, riſing towards the fauces, pricking and twitching both, whence the other parts follow the ſame motion; or, 2. A viſcid, ſluggiſh, and floating matter, which, by watering thoſe parts, doth alſo twitch them. 3. A ſlight inflammation of the ſtomach, gullet, inteſtines, and neighbouring viſcera. 4. The remembrance of things which, when formerly taken, uſed to occaſion loathings. 5. Laſtly, The inordinate motion of the nervous juice, no matter whence ariſing.

113
Vomiting and hick-up.

Vomiting, which at firſt is a violent expulſion and throwing up of the contents of the ſtomach, and afterwards alſo of the guts, and laſtly of the bowels emptying themſelves into the latter, hath, for its proximate cauſe, a convulſion of the muſcular fibres of the fauces, gullet, ſtomach, inteſtines, diaphragm, and of the abdominal muſcles; and for its remote cauſe, whatever ſtimulates theſe fibres by irritating them or thoſe viſcera which are eaſily convulſed. It happens ſometimes, therefore, from a defect of the ſtomach, which is convulſed, inflamed, impoſthumated, ſcirrhous, and cartilaginous, together with an acute fever. It may happen alſo from a defect of the bowels, and the ſurrounding parts affected in the ſame manner, and irritated by the diſtended ſtomach full of aliments or other matters; or it may happen from all the cauſes of very great loathings. Hickups may ariſe from the ſame cauſes.

114
Weakneſs.

The weakneſs in fevers proceeds from the hindrance of the influx and preſſure of the nervous juice into the muſcles. It may proceed from the emptineſs of the veſſels, from the liquid being ſpent, or its being unable to flow; from the obſtruction of the canal; or its being preſſed and ſqueezed by an external cauſe, chiefly about its origin in the brain and cerebellum; and from the weakneſs of the heart.

115
Heat.

Heat in fevers is known outwardly by the thermometer, and the ſenſe or feeling of the patient; but the inward heat, from the redneſs of the urine. It always argues a greater quantity of fire in that place where the heat is greateſt. This again ariſes from an unuſually ſtrong rubbing of the fluid parts among each other, againſt the veſſels, and of the veſſels againſt the liquids. This violence ariſes from the great motion of the parts puſhed from the heart, and from the ſtrong reſiſtance of the veſſels againſt the heart.

The great motion of the blood expelled from the heart is meaſured by the thickneſs of it, and by its quick or ſlow running through the veſſels. The degree of thickneſs is known by inſpecting the ſame when extravaſated, from the faſt diſſipation of the thinneſt part, and from the hardneſs of the pulſe. The quickneſs of its running is computed from the number of the beatings of the heart, compared with the greatneſs of the pulſe beatings. The greatneſs of the reſiſtance is known from the bulk of ſluggiſh liquors that are to be moved; and from the ſmall number, narrowneſs, or immobility of the canals which are to let the liquids paſs. That the liquids to be moved are too bulky, is known from the ſigns of a plethora, of a cacochymy, or of a ſudden ſolution of theſe liquids which juſt before were ſtagnating, as it happens in fat people: but this appears moſt of all to be the caſe when the veins are much ſwelled, and at the ſame time the arteries full and their motions quick. The narrowneſs of the veſſels is underſtood by ſeeing, feeling, and knowing, the dry conſtitution of the patient, whoſe heat increaſes greatly upon the leaſt increaſe of motion. The immobility of the channels, or their unwillingneſs, as it were, to be dilated, is known by all the ſigns of ſtiff fibres, or too great a degree of ſtrength.

From all of theſe proximate cauſes may ariſe the febrile heat; of which again there may be numberleſs remote cauſes. But it may ariſe from the increaſe of only one of theſe cauſes; in which caſe, the increaſe of the heat keeps pace with the increaſe of the cauſe. If two cauſes increaſe together, then will the increaſed heat be as the products of the increments of thoſe cauſes when multiplied by each other. The effects of this increaſe of heat are, to diſſipate the moſt liquid parts of the blood, i. e. the water, ſpirits, ſalts, and moſt ſubtile oils; it dries the remaining maſs, thickens it, and cauſes it to run together into an immoveable and irreſolvable matter; it extricates the ſalts and oils, attenuates and makes them ſharper, exhales and moves them. The conſequence of all this is, that the ſmalleſt veſſels are worn out and broken; the fibres dried, made ſtiff, and ſhrivelled: and hence are produced many acute, dangerous, and mortal diſeaſes; which may be eaſily accounted for and derived from the firſt effect of heat mentioned here, viz. the diſſipation of the thinneſt parts of the blood.

115 Delirium.

A delirium in fevers always ſuppoſes a morbid affection of the medullary part of the brain, which may ariſe from any obſtruction whatever, the hindrance of the influx, the transflux, and flowing out of the nervous juice through the ſubſtance of the brain; from a violent quick motion, a ſtagnation, and many other cauſes, to find out which the phyſician ought to uſe all his ſagacity and application.

116 Coma.

A coma, or continual propenſity to ſleep, ſometimes with a real ſleep, and often without it, always proceeds from ſuch a ſtate of the brain as hinders the free exerciſe of the ſenſes and animal-motions. It may ariſe from a defect of the nervous juice derived to the brain, or from the ſeparation of animal-ſpirits from the blood into the nerves being obſtructed, or from thoſe ſpirits being denied their free paſſage to and fro through the nerves. This ſymptom therefore may be produced by ſeveral different, and often contrary, cauſes: ſuch as all violent and great evacuations or repletions; all the too great thickenings of the blood, whether by glutinous, fat, or inflammatory matters and cauſes; every thing compreſſing the brain itſelf, of whatever nature it may be; and the ſame cauſes will produce the ſame effects, if they act immediately upon the nerves themſelves.

117 Watchfulneſs.

The oppoſite evil to the former is a conſtant and obſtinate watchfulneſs. Its cauſe is generally the firſt beginning of the ſlighteſt inflammation of the brain; which, if increaſed, generally turns to a coma.

118 Convulſions

Convulſions in fevers always proceed from a defect of the brain; which is either affected by ſome matters conveyed thither through the nerves, and thereby twitched: or they proceed from the unruly arrival, transflux, and iſſuing forth of the animal-ſpirits; which may ariſe from every one of the cauſes that are able to create a delirium, a coma, or an obſtinate watchfulneſs. If the cauſes continue long, the evil ſoon ſpreads to the whole ſyſtem of the nerves; whence proceed innumerable miſchiefs.

119 Sweating.

Sweats, in the beginning of an acute fever, ariſe from a laxity of the extreme capillary veſſels, a violent circulation of the blood, and an eaſy ſeparation of the thin watery part from the others. A continuance of them deprives the blood of its diluting liquor, thickens the remainder, and occaſions mortal obſtructions; becauſe the blood afterwards will hardly admit either of being diluted or reſolved; whence may be produced almoſt all the different kinds of acute diſeaſes.

120 Diarrh

A diarrhœa or looſeneſs happens pretty frequently in fevers. The matters voided in this caſe are mucus, lymph, gluten, pus, watery blood, and blood itſelf; all coming from the noſtrils, mouth, fauces, gullet, ſtomach, liver, gall-bladder, pancreas, the guts themſelves, and the meſentery. The cauſes of their working themſelves off in the form of this diſeaſe are, ſuch a powerful force as carries them into the inteſtines, while the contracting force of the inteſtines is much weakened; or they may ariſe from impediments in the abſorbing veſſels of the guts, ſuch as the lacteals hindering the inlets of ſome of theſe matters thro' them into the blood. Hence a looſeneſs in fevers is very various as to its cauſes, effects, and conſequences. If it continues long, it diſpoſes the bowels of the lower belly more and more to this diſeaſe; it weakens, inflames, and excoriates them; and it drains and dries the other bowels and veſſels. Hence a want of nouriſhment, leanneſs, weakneſs, bloody-flux, a thickneſs of the fluids through the whole habit, a laxity of the ſolids, a pituitous bloating all over, a dropſy, and a conſumption.

121 Puſtul

Inflammatory puſtules have generally for their matter, ſomething which cannot paſs through the leaſt veſſels of the ſkin, but is forced to ſtop there; and, for their cauſe, they acknowledge the circulating, ſecretory, and excretory, power of life; ſo that they are manifold according to theſe different cauſes, and from thence fevers take their names; as the eryſipelatous, ſcarlet, red, petechial, purple; and variolous or morbillous, from the ſmall-pox and meaſles.

122 Interm tent fe

The above is Dr Boerhaave's theory of continued fevers. The intermittents, he ſays, have for their proximate cauſe a viſcoſity of the arterial blood, upon which ſucceeds a too quick and ſtrong contraction of the heart, and after this a reſolution of what had been ſtagnated; which ends the fit.

123 This o oppoſ Hoffm

For a long time this theory continued to prevail, and is ſtill adopted by ſeveral phyſicians. It was not, however, without oppoſition, even during the lifetime of Dr Boerhaave. His opponent was Dr Hoffman, who was alſo a man of great learning and eminence in his profeſſion. He found fault with Dr Boerhaave for neglecting the nervous ſyſtem; and aſſerted, that ſo far was the body from depending on the ſtate of the fluids, that the craſis of the fluids themſelves was entirely dependent on the nervous power; and that a ſlight alteration in this power was capable of inſtantaneouſly changing the blood and all the other humours into fluids of a quite different nature from what they formerly had. He was of opinion therefore, that all, or at leaſt the greateſt part of diſeaſes, were affections of the nervous ſyſtem. This opinion is now ſo generally diffuſed and adopted, that Dr Boerhaave's theory is in a manner totally exploded; and as a ſyſtem of phyſic built on principles ſimilar to thoſe of Hoffman, hath for ſome years been taught by Dr Cullen of Edinburgh, we ſhall give as full an account of it as our limits will admit.

Sect. II. *Dr* Cullen's *Theory.*

The Doctor begins with dividing his theoretical part, or the *Inſtitutions of Medicine*, into three general heads. The firſt, called *phyſiology*, treats of that condition of the human body which is neceſſary to life and health. The ſecond, called *pathology*, delivers the general doctrine of diſeaſes; and the third, called *therapeutics*, delivers the general doctrine concerning the means of prevention and cure.

I. Physiology.

In treating of this ſubject, our author firſt conſiders the ſolid matter of which our bodies are compoſed, and which he calls the *ſimple ſolid*. Here he differs remarkably from Dr Boerhaave. The latter, following the doctrines of the chemiſts, aſſerted, that the original ſtamina of the human body are fibres compoſed of earthy particles cemented together by a kind of glutinous matter. This cementation is denied by Dr Cullen, who very juſtly obſerves, that nothing can be deduced from the chemical analyſis of theſe ſolids, unleſs we were able to recompoſe them from the principles to which they are reduced by chemical operations. All that we can know, therefore, with regard to our ſolid parts, is, that they are formed of water, and a certain matter concreting along with it. The brain is that part of the human body which is firſt formed; and therefore he is of opinion, that it is the principal or chief organ, upon which the welfare of the body depends. The original ſtamina of the body he alſo ſuppoſes to be fibrous; and differs from other phyſiologiſts, who ſuppoſe it totally to conſiſt of cellular texture. This laſt, he thinks, is ſuperadded to the fibres. How the nutritious matter is applied to the fibres, in order to extend them in length, or to form a cellular texture on their ſurface, he declares himſelf unable to explain. "It is probable, however, ſays he, that for a certain time, at its firſt beginning, the growth of animal bodies proceeds in the ſame manner as that of vegetables: but it is evident, that, at a certain period, in the growth of animals, a different œconomy takes place; and that afterwards the growth ſeems to depend on an extenſion of the arteries in length and wideneſs by the blood propelled into them. It may be ſuppoſed that this extenſion of the arteries is applied to every fibre of the body; and that, by the extenſion of theſe, it gives an opportunity for the application and accretion of the nutritious matter, to the growth therefore of the fibre itſelf, and to the growth of cellular texture on its ſurface. Perhaps the ſame extenſion of the arterial ſyſtem gives occaſion to the ſecretion of fluids, which, poured into the cellular texture already formed, according to the diſpoſition of theſe fluids to concrete more or leſs firmly, gives the different degrees of hardneſs or denſity to be obſerved throughout the body.

"By this extenſion of the arterial ſyſtem, the ſeveral parts of the body are gradually evolved, ſome of them ſooner, others later, as by the conſtitution of the original ſtamina, or after occurrences, they are ſeverally put into ſuch conditions as render them leſs expoſed to the impetus of the blood, and fitted to receive a greater quantity of it. But as the parts by theſe cauſes firſt evolved will increaſe the moſt in the denſity of their ſolid parts, they will therefore more and more reſiſt their former growth; and by the ſame reſiſtance will determine the blood with more force and in greater quantity into the parts then not ſo far evolved. Hence the whole ſyſtem will be at length evolved; and every part of the ſolids will, in reſpect of denſity and reſiſtance, be in balance with every other part, and with the forces to which they are ſeverally expoſed.

"The extenſion of the arteries depends upon the reſiſtances which occur to the free tranſmiſſion of the blood through them; and further, from a reſiſtance in the veins. For as a conſiderable portion of the blood does not commonly paſs into the ſmaller branches of the arteries, but muſt paſs very entirely into the veins; ſo theſe, by their capacity conſtantly diminiſhing as they approach nearer to the heart, and by their coats being of a denſity and firmneſs ſufficient to prevent further dilatation, conſiderably reſiſt the free paſſage of the blood from the arteries into them.

"While theſe reſiſtances continue, the arteries, and with them almoſt every fibre of the body, muſt be extended at every ſyſtole of the heart, and with this extenſion the growth of every part will proceed: but as every part, by its receiving an addition of ſolid matter, becomes more denſe and rigid; ſo it is leſs eaſily extended, and perhaps leſs readily receives an accretion of new matter than before. Hence it is, that the more the body grows, it admits of any additional growth the more ſlowly; and unleſs the extending powers increaſe in the ſame proportion with the increaſing denſity of the ſolids, there muſt be a period at which theſe two powers will balance each other, and the growth will proceed no farther. But as it is evident, that the bulk and weight of the heart, and probably therefore its force, does not increaſe with the increaſing bulk of the body, and that the action of the heart is the principal extending power in the ſyſtem; it is alſo plain, that the extending power does not extend in the ſame proportion with the increaſing denſity of the ſolids; and therefore that theſe two powers will, at a certain period, come to balance each other.

"But not only is the force of the heart thus conſtantly diminiſhing with reſpect to the reſiſtance of the arteries, but, tho' this force were ſtill ſubſiſting, it has, from other cauſes, leſs effect in extending the arteries. The blood is more confined in the arteries, and extends them further in proportion to the reſiſtance of the veins; and this reſiſtance in the veins, and extenſion of the arteries depending upon it, will be more or leſs according to the reſpective denſity of theſe two ſets of veſſels. But it appears from the experiments of Sir Cliſton Wintringham, that the denſity and firmneſs of the veins with reſpect to their correſponding arteries is much greater in young animals than in old ones: and thence it appears, that, during the growth of animals, the arteries are acquiring an increaſe of denſity in a greater proportion than the veins are at the ſame time; and therefore that the reſiſtance in the veins with reſpect to the arteries muſt be conſtantly diminiſhing; that the veins will therefore receive a greater proportion of blood; that in the ſame proportion the arteries will be leſs extended; and laſtly, that the diminiſhed reſiſtance in the veins concurring with the diminiſhed force of the heart, will the ſooner bring the increaſing rigidity of the arteries, and therefore of every fibre in the body, to be in balance with the extending powers; at leaſt ſo far as to prevent their producing any farther growth.

"This account of the change of the reſiſtances in the arteries and veins with reſpect to one another is agreeable to phænomena which ſhew that the arteries are larger, and contain more blood in proportion to the veins, in young animals than in old; that arterial hæmorrhages occur moſt frequently in young perſons; and that congeſtions in the veins with hæmorrhagies, or hydropic effuſions depending upon them, occur moſt frequently in old age.

126
Death from mere old age accounted for.

"It is probable, that the reſiſtance both of arteries and veins goes on increaſing, while the force of the heart is not increaſed at the ſame time: but it appears alſo, that from the diminiſhing force of the heart, and the compreſſion which the ſmaller veſſels are expoſed to from the diſtenſion of the larger, the action of the muſcles, and other cauſes; the number of ſmall veſſels, and therefore the capacity of the whole ſyſtem, is conſtantly diminiſhing ſo much, that the heart may ſtill for ſome time be ſufficient for the circulation of the blood. But while the reſiſtances in the veſſels are conſtantly increaſing, the irritability of the moving fibres and the energy of the brain are at the ſame time conſtantly diminiſhing; and therefore the power of the heart muſt at length become unequal to its taſk, the circulation muſt ceaſe, and death enſue.

"The unavoidable death of old perſons is thus in part accounted for; but it is, however, ſtill probable, that the ſame event proceeds chiefly from the decay and total extinction of the excitement or vital power of the nervous ſyſtem, and that from cauſes very much independent of the circulation of the blood, and ariſing in the nervous ſyſtem itſelf, in conſequence of the progreſs of life. This ſeems to be proved by the decay of ſenſe, memory, intellect, and irritability, which conſtantly takes place as life advances beyond a certain period."

Thus, according to our author, the nervous ſyſtem is the ſubſtratum or fundamental ſtamina of the whole body; and indeed, as he explains it, our whole frame is ſo made up of nerves, that the body may be ſaid to contain nothing elſe. The nervous ſyſtem he divides into four parts. 1. The medullary ſubſtance contained in the cranium and vertebral cavity; the whole of which ſeems to conſiſt of diſtinct fibres, but without the ſeveral fibres being ſeparated from each other by any evident developing membranes. 2. Connected with one part or other of the above ſubſtance are the nerves, in which the ſame medullary ſubſtance is continued; but here more evidently divided into fibres, each of which is ſeparated from the others by an enveloping membrane derived from the pia mater. 3. Parts of the extremities of certain nerves in which the medullary ſubſtance is diveſted of the inveloping membranes from the pia mater, and ſo ſituated as to be expoſed to the action of certain external bodies, and perhaps ſo framed as to be affected by the action of certain bodies only. Theſe he calls the *ſentient extremities* of the nerves. 4. Certain extremities of the nerves ſo framed as to be capable of a peculiar contractility, and in conſequence of their ſituation and attachments to be by their contraction capable of moving moſt of the ſolid and fluid parts of the body. Theſe he calls the *moving extremities of the nerves*; they are commonly called *moving* or *muſcular fibres*. The proofs of this laſt poſition we ſhall give in his own words.

127
Muſcles proved
be a par
the nerv
ſyſtem.

"XCI. The inherent power (or contractility of the muſcles) is ſuppoſed to be more vigorous, moveable, and permanent, in certain muſcular fibres than in others.

"XCII. The inherent power, or the contraction dependent upon it, can be excited by certain applications, made either to the muſcles themſelves, or to the nerves connected with them; and in either caſe, the the effects of ſuch application are ſo exactly the ſame as to allow us to conclude that the matter of the nerves and of the muſcular fibres is of the ſame kind.

"XCIII. The muſcular fibres are ſenſible to various impreſſions, and are otherwiſe organs of the ſenſations of conſciouſneſs. From this alſo it is preſumed, that the muſcular fibres conſiſt of the ſame matter which is the ſubject of ſenſe in other parts of the nervous ſyſtem.

"XCIV. From (XCII. XCIII.) and other conſiderations, we think it probable, that the muſcular fibres are continuations of the medullary ſubſtance of the brain and nerves as before alleged.

"XCV. Though the muſcular fibres conſiſt of the ſame kind of matter as that in the nerves, the latter ſhew no contractility, becauſe they have not the peculiar organization of the former."

Some phyſiologiſts, particularly Dr Haller, have endeavoured to prove, that the muſcles have a power of motion independent of that which they receive from the nerves: theſe our author refutes by ſome experiments which prove, that both of them continue for an equal length of time, and that when the nerve is irritated, the muſcle contracts, even after death, in the ſame manner as tho' the muſcular fibres themſelves were irritated.

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The Doctor next endeavours to ſhew, that the force of coheſion and of the muſcular fibres are the ſame. His words are, "As the force of coheſion in the muſcular fibres of living animals is much greater than in thoſe of dead ones, it is probable from this and other conſiderations that the cauſe of muſcular contraction is an increaſe only of that ſame power which gives the contractility of the ſimple ſolids, and of other inanimate elaſtics. *Haller Prim. Lin.* 407, 408.

"If this is true, it will alſo explain why the force of coheſion in muſcular fibres is greater than that of the medullary fibres in any other part of the nervous ſyſtem, though both kinds of fibres conſiſt of the ſame kind of matter." The power abovementioned he conjectures to be an elaſtic fluid, the motions of which are excited in the nerves, and by their means accumulated in the muſcles. The excitement of the fluid in ſome meaſure is what is properly called *life*, at leaſt as far as that is corporeal; and its *collapſe*, or ſome diminution of its motion, produces ſleep, fainting, &c. or if the collapſe is total and irrecoverable, death itſelf.

12
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With regard to this nervous power, the Doctor abſolutely refuſes that it is ſecreted from the blood. "The moſt common opinion (ſays he) is, that the brain is a ſe-

ſecretory organ, which ſecretes a fluid neceſſary to the functions of the nervous ſyſtem; that this fluid is alternately exhauſted and recruited, and thereby gives occaſion to the alternate ſtates of ſleeping and waking. But this ſupppoſition is attended with many difficulties. 1. It is probable that the nervous fluid exiſted in the animal embryo before the action of the heart, or any ſecretory function could take place. 2. In animals which during the winter ſuffer a temporary death, when, by heat, they are again reſtored to life, the vital power of the ſolids is reſtored before the fluidity of the blood. 3. The nervous fluid ſubſiſts in the nerves and muſcular fibres long after they are ſeparated from the brain, and often when cut into ſmall parts. 4. Though it be true that the brain is a ſecretory organ, the fluid may be deſtined to another purpoſe; and, ſo far as we underſtand that purpoſe, the fluid fit for it muſt be unfit for the purpoſes of ſenſe and motion. 5. There is no appearance, in any part of the nervous ſyſtem, of proviſion made for an occaſional accumulation of the ſecreted fluid; nor is there any evidence of its actually taking place. 6. The phænomena of ſleep and waking do not correſpond with ſuch a ſuppoſition; as ſleep often takes place when the ſecreted fluid muſt be copiouſly preſent, and waking can be protracted when the fluid is exhauſted much beyond its uſual meaſure. 7. Both ſtates are induced by many cauſes which can hardly be ſuppoſed to act upon a ſecretion.

"A certain compreſſion of the brain can produce a ſtate of the ſyſtem reſembling ſleep: but that ſtate is in ſome reſpects different from that of ordinary ſleep; and it does not by any means appear, that natural and ordinary ſleep depends upon any compreſſion of the brain.

"As it is therefore probable, that ſleep and waking do not depend upon a different quantity of the matter of the nervous fluid for the time preſent in the ſyſtem, or upon any cauſes interrupting its motion, while the condition of the matter remains the ſame, we are diſpoſed to believe, that thoſe ſtates of ſleep and waking depend upon the nature of the nervous fluid itſelf capable of becoming more or leſs moveable; that it is chiefly in the brain ſuſceptible of theſe different conditions; and that eſpecially by its condition there, it has its more general effects on the ſyſtem."

Speaking afterwards of the nutrition of the body, he ſays, "From the fibrous parts being evidently, in moſt inſtances, parts of the nervous ſyſtem, and from the gradual formation of the fœtus, in which the nervous ſyſtem is firſt formed, we think it probable, that the whole of the fibres in the different parts of the body are a continuation of the nerves; and this again will lead to the concluſion, that the nouriſhment of the ſoft and homogeneous ſolid every where is conveyed to it by the nerves.

"This ſuppoſes alſo what is otherwiſe probable, that the cortical part of the brain, or common origin of the nerves, is a ſecretory organ, in which the gluten of the blood being freed from all ſaline matter before adhering to it, becomes fit for the nouriſhment of the ſolids, and being poured in a ſufficiently diluted ſtate upon the organ of the nerves, it is filtrated along the fibres of theſe; and is thus conveyed to every ſtaminal fibre of the ſyſtem. We ſuppoſe, at the ſame time, that the medullary, or what may be called the *ſolid matter of the nerves*, is, in the living body, conſtantly accompanied with a ſubtile elaſtic fluid, which fits them for being the organs of ſenſe and motion, and which probably is alſo the means by which the nutritious fluid is carried on in the ſubſtance of the nerves from their origin to their extremities.

By this ſyſtem the blood and its circulation, inſtead of being the principal or vital function, as it was reckoned by Harvey and others, becomes ſo much a ſecondary in the animal œconomy, that it anſwers little other purpoſe beſides the nutrition of the body. It hath been objected, however, that this fluid is, ſome how or other, of the utmoſt conſequence; ſince a ſtoppage of the circulation, or a wound in the large veſſels about the heart, proves inſtant death, without waiting for any conſumption of the body by reaſon of its want of nouriſhment. This our author explains by reminding us, that the veſſels muſt neceſſarily be in a certain ſtate of diſtenſion, in order to the mobility of the nervous fluid. The evacuation of all the blood cauſes an irretrievable collapſe of the veſſels, and conſequently of the nervous fluid, upon which death immediately takes place.

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Why ſudden death happens from wounding the large blood-veſſels.

We apprehend it would be ſuperfluous here to enter into any particular diſquiſition concerning the manner in which each of the functions of the animal œconomy are performed. Theſe may be ſeen under their proper articles as they occur in the order of the alphabet, and what we have already taken notice of will be ſufficient to make his theory of diſeaſes quite intelligible.

II. Pathology.

From the ſketch we have given of Dr Cullen's phyſiology, it may eaſily be imagined, that the diſtinguiſhing characteriſtic of his pathology will be, that almoſt all diſeaſes are the conſequences of an affection of the nervous ſyſtem. The nervous power, he thinks, is the ſame with what Hippocrates called *Nature*, and to which he aſcribed ſuch efficacy in removing diſeaſes. This ſubject, however, the latter did not proſecute to any good purpoſe, and his followers ſtill leſs. Eraſiſtratus took no notice of it; and though Galen aſcribed an active power to what he called *Nature*, yet he conſidered this as chiefly concerned in the ſupport of health and the cure of diſeaſes, and referred the operations of nature in the cure of diſeaſes to the ſolids and fluids. In the 15th and 16th centuries the reſtorers of phyſic for a long time overlooked the nervous power; and though the chemiſts introduced their doctrines with regard to the fluids, yet they acquieſced in the former doctrine which aſcribed to them the ultimate powers of the animal œconomy. Van Helmont indeed propoſed a very conſiderable change by his doctrine of the *archæus*; maintaining, that the motion of it had a greater ſhare in the production of diſeaſes than the cauſes aſſigned by the chemiſts and Galeniſts. But this doctrine was delivered in ſuch an obſcure and fanciful manner, that no notice was taken of it; and people continued to imagine that diſeaſes conſiſted in a certain *intemperies* of the fluids, and that *fever* particularly conſiſted in a preternatural heat. After the diſcovery of the circulation, Sylvius de la Boe aſſerted, that fever proceeded from an increaſed velocity of the blood, and that an increaſed quick-

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Nervous power neglected by moſt phyſicians.

Theory.

quickneſs of the pulſe was its pathognomic. This, however, we are not to admit as true, becauſe then the cure of fevers would conſiſt only in diminiſhing the velocity of the blood, which is very eaſily done; yet ſometimes it is neceſſary to increaſe this velocity in order to cure the fever. To this doctrine Bellini and Boerhaave added the doctrine of acrimony and a *lentor* or viſcidity in the blood; and this theory, ſuch as we have laid down above from the aphoriſms of Boerhaave, continued to be followed till very lately. Hoffman conſiders fevers as entirely conſiſting in a change of the ſtate of motion in the muſcular fibres; which undoubtedly depends on that of the nervous ſyſtem. The particular cauſe is a *ſpaſm* in the extreme arteries; and the cure conſiſts in a relaxation of that ſpaſm, without regarding the fluids, but only ſo far as they affect the nervous ſyſtem.

133 Account of the phænomena of fevers.

The following are the general phænomena of fevers as laid down by Dr Cullen. The perſon is affected firſt with a languor, or ſenſe of debility, inactivity, and ſluggiſhneſs. The face and extremities become pale; the features ſhrink; the bulk of every external part is diminiſhed, and the ſkin all over the body appears conſtricted as if by cold. A coldneſs of the extremities may now be perceived by another perſon, though the patient himſelf takes little or no notice of it. At length the cold becomes alſo perceptible to him; firſt, commonly, in his back, and thence paſſing over the whole body; though now his ſkin frequently feels warm to another perſon. The ſenſe of cold continually increaſes, and at length produces a tremor in all the limbs, with frequent ſuccuſſions or rigors of the trunk of the body. When this ſenſe of cold and its effects have continued for ſome time, they become leſs violent, and alternate with warm fluſhings. By degrees the cold goes off entirely, and a heat greater than in a natural ſtate prevails all over the body. With this heat the colour of the ſkin returns; and a preternatural redneſs appears, eſpecially in the face. With the heat and redneſs the ſkin is relaxed and ſmoothed, but for ſome time it continues dry. The features of the face, and other parts of the body, recover their uſual ſize, and even become more turgid. When the heat, redneſs, and turgeſcence, have increaſed and continued for ſome time, a moiſture appears upon the face, which by degrees becomes a ſweat, and at length prevails over the whole body. As this ſweat continues to flow, the heat of the body abates; the ſweat, after continuing ſome time, gradually ceaſes; the body returns to its uſual temperature, and moſt of the functions are reſtored to their ordinary ſtate.

From theſe general appearances, the paroxyſm may be divided into three different ſtages, viz. the *cold*, the *hot*, and the *ſweating* ſtages or fits; in each of which a conſiderable change happens to ſeveral of the functions.

On the firſt approach of languor, the pulſe ſometimes become ſlower, and always weaker, than before; and as the ſenſe of cold comes on, it becomes ſmaller, very frequent, and often irregular. As the cold wears off and the heat comes on, the pulſe becomes more regular, hard, and full; and in theſe reſpects increaſes till the ſweat breaks out. As the ſweat flows, the pulſe becomes ſofter and leſs frequent, until, the ſweat ceaſing altogether, it returns to its uſual ſtate. The reſpiration during the cold ſtage is ſmall, frequent, and anxious; as the hot ſtage comes on, it becomes fuller, and more free; but is ſtill frequent and anxious, till the flowing of the ſweat relieves the anxiety, and renders the breathing leſs frequent. On the approach of the cold ſtage, the appetite ceaſes, and does not return till either the paroxyſm is at an end, or the ſweat has flowed for ſome time. Generally, however, during the whole paroxyſm, there is not only a want of appetite, but an averſion from all ſolid food, eſpecially of the animal kind. As the cold ſtage advances, nauſea and vomiting frequently come on, with the diſcharge of a matter for the moſt part bilious; but when the hot ſtage is pretty well advanced, this ſickneſs abates, and commonly goes off altogether when the ſweat breaks out. A conſiderable degree of thirſt is commonly felt during the whole courſe of the paroxyſm. In the cold ſtage, it ſeems to ariſe from the dryneſs and clammineſs of the mouth and fauces; and during the hot ſtage, from the heat which then prevails: but, as the ſweat flows, the mouth becomes more moiſt; and the thirſt, together with the heat, gradually abates.

In the courſe of the paroxyſm, a conſiderable change is alſo made in the ſtate of the ſecretions. The circumſtances already mentioned ſhew it with regard to the ſaliva, and it is ſtill more remarkable with regard to the urine. In the cold ſtage, the urine is almoſt colourleſs and without cloud or ſediment. In the hot ſtage it becomes high coloured, but is ſtill without ſediment. After the ſweat has flowed freely, the urine depoſits a ſediment commonly lateritious, and continues to do ſo for ſome time after the paroxyſm is over. Stools ſeldom occur till towards the end of a paroxyſm, except in certain uncommon caſes which are attended throughout with a diarrhœa.

It frequently happens alſo that tumours, ſubſiſting on the ſurface of the body, ſuffer, during the cold ſtage of fevers, a conſiderable diminution of their bulk; but which returns, though not always, during the ſweating ſtage. In like manner, ulcers are ſometimes dried up during the cold ſtage, and return again to diſcharge matter during the ſweating ſtage, or after the paroxyſm is over.

During the cold ſtage, the ſenſibility is often greatly impaired; but when the hot ſtage comes on, the ſenſibility is recovered, and often conſiderably increaſed. When the cold ſtage comes on, the attention and recollection become difficult; and continue ſo, more or leſs, during the whole paroxyſm. Hence ſome confuſion of thought takes place, and often ariſes to a delirium; which ſometimes comes on at the beginning of the cold ſtage, but more frequently not till the hot ſtage is formed. With the cold ſtage alſo comes on a kind of drowſineſs or ſtupor, which ſometimes increaſes to ſuch a degree that the patient becomes comatoſe, and almoſt apoplectic. In this ſtage alſo a head-ach ſometimes comes on: but more commonly this is not felt till the hot ſtage is formed; and then it is uſually attended with a throbbing of the temples. The head-ach continues till the ſweat breaks out; but as this flows more freely, that gradually wears off. At the ſame time there are commonly pains of the back, and ſome of the great joints; which are to be derived from the ſame cauſes with the head-ach.

Theſe are the principal phænomena to be obſerved in the paroxyſm of a fever; but it is very ſeldom that the diſeaſe is terminated by a ſingle paroxyſm ſuch as hath been already deſcribed. It more generally happens, that after the ſeries of phænomena above-mentioned, and after the patient has been for a certain length of time free from them, the ſame ſeries of phænomena begins again to ariſe, and to obſerve the ſame courſe as before; and theſe ſtates of fever and apyrexia often continue to alternate with each other for a great number of times. In theſe caſes, the length of time from the end of one paroxyſm to the beginning of another is called an INTERMISSION; and the length of time from the beginning of one paroxyſm to the beginning of another is called an INTERVAL.

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When the diſeaſe conſiſts of a number of paroxyſms, it is generally to be obſerved that the intervals between them are nearly equal; but theſe intervals are of different lengths in different caſes. The moſt uſual interval is that of 48 hours; which is named the TERTIAN Period. The next moſt common is that of 72 hours, and is named the QUARTAN Period. An interval of 24 hours is called the QUOTIDIAN Period. This laſt is not unfrequent: but all intervals longer than the quartan are extremely rare, and probably only irregularities of the tertian or quartan periods.

The paroxyſms of pure intermittent fevers are always finiſhed in leſs than 24 hours. But it frequently happens that there are fevers which conſiſt of repeated paroxyſms without any entire intermiſſion between them: yet in ſuch caſes it is obſerved, that though the hot and ſweating ſtages of the paroxyſms do not entirely ceaſe before the 24 hours from their beginning have expired, they ſuffer, however, before that time, a conſiderable abatement or REMISSION of their violence; and at the return of the quotidian period, a paroxyſm is in ſome ſhape renewed, and runs the ſame courſe as before. This conſtitutes what is called a REMITTENT FEVER. In many caſes, however, this remiſſion is not conſiderable, and perhaps takes place without ſweat; the returning paroxyſm is not marked by the uſual ſymptoms of a cold ſtage, but is chiefly known by the aggravation or *exacerbation* of a hot ſtage; in which caſes the diſeaſe is called a CONTINUED FEVER. In ſome caſes the remiſſions and exacerbations are ſo inconſiderable, that they are not eaſily obſerved or diſtinguiſhed; and this has led phyſicians to imagine that there is a ſpecies of fever ſubſiſting for ſeveral days together, and ſeemingly conſiſting of one paroxyſm only. This they have called a CONTINENT fever; but Dr Cullen aſſures us, that, in a long courſe of practice, he had no opportunity of obſerving ſuch a fever.

With reſpect to the form or type of fevers, it may be obſerved, that the quartan, while it has the longeſt interval, has at the ſame time the longeſt and moſt violent cold ſtage; but, upon the whole, the ſhorteſt paroxyſm: the tertian, having a ſhorter interval than the quartan, has, at the ſame time, a ſhorter and leſs violent cold ſtage; but a longer paroxyſm: and, laſtly, that the quotidian, with the ſhorteſt interval, has the leaſt of a cold ſtage; but the longeſt paroxyſm. The type of fevers is ſometimes changed in their courſe. When this happens, it is generally in the following manner: Both tertians and quartans change into quotidians; quotidians into remittents; and theſe laſt become often of the moſt continued kind; and in all theſe caſes the fever has its paroxyſms protracted longer than uſual, before it changes into a type of more frequent repetition.

From all this the Doctor concludes, that every fever conſiſts of repeated paroxyſms, and differs from others only in the circumſtances and repetition of the paroxyſms; and therefore that it was allowable to take the paroxyſm of a pure intermittent as an example and model of the whole.

135 Of the cauſes of fevers.

The phænomena of fevers being thus enumerated, the Doctor next proceeds to explain their cauſes. The proximate cauſe, he ſays, has hitherto eluded the reſearches of phyſicians; but as the hot ſtage is ſo conſtantly preceded by a cold one, he preſumes that the cold ſtage is the *cauſe* of the hot one, and conſequently that the cauſe of the cold ſtage is the cauſe of all that follows in the courſe of the paroxyſm. The cold ſtage, he obſerves, is always preceded by evident marks of a general debility prevailing in the ſyſtem. The ſmallneſs and weakneſs of the pulſe, the paleneſs and coldneſs of the extreme parts, with the ſhrinking of the whole body, ſufficiently ſhew that the action of the heart and larger arteries is for the time extremely weakened. At the ſame time the languor, inactivity, and debility of the animal-motions, the imperfect ſenſations, the feeling of cold while the body is truly warm, and ſome other ſymptoms, all ſhew that the energy of the brain itſelf is on this occaſion greatly weakened: and as this weakneſs of the action of the heart can hardly be attributed to any other cauſe, it is alſo a proof of the diminiſhed energy of the brain.—Another proof of the exiſtence of debility is, that when the paroxyſms of a fever have ceaſed to be repeated, they may be again renewed; and are moſt commonly renewed by the application of debilitating powers.

Hence, ſays our author, it is evident that there are three ſtates which always take place in fever, viz. a ſtate of debility, a ſtate of cold, and a ſtate of heat; and as theſe three ſtates regularly ſucceed each other in the order above-mentioned, it is to be preſumed that they are in the ſeries of cauſe and effect with regard to one another.—The hot ſtage, he thinks, is an effect of the *vis medicatrix naturæ* ſo famous in the ſchools of phyſic, and it is probable that many ſymptoms of diſeaſes are owing to the ſame cauſe. To this cauſe he alſo inclines to attribute ſome of the ſymptoms of the cold ſtage; but is obliged to refer them to a law which he ſays exiſts in the animal œconomy, whereby thoſe powers which have a tendency to hurt and deſtroy the ſyſtem, often excite ſuch motions as are ſuited to obviate the effects of the noxious power. That ſome part of the cold ſtage is owing to the vis medicatrix, he thinks further probable, becauſe the cold ſtage appears univerſally to be a means of producing the hot; becauſe cold, externally applied, has very often ſimilar effects; and eſpecially becauſe is ſeems to be in proportion to the degree of tremor in the cold ſtage that the hot one proceeds more or leſs quickly to a termination of the paroxyſm, and to a more complete ſolution and longer intermiſſion.

In the time of the cold ſtage, there ſeems to be a *ſpaſm* induced every-where on the extremities of the arteries, particularly of thoſe upon the ſurface of the body. This appears from the ſuppreſſion of all the excretions, and from the ſhrinking of the external parts: and though this may in part be attributed to the weaker action of the heart in propelling the blood into the extreme veſſels; yet as theſe ſymptoms often continue after the action of the heart is reſtored, there is reaſon to believe that a ſpaſmodic conſtriction has taken place; and that it ſubſiſts for ſome time, and ſupports the hot ſtage; for this ſtage ceaſes with the flowing of the ſweat, and the return of other excretions, which are marks of the relaxation of veſſels formerly conſtricted.

The idea of fever then may be, that a ſpaſm of the extreme veſſels, however induced, may prove an irritation to the heart and arteries; and that this continues till the ſpaſm is relaxed and overcome. Still, however, it will remain a queſtion what is the cauſe of this ſpaſm; whether it be directly produced by the remote cauſes of fever, or if it is only a part of the vis medicatrix naturæ. The doctor is inclined to the latter opinion; firſt, becauſe it is certain that debility lays the foundation of fever: ſecondly, becauſe ſuppoſing this uncertain, we can more eaſily perceive how debility induces ſpaſm, than how ſpaſm produces debility, which always more or leſs appears: and thirdly, becauſe we perceive that the degree of ſpaſm formed, and the obſtinacy of its continuance, depend, in many caſes, upon the power of the cauſes inducing debility, and upon the debility induced; for the more powerful the debilitating cauſes, and the greater the debility produced, the paroxyſms are the longer, and the more frequently repeated.—From hence, ſays he, we are led to believe, that, together with the *ſpaſm*, there is an *atony* ſubſiſting in the extreme veſſels, and that the relaxation of the ſpaſm requires the reſtoring of the tone and action of theſe.

This may be illuſtrated from conſidering the ſymptoms which take place with reſpect to the functions of the ſtomach in fevers; ſuch as the anorexia, nauſea, and vomiting. The connection, or conſent, which we obſerve between the perſpiration and the appetite in healthy perſons, renders it probable, that the tone of the extreme veſſels on the ſurface of the body, and that of the muſcular fibres of the ſtomach, are connected or conſenting with each other; and that therefore in fevers the want of appetite or of tone in the muſcular fibres of the ſtomach may depend upon the atony of the extreme veſſels on the ſurface of the body.—A further proof that in fevers the fibres of the ſtomach are affected with an atony, is the nauſea and vomiting which ſo frequently occur, and which ſo commonly depend upon a debility of the ſtomach.—That the debilty of the ſtomach which produces vomiting depends upon an atony of the extreme veſſels on the ſurface of the body appears particularly from an obſervation of Sydenham. In the attack of the plague, a vomiting happens, which prevents any medicine from remaining upon the ſtomach; and Dr Sydenham tells us, that he could not overcome this vomiting but by external means, applied to produce a ſweat or determination to the ſurface of the body.

The connection between the ſtate of the ſtomach and that of the extreme veſſels on the ſurface of the body appears from this alſo, that the vomiting, which ſo frequently happens in the cold ſtage of fevers, commonly ceaſes upon the coming on of the hot, and very certainly upon any ſweats coming out. It is indeed probable, that the vomiting in the cold ſtage of fevers, is one of the means employed by nature for reſtoring the determination to the ſurface of the body; and it is a circumſtance affording a proof, both of this and of the general connection between the ſtomach and ſurface of the body, that emetics thrown into the ſtomach and operating there in the time of the cold ſtage, commonly put an end to it, and bring on the hot ſtage. It alſo affords a proof of the ſame connection, that cold water taken into the ſtomach produces an increaſe of heat on the ſurface of body, and is very often a convenient and effectual means of producing ſweat.

We draw a proof of the ſame connection from this alſo, that cold applied to the ſurface of the body, when it does not ſtop perſpiration, is always a powerful means of exciting appetite. It may alſo be conſidered, whether the fever which ſo conſtantly accompanies the digeſtion of food in the ſtomach be not induced by filling the ſtomach, by relaxing its muſcular fibres, and thereby inducing an atony of the extreme veſſels.

The Doctor acknowledges a difficulty in explaining how an atony and ſpaſm can ſubſiſt at the ſame time in the ſame veſſels: but conſiders it as a matter of fact which cannot be denied; and at the ſame time thinks it may be found analogous to what happens upon other occaſions in the ſyſtem, where we often obſerve atony producing ſpaſm.—This atony is ſuppoſed to depend upon a diminution of the energy of the brain; and that this diminution takes place in fevers, he concludes, not only from the debility prevailing in ſo many of the functions of the body as already mentioned, but from the ſymptoms peculiar to the brain itſelf.

Delirium is common in fever: and this ſymptom commonly depends on ſome inequality in the excitement of the brain, or intellectual organ; and hence it may be concluded, that, in fever, it denotes ſome diminution in the energy of the brain. Delirium indeed ſeems often to depend on an increaſed impetus of the blood in the veſſels of the brain; and therefore attends phrenitis. It frequently appears alſo in the hot ſtage of fevers, accompanied with a head-ach and throbbing of the temples. But, as the impetus of the blood in the veſſels of the head is often conſiderably increaſed, by exerciſe, external heat, paſſions, and other cauſes, without occaſioning any delirium; it muſt be ſuppoſed, that the ſame impetus, in the caſe of fever, produces delirium; for this reaſon only, that at the ſame time there is ſome cauſe which diminiſhes the energy of the brain, and prevents a free communication between the parts concerned in the intellectual functions. Upon the ſame principles alſo he ſuppoſes that there is another ſpecies of delirium which depends more entirely on the diminiſhed energy of the brain; and may therefore ariſe when there is no unuſual increaſe of the impetus of the blood in the veſſels of the brain. Such ſeems to be the delirium occurring at the beginning of the cold ſtage of fevers, or in the hot ſtage of ſuch fevers as ſhew ſtrong marks of debility in the whole ſyſtem.

“Upon the whole then, (ſays he), our doctrine of fever is explicitly this:—The remote cauſes of fever are certain ſedative powers applied to the nervous ſyſtem, which, diminiſhing the energy of the brain, thereby produce a debility in the whole of the functions, and particularly in the action of the extreme veſſels. Such, however, is at the ſame time the nature of the animal œconomy, that this debility proves an indirect ſtimulus to the ſanguiferous ſyſtem; whence, by the intervention of the cold ſtage and ſpaſm connected with it, the action of the heart and larger arteries is increaſed, and continues ſo till it has had the effect of reſtoring the energy of the brain, of extending this energy to the extreme veſſels, of reſtoring therefore their action, and thereby eſpecially overcoming the ſpaſm affecting them; upon the removing of which, the excretion of ſweat, and other marks of the relaxation of excretories, take place."

The Doctor next proceeds to take notice of ſome miſtakes concerning the nature of fever.—It has been ſuppoſed, that a lentor or viſcidity prevailing in the maſs of blood, and ſtagnating in the extreme veſſels, is the cauſe of the cold ſtage of fevers and its conſequences. But there is no evidence of any ſuch viſcidity previouſly ſubſiſting in the fluids; and as it is very improbable that ſuch a ſtate of them can be ſuddenly produced, the ſuddenneſs with which paroxyſms come on, renders it more likely that the phænomena depend upon ſome cauſe acting on the nervous ſyſtem, or the primary moving powers of the animal œconomy.

Another opinion, which has been very univerſally received, is, that a noxious matter introduced into, or generated in the body, is the proximate cauſe of fever; and that the increaſed action of the heart and arteries, which makes ſo great a part of the diſeaſe, is an effect of the *vis medicatrix naturæ* to expel this morbific matter, and particularly to change and concoct it, ſo as to render it altogether innocent, or at leaſt fit for being more eaſily thrown out of the body. This doctrine, however, though of as great antiquity as any in the records of phyſic, and received into every ſchool of medicine, he nevertheleſs conſiders as exceedingly erroneous. Fevers are produced by cold, fear, and other cauſes, with all the eſſential circumſtances belonging to the diſeaſe, and terminating by ſweat, without any evidence or ſuſpicion of morbific matter. There have been fevers ſuddenly cured by an hæmorrhagy ſo moderate as cannot carry out any conſiderable portion of a matter diffuſed over the whole maſs of blood; nor can we conceive how the morbific matter could be collected or determined to paſs off by ſuch an outlet as in that caſe is opened. Even ſuppoſing a morbific matter were preſent, there is no explanation given in what manner the concoction of it is performed; nor is it ſhewn that any ſuch change does in fact take place. In certain caſes it is indeed evident, that a noxious matter is introduced into the body, and proves the cauſe of fever. But even in theſe caſes it appears, that the noxious matter is thrown out again, without having ſuffered any change: that the fever often terminates before the matter is expelled: and that, upon many occaſions, without waiting the ſuppoſed time of concoction, the fever can be cured; and by remedies which do not ſeem to operate upon the fluids, or to produce any evacuation.

But though he thus reaſons againſt the notion of fevers being an effort of nature for concocting and expelling a morbific matter, the Doctor by no means denies that the cauſe of fever frequently operates upon the fluids, and particularly produces a putreſcent ſtate of them. This he acknowledges is frequently the caſe: but at the ſame time he maintains, that ſuch a change of the fluids is not commonly the cauſe of fever; that very often it is only an effect; and that there is no reaſon for believing the termination of the fever to depend upon the expulſion of the putrid matter.

Another opinion with regard to intermittent fevers remains ſtill to be mentioned. In theſe fevers a great quantity of bile is commonly thrown out by vomiting; and this is ſo frequently the caſe, that many have ſuppoſed an unuſual quantity of bile, and perhaps a peculiar quality of it, to be the cauſe of intermittent fevers—This, however, does not appear to be well-founded. Vomiting, by whatever means excited, if often repeated, with violent ſtraining, ſeems to be powerful in emulging the biliary ducts, and commonly throws out a great deal of bile. This will happen eſpecially in the caſe of intermittent fevers. For as, in the ſtate of debility and cold ſtage of theſe fevers, the blood is not propelled in the uſual quantity into the extreme veſſels, and particularly into thoſe on the ſurface of the body; but is accumulated in the veſſels of the internal parts, and particularly in the *vena portarum;* ſo this may occaſion a more copious ſecretion of bile. The circumſtance, however, which chiefly occaſions the appearance of bile in theſe caſes is, the influence of warm climates and ſeaſons. Theſe ſeldom fail to produce a ſtate of the human body, in which the bile is diſpoſed to paſs off by its ſecretories in greater quantity than uſual, and perhaps alſo changed in its quality; as appears from the diſeaſe of the cholera, which ſo frequently occurs in warm ſeaſons. This diſeaſe, however, occurs often without fever: and there are very ſtrong reaſons for ſuppoſing that intermittent fevers for the moſt part ariſe from another cauſe, viz. marſh effluvia; while at the ſame time there is no evidence of their ariſing from the ſtate of the bile alone. The marſh effluvia, however, commonly operate in the ſame ſeaſon that produces the change of the bile; and therefore, conſidering the vomiting and other circumſtances of the intermittent fevers which here concur, it is not ſurpriſing that autumnal intermittents are ſo often attended with effuſions of bile.

The Doctor now proceeds to conſider the difference of fever, and its cauſes. With other phyſicians, he ſuppoſes, that in every fever there is a power applied to the body which has a tendency to hurt and deſtroy it, and produces certain motions in it which deviate from the natural ſtate: and, at the ſame time, in every fever which has its full courſe, he ſuppoſes, that, in conſequence of the conſtitution of the animal œconomy, there are certain motions excited which have a tendency to obviate the effects of the noxious power, or to correct and remove it. Both theſe kinds of motions he conſiders as conſtituting the diſeaſe. The latter, which are of ſalutary tendency, and conſidered as the operations of the *vis medicatrix naturæ*, he calls the RE-ACTION of the ſyſtem.

From the above doctrine it appears, that, in fever, the circumſtances of debility, ſpaſm, and re-action, are chiefly to be conſidered; and therefore, according as theſe are different in degree, and different in proportion to one another, they will exhibit the chief differences of fevers.

137 Of the cauſes of paroxyſms at certain intervals.

Every fever of more than one day's duration, conſiſts of repeated paroxyſms; and in thoſe in which the paroxyſms are diſtinctly obſerved, it is conſtantly to be remarked, that every paroxyſm is finiſhed in leſs than 24 hours: but as we cannot perceive any thing in the cauſe of fevers determining to this, we muſt ſuppoſe it to depend on ſome general law of the animal œconomy. Such a law ſeems to be that which ſubjects the œconomy, in many reſpects, to a diurnal revolution. The cauſe of this is uncertain; but the returns of ſleep and watching, of appetites and excretions, and the changes which regularly occur in the ſtate of the pulſe, ſhew ſufficiently that in the human body a diurnal revolution takes place. That the paroxyſms are connected with that revolution appears from this, that though the intervals of paroxyſms are different in different caſes, the times of the acceſſion of the paroxyſms are generally fixed to one time of the day; ſo that quotidians come on in the morning, tertians at noon, and quartans in the afternoon. It is ſtill, however, to be remarked, that as quartans and tertians are apt to become quotidians, theſe to paſs into the ſtate of remittents, and theſe to become continued; and that, even in the continued form, daily exacerbations and remiſſions are generally to be obſerved: all this ſhews ſo much the power of diurnal revolution, that when, in certain caſes, the daily exacerbations and remiſſions are with difficulty diſtinguiſhed, we may ſtill preſume that the general tendency of the œconomy prevails; that the diſeaſe ſtill conſiſts of repeated paroxyſms; and, on the whole, that there is no ſuch diſeaſe as hath been commonly called a *continent fever*.

The repetition of the paroxyſms depends on the circumſtances belonging to them when already formed. The longer theſe paroxyſms are protracted, the ſooner they are repeated; and therefore we are to conclude, that the cauſe of the frequent repetition is to be ſought for in the cauſe of the protraction of the paroxyſms. The duration of the whole paroxyſm chiefly depends upon that of the hot ſtage, in which the reaction is operating to take off the ſpaſm formed in the cold ſtage. We may therefore ſuſpect that the longer duration of the hot ſtage is owing either to the obſtinacy of the ſpaſm, or to the weakneſs of the reaction; and it is probable, that ſometimes the one and ſometimes the other of theſe circumſtances takes place.

The degree of ſpaſm which takes place in fevers, may be ſuppoſed different, according the degree of irritability in each particular perſon; and therefore the reaction in fever being given, the paroxyſm, or continuance of the hot ſtage, may be longer or ſhorter, according to the degree of ſpaſm that has been formed. One of the cauſes of the obſtinacy of ſpaſm is, that in inflammatory diſeaſes there is a *diatheſis phlogiſtica* prevailing in the body, and this diatheſis is ſuppoſed by the Doctor to conſiſt in an increaſed tone of the whole arterial ſyſtem. When therefore this diatheſis accompanies fever, as it ſometimes does, it may be ſuppoſed to give occaſion to the febrile ſpaſms being formed more ſtrongly, and thereby to produce more protracted paroxyſms. Accordingly we find, that all inflammatory fevers are of the continued kind, and that all the cauſes of the diatheſis phlogiſtica have a tendency to change intermittent into continued fevers. As continued fevers, therefore, are in many caſes attended with the diatheſis phlogiſtica, our author thence concludes, that this is the cauſe of their continued form. In many fevers, however, there is no evidence of any diatheſis phlogiſtica being preſent, or any evidence of more conſiderable ſpaſm; and in ſuch fevers we muſt impute the protraction of the paroxyſms, and the continued form of the fever, to the weakneſs of reaction. That this cauſe takes place, may be concluded from hence, that in many caſes of fever wherein the ſeparate paroxyſms are the moſt protracted, and the moſt difficultly obſerved, we find the moſt conſiderable ſymptoms of a general debility; and therefore it may be concluded, that in ſuch caſes the protracted paroxyſms and continued form depend upon a weaker reaction, owing either to the cauſes of debility applied having been of a more powerful kind, or to circumſtances of the patient's conſtitution favouring their operation.

From the view juſt now given of the cauſes of the protraction of paroxyſms, and therefore of the form of continued fevers ſtrictly ſo called, it ſeems probable, that the remote cauſes of theſe operate by occaſioning either a phlogiſtic diatheſis, or a weaker reaction; for we can obſerve, that the moſt obvious difference of continued fevers depends upon the prevailing of one or other of theſe ſtates.

138 Remot cauſes fever.

With regard to the remote cauſes of fever, as this has been conſidered as conſiſting chiefly in an increaſed action of the heart and arteries, phyſicians have ſuppoſed, that certain direct ſtimulants, fitted to produce this increaſed action, are the remote cauſes of fever. In many caſes, however, there is no evidence of ſuch ſtimulants being applied: and in the caſes in which they are applied, they either produce only a temporary frequency of pulſe, which cannot be conſidered as a diſeaſe; or, if they do produce a permanent febrile ſtate, it is by the intervention of a topical inflammation, which produces a diſeaſe different from what is ſtrictly called a *fever*.

That direct ſtimulants are the remote cauſes of fever ſeems farther improbable, becauſe the ſuppoſition does not account for the phænomena attending the acceſſion of fevers, and becauſe other remote cauſes can with greater certainty be aſſigned. As fevers are ſo generally epidemic, it is probable, that ſome matter floating in the atmoſphere, and applied to the bodies of men, ought to be conſidered as the remote cauſe of fevers. Theſe matters being preſent in the atmoſphere, and acting upon men, may be conſidered either as MIASMATA, or as CONTAGIONS.

13 Of mata.

Miaſmata may ariſe from various ſources, and be of different kinds; but we know little of their variety or of their ſeveral effects. We know with certainty only one ſpecies of miaſma which can be conſidered as the cauſe of fever; and from the univerſality of this it may be doubted whether there be any other. The miaſma ſo univerſally the cauſe of fever, is that which ariſes from marſhes or moiſt ground acted upon by heat. So many obſervations have now been made with reſpect to this, in ſo many different regions of the earth, that there is neither any doubt of its being in general a cauſe of fevers, nor of its being very univerſally the cauſe of intermittent fevers in all their different forms. The ſimilarity of the climate, ſeaſon, and ſoil, in which intermittents ariſe, and the ſimilarity of the diſeaſes ariſing in different regions, concur in proving that there is one common cauſe of theſe diſeaſes, and that this is the marſh miaſma. What is the particular nature of this miaſma we know not; nor do we certainly know whether it differs in kind or not: but it is probable that it does not; and that it differs only in the degree of its power, or perhaps in its quantity, in a given ſpace.

140 conta- ns.

Of contagions, a great variety have been ſuppoſed to exiſt; but this ſeems to be aſſerted without ſufficient evidence. The number of genera and ſpecies of contagious diſeaſes, of the claſs of pyrexiæ, at preſent known, is not very great. Whether there are any belonging to the order of phlegmaſiæ, is doubtful; and though it ſhould be ſuppoſed, it will not much increaſe the number of contagious pyrexiæ: and as each of the contagious diſeaſes hath been found always to retain the ſame character, and to differ only in circumſtances, which may be imputed to ſeaſon, climate, and other external cauſes, or to the peculiar conſtitution of the perſons affected, it may thence be concluded, that in each of theſe ſpecies the contagion is of one ſpecific nature; and that there is one principal, perhaps one common, ſource of ſuch contagions.

It is now well known, that the effluvia ariſing from the living human body, if long confined in the ſame place, without being diffuſed in the atmoſphere, acquire a ſingular virulence; and, in that ſtate, applied to the bodies of men, become the cauſe of a fever which is very contagious. The late obſervations on jail and hoſpital fevers have fully proved the exiſtence of ſuch a cauſe; and it is ſufficiently obvious, that the ſame virulent matter may be produced in many other places. At the ſame time the nature of the fevers ariſing renders it probable, that the virulent ſtate of human effluvia is the common cauſe of ſuch fevers, as they differ only in a ſtate of their ſymptoms; which may be imputed to the circumſtances of ſeaſon, climate, &c. concurring with the contagion, and modifying its force.

With reſpect to theſe contagions, though they are ſpoken of above as a matter floating in the atmoſphere, it is proper to obſerve, that they are never found to act but when they are near to the ſources from whence they ariſe; that is, either near to the bodies of men from which they immediately iſſue, or near to ſome ſubſtances which, as having been near to the bodies of men, are imbued with their effluvia, and in which ſubſtances theſe effluvia are ſometimes retained in an active ſtate for a very long time. The ſubſtances thus imbued with an active matter may be called *fomites;* and the Doctor thinks it probable, that contagions, as they ariſe from fomites, are more powerful than as they ariſe immediately from the human body. But though it is probable that fevers generally ariſe from marſh or human effluvia, we cannot with any certainty exclude ſome other remote cauſes which are commonly ſuppoſed to have a ſhare in producing them. The firſt of theſe cauſes to be taken notice of is, the operation of cold on the human body.

141 Of the operation of cold.

This acts ſo differently in different circumſtances, that it is difficult to give a ſatisfactory explanation of it. In certain circumſtances cold has manifeſtly a ſedative power. It can extinguiſh the vital principle entirely, either in particular parts, or through the whole body; and, conſidering how much the vital principle of animals depends upon heat, it cannot be doubted that the power of cold is always more or leſs directly ſedative. But it is equally manifeſt, that, in certain circumſtances, cold proves a ſtimulus to the living body, and particularly to the ſanguiferous ſyſtem. Beſides the ſedative and ſtimulant powers of cold, it is alſo manifeſtly a powerful aſtringent; cauſing a contraction of the veſſels on the ſurface of the body, and thereby producing paleneſs and a ſuppreſſion of perſpiration. It is likewiſe probable, that this conſtriction is in ſome meaſure communicated to the whole body, and that thereby the application of cold proves a tonic with reſpect to the whole ſyſtem.

Theſe ſeveral effects of cold do not all take place at the ſame time, but may be variouſly combined. The ſtimulant power taking place, obviates the effects that might otherwiſe have ariſen from the ſedative, and in ſome meaſure from thoſe of the aſtringent power. But the ſtimulant and tonic powers of cold are commonly conjoined, and the former perhaps depend in part upon the latter.

In what circumſtances theſe different effects of cold take place, is difficult to determine; but the morbid effects may be obſerved to be chiefly of four kinds. One is a general inflammatory diatheſis of the ſyſtem; which is commonly accompanied with rheumatiſm, or other phlegmaſia. A ſecond is a catarrhal affection; a third is a gangrene; and a fourth is a proper fever. In producing this laſt, the operation of cold generally concurs with that of marſh or human effluvia. In all its operations, cold ſeems to act more powerfully, in proportion as the body, and particularly the vigour of the circulation, is previouſly more weakened.

Beſides cold, there are other powers which ſeem to be the remote cauſes of fevers; as fear, intemperance in drinking, exceſs in venery, and other cauſes, which evidently weaken the ſyſtem. But, whether any of theſe ſedative powers be alone the remote cauſe of fever, or if they only concur with the operation of marſh or human effluvia, or if they give an opportunity to the poſitive operations of cold, are queſtions not to be anſwered with certainty.

142 Of the cauſes of death in fevers.

The cauſes of death in fevers are either direct or indirect. The firſt are thoſe which directly attack and deſtroy the vital principle as lodged in the nervous ſyſtem, or deſtroy the organs immediately connected with it. The ſecond, or the indirect cauſes of death, are thoſe which interrupt ſuch functions as are neceſſary to the due continuance and ſupport of the vital principle.

Of theſe general cauſes thoſe which operate more particularly in fevers ſeem to be, firſt the violence of reaction, which, either by repeated violent excitements deſtroys the vital power itſelf, or by its violence deſtroys the organization of the brain neceſſary to the action of the vital principle, or by the ſame violence deſtroys the organization of the parts more immediately neceſſary to the circulation of the blood.

Secondly, the cauſe of death in fevers may be a poiſon, that is, a power capable of deſtroying the vital principle; and this poiſon may be either the miaſma or contagion which was the remote cauſe of the fever, or it may be a putrid matter generated in the courſe of the fever. In both caſes, the operation of ſuch a power appears either as acting chiefly on the nervous ſyſtem, inducing the ſymptoms of debility; or, as acting upon the maſs of blood, inducing a putreſcent ſtate in it, and in the fluids derived from it.

From all this the ſymptoms ſhewing the tendency to death in fevers may be diſcovered, by their being either the ſymptoms of violent reaction, of great debility, or of a ſtrong tendency to putrefaction in the fluids.

The ſymptoms which denote the violence of reaction, are, 1. The increaſed force, frequency, and hardneſs of the pulſe. 2. The increaſed heat of the body. 3. Thoſe ſymptoms which are the general marks of an inflammatory diatheſis; and more eſpecially thoſe of a particular determination to the brain, lungs, or other important viſcera. 4. Thoſe which are the marks of the cauſe of violent reaction; that is, of a ſtrong ſpaſm appearing in the ſuppreſſion of the excretions.

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Symptoms denoting great debility.

The ſymptoms which denote a great degree of debility are,—in the animal functions, 1. The weakneſs of the voluntary motions. 2. The irregularity of the voluntary motions depending on their debility. 3. The weakneſs of ſenſation. 4. The weakneſs and irregularity of the intellectual operations.—In the vital functions, 1. The weakneſs of the pulſe. 2. The coldneſs or ſhrinking of the extremities. 3. The tendency to a deliquium animi in an erect poſture. 4. The weakneſs of reſpiration.—In the natural functions, 1. The weakneſs of the ſtomach, as appearing in anorexia, nauſea, and vomiting. 2. Involuntary excretions, depending upon a palſy of the ſphincters. 3. Difficult deglutition, depending upon a palſy of the muſcles of the fauces.—

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Denoting a putreſcent ſtate of the fluids.

The ſymptoms denoting a putreſcent ſtate of the fluids, are, 1. In the ſtomach, the loathing of animal food, nauſea, and vomiting, great thirſt, and a deſire of acids. 2. In the maſs of blood, an unuſual fluidity, ſo that when drawn out of the veins it does not coagulate as uſual; hæmorrhagy from different parts, without marks of increaſed impetus; effuſſions under the ſkin or cuticle, forming petechiæ, maculæ, and vibices, and effuſions of a yellow ſerum under the cuticle. 3. In the ſtate of excretions, frequent, looſe, and fetid ſtools; high-coloured turbid urine; fetid ſweats; and the fetor of bliſters. 4. The cadaverous ſmell of the whole body.

146
Of critical days.

Many phyſicians have been of opinion that there is ſomething in the nature of fevers which generally determines them to be of a certain duration; and, therefore, that their terminations, whether in health or in death, happen at certain periods of the diſeaſe rather than at others. Theſe periods are called the Critical Days. Theſe were carefully obſerved by Hippocrates and the ancients, but have been denied by many to take place in the fevers of theſe northern regions. Dr Cullen, however, is of opinion, that the doctrine of the ancients, and particularly that of Hippocrates, on this ſubject, was well founded; and that it is juſt and true even with reſpect to the fevers of our climate. For this opinion he gives the following reaſons: 1. Becauſe the animal œconomy is readily ſubjected to periodical movements, both from its own conſtitution, and from habits which are readily produced in it. 2. Becauſe periodical movements take place in the diſeaſes of the human body with great conſtancy and exactneſs, as in the caſe of intermittent fevers, and many other diſeaſes.

The critical days, or thoſe on which the termination of continued fevers is ſuppoſed to happen, are, the *third*, *fifth*, *ſeventh*, *ninth*, *eleventh*, *fourteenth*, *ſeventeenth*, and *twentieth*. We mark none beyond this laſt; becauſe though fevers are ſometimes protracted beyond this period, the inſtances are but rare, and we have not a ſufficient number of obſervations to aſcertain the courſe of them; and likewiſe becauſe it is probable, that in fevers long protracted the movements become leſs exact and regular, and are therefore leſs eaſily obſerved. This appears from the facts laid down by Hippocrates: as, in 163 caſes of fevers, no fewer than 107, or more than two thirds of the whole number, terminated on one or other of the eight days abovementioned; none terminated on the ſecond or thirteenth; and upon the eighth, tenth, twelfth, fifteenth, ſixteenth, eighteenth, and nineteenth, there are but 18 terminations, or one-ninth of the whole. But though it muſt be acknowledged that it is the general tendency of the animal-œconomy to determine the periodical movements in fevers to be chiefly on critical days, it muſt alſo be acknowledged that in many caſes the regular courſe of it may be diſturbed by particular circumſtances. Thus, though the chief and more remarkable exacerbations in continued fevers happen on the critical days, there are truly exacerbations happening every day; and theſe, from certain cauſes, may become conſiderable and critical.

What determines the periods to be changed about the 11th day, hath not been well underſtood. But the fact is certain: for there is no inſtance of any termination on the 13th; but on the 14th, 17th, and 20th, there are 43 inſtances of termination, and only ſix on all the intermediate days between theſe. Hippocrates indeed makes mention of many terminations happening on the 4th day; but, from its inconſiſtency with the general tendency, and ſome other conſiderations, Dr Cullen is led to think that the terminations on this day are to be looked upon only as irregularities.

The opinions of thoſe modern phyſicians who refuſe the prevalence of critical days, he thinks, are to be little regarded. The obſervation of the courſe of continued fevers is difficult and fallacious; and therefore the regulating of that courſe may have eſcaped inattentive and prejudiced obſervers. His own obſervations amount to this: That fevers with moderate ſymptoms, generally caſes of the ſynocha, frequently terminate in nine days or ſooner, and very conſtantly on one or other of the critical days which fall within that period: but it is very rare in this climate, that caſes of either the typhus or ſynochus terminate before the 11th day; and when they do terminate on this day, it is moſt commonly fatal. When protracted beyond this period, their termination hath been very conſtantly obſerved on the 14th, 17th, or 20th day.

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In ſuch caſes, the ſalutary terminations are ſeldom attended with any conſiderable evacuation. A ſweating

ing frequently appears, but is ſeldom conſiderable; and critical and deciſive terminations have been hardly ever obſerved attended with vomiting, evacuations by ſtool, or remarkable changes in the urine. The ſolution of the diſeaſe is chiefly to be diſcerned from ſome return of ſleep and appetite, the ceaſing of the delirium, and an abatement of the frequency of the pulſe. By theſe ſymptoms we can often mark a criſis of the diſeaſe; but it ſeldom happens ſuddenly and entirely, and it is moſt commonly from ſome favourable ſymptoms on one critical day that we can announce a more entire ſolution on the next following.

Having thus given a pretty full account of the Doctor's general theory of fevers, we now proceed to take notice of his doctrine of inflammation.

48 nflam- on. When any part of the ſurface of the body is affected with unuſual redneſs, heat, pain, and tumour, we name the diſeaſe an *inflammation* or *phlegmaſia*. Theſe ſymptoms of inflammation are never very conſiderable, without the whole ſyſtem being at the ſame time affected with *pyrexia*. The internal parts are ſubject to inflammation as well as the external; and we judge them to be inflamed, when, together with pyrexia, there is a fixed pain in any internal part, attended with ſome interruption in the exerciſe of its functions. We judge of the preſence of inflammation alſo from the ſtate of the blood drawn from the veins. When the blood, after cooling and concreting, ſhews a portion of the gluten ſeparated from the reſt of the maſs, and lying on the ſurface of the craſſamentum; as ſuch ſeparation happens in all caſes of more evident phlegmaſia, ſo in ambiguous caſes, we, from this appearance, joined with other ſymptoms, conclude the preſence of inflammation. At the ſame time it muſt be obſerved, that as ſeveral circumſtances in blood-letting may prevent this ſeparation of gluten from taking place in blood otherwiſe diſpoſed to it, ſo we cannot always conclude, from the want of ſuch appearance, againſt the preſence of inflammation.

9 s s. The phænomena of inflammation all concur in ſhewing, that there is an increaſed impetus of the blood in the veſſels of the part affected; and as at the ſame time the action of the heart is not always conſiderably increaſed, Dr Cullen ſuppoſes that the increaſed impetus of the blood in the particular part is owing eſpecially to the increaſed action of the veſſels of the part itſelf. The cauſe of this increaſed action is therefore to be inquired after, and is the proximate cauſe of inflammation. In many caſes we can manifeſtly perceive, that inflammation ariſes from the application of ſtimulant ſubſtances to the part. When the application of ſtimulants therefore is evident, we ſeek for no other cauſe of inflammation; but as, in many caſes, ſuch application is neither evident, nor (with any probability) to be ſuppoſed, we muſt in ſuch caſes ſeek for ſome other cauſe of the increaſed impetus of the blood in the veſſels of the part.

9 neous ons rning ted. Many phyſicians have ſuppoſed, that an obſtruction of the extreme veſſels, any-how produced, may prove a cauſe of inflammation: but many difficulties attend this doctrine.

147 Of cri 1. The ſuppoſition of an ERROR LOCI is not at all probable. For the motion of the blood in the extreme veſſels is ſo weak and ſlow, as readily to admit a retrograde courſe of it: and therefore, if a particle of blood ſhould happen to enter a veſſel whoſe branches will not allow its paſſage, it will be moved backwards till it meet with a veſſel fit for tranſmitting it; and the frequent ramifications and anaſtomoſes of the extreme arteries are very favourable to this.

2. The ſuppoſition of a preternatural lentor or viſcidity of the blood, is not well-founded; for it is probable, that nature has ſpecially provided againſt a ſtate of the fluids ſo incompatible with the exerciſe of the moſt important functions of the animal œconomy. While motion continues to prevent any ſeparation of parts, and heat continues to preſerve the fluidity of the more viſcid, there ſeems to be always ſo large a quantity of water preſent, as to give a ſufficient fluidity to the whole.

3. The Doctor ſuppoſes that no general lentor ever does take place; becauſe, if it did, it muſt ſhew more conſiderable effects than commonly appear.

4. There are no experiments directly in proof of a preternatural lentor prevailing in the maſs of blood; nor is there any evidence of certain parts of the blood occaſionally acquiring a greater denſity and force of coheſion than ordinary; neither is there any proof of the denſer or more coherent parts being preſent in the maſs of blood in ſuch greater proportion than uſual, as to occaſion a dangerous ſpiſſitude. The experiments of Dr Browne Langriſh on this ſubject afford no concluſion, having been made on certain parts of the blood ſeparated from the reſt, without attending to the circumſtances of blood-letting, which very much alter the ſtate of the ſeparation and concretion of the blood drawn out of the veins.

5. In the particular caſe of inflammation, there are ſeveral circumſtances which render it probable that the blood is then more fluid than uſual.

6. Though an obſtruction ſhould be ſuppoſed to take place, it will not be ſufficient for producing the effects appearing in inflammation. An obſtruction of one veſſel does not, as has been imagined, increaſe the velocity of the blood in the neighbouring veſſels which are free; and in fact it appears, from many obſervations and experiments, that conſiderable obſtructions may be formed, and may ſubſiſt, without producing the ſymptoms of inflammation.

Obſtruction, therefore, is not to be conſidered as the cauſe of inflammation; but, at the ſame time, it is probable, that ſome degree of obſtruction does take place in every inflammation. The diſtenſion, pain, redneſs, and tumour, attending inflammation, are only to be explained by ſuppoſing, that the extremities of the arteries do not readily tranſmit the unuſual quantity of blood impelled into them by the increaſed action in the courſe of thoſe veſſels. Such an obſtruction may be ſuppoſed to happen in every caſe of an increaſed impetus of the blood; but it is probable, that, in the caſe of inflammation, there is alſo a preternatural reſiſtance to the free paſſage of the fluids.

150 Inflammation generally accompanied with ſpaſm. From the doctrine of fever we are led to believe, that an increaſed action of the heart and arteries is not ſupported for any length of time by any other means than a ſpaſm affecting the extreme veſſels; and that the ſame ſpaſm takes place in inflammation,

ſeems probable from hence, that every conſiderable inflammation is introduced by a cold ſtage, and is accompanied with that and the other circumſtances of pyrexia; and it ſeems alſo probable, that ſomething analogous to this occurs even in the caſe of thoſe inflammations which ſeem leſs conſiderable and to be purely topical.

151
Inflammation particularly explained.

From all this, the nature of inflammation may be explained in the following manner. Some cauſes of inequality in the diſtribution of the blood may throw an unuſual quantity of it upon particular veſſels, to which it muſt neceſſarily prove a ſtimulus. But, further, it is probable, that, to relieve the congeſtion, the *vis medicatrix naturæ* increaſes ſtill more the action of theſe veſſels, which it effects by the formation of a ſpaſm on their extremities, as in all other febrile diſeaſes. A ſpaſm, therefore, of the extreme arteries, ſupporting an increaſed action in the courſe of them, may be conſidered as the proximate cauſe of inflammation, at leaſt in all caſes not ariſing from direct ſtimuli applied. That this is the caſe, ſeems probable from the conſideration of rheumatiſm. This is a ſpecies of inflammation which is often manifeſtly produced, either by cold applied to over-diſtended veſſels, or by cauſes of an increaſed impetus and over-diſtenſion in veſſels previouſly conſtricted. Hence the diſeaſe eſpecially appears at ſeaſons liable to frequent and conſiderable viciſſitudes of heat and cold. To this we may add, that the parts of the body moſt frequently affected with inflammation, are thoſe expoſed both to over-diſtenſion from a change in the diſtribution of the fluids, and at the ſame time to the immediate action of cold. Hence quinſies and pneumonic inflammations are more frequent than any others.

That a ſpaſm of the extreme veſſels takes place in inflammation is further to be preſumed from what is at the ſame time the ſtate of the whole arterial ſyſtem. In every conſiderable inflammation, though ariſing in one part only, an affection is communicated to the whole ſyſtem; in conſequence of which, an inflammation is readily produced in other parts beſides that firſt affected. This general affection is well known to phyſicians under the name of the DIATHESIS PHLOGISTICA. It appears moſt commonly in perſons of the moſt rigid fibres; is often manifeſtly induced by the tonic or aſtringent powers of cold; is increaſed by all tonic and ſtimulant powers applied to the body; is always attended with a hardneſs of the pulſe; and is moſt effectually taken off by the relaxing powers of blood-letting. From theſe circumſtances it ſeems probable, that the *diatheſis phlogiſtica* conſiſts in an increaſed tone, or contractility, and perhaps *contraction*, of the muſcular fibres of the whole arterial ſyſtem. Such a ſtate of the ſyſtem preſumes a ſpaſm of the extreme veſſels, and the general ſtate commonly ariſes from that begun in a particular part; tho' it be alſo probable, that the general ſtate may ariſe and ſubſiſt for ſome time without the obvious inflammation of any particular parts.

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Diatheſis phlogiſtica explained.

153
Inflammations may be terminated by reſolution.

If an inflammation is cured while the ſtate and texture of the part remain entire, the diſeaſe is ſaid to terminate by *reſolution*. This happens when the previous congeſtion and ſpaſm have been in a moderate degree, and the increaſed impetus of the blood has been ſufficient to overcome the ſpaſm, to dilate the veſſels, and to remove the congeſtion, ſo that the part is reſtored to its ordinary and healthy ſtate. A reſolution takes place alſo when the increaſed impetus of the fluids has produced an increaſed exhalation into the adjoining cellular texture, or an increaſed excretion in ſome neighbouring part, and has thereby relieved the congeſtion in the veſſels, and relaxed the ſpaſm of the inflamed part. Laſtly, a reſolution may take place, when the increaſed impetus of the blood in the whole ſyſtem occaſions ſuch an evacuation, as, tho' in a diſtant part, may prove ſufficient to take off the phlogiſtic diatheſis of the whole ſyſtem, and thereby relieve the congeſtion and ſpaſm of the particular part affected by inflammation.

The tumour which appears in inflammation may be imputed in part to the congeſtion of fluids in the veſſels; but is owing chiefly to an effuſion of matter into the adjoining cellular texture; and accordingly tumours ſeldom appear but in parts adjoining to a lax cellular texture. If, in this caſe, the matter effuſed be only a larger quantity of the ordinary exhalent fluid, this, when the free circulation in the veſſels is reſtored, will be readily abſorbed, and the ſtate of the part will become the ſame as before: but, if the increaſed impetus of the blood in an inflamed part dilate the exhalent veſſels to ſuch a degree that they pour out an entire ſerum, this will not ſo readily be re-abſorbed; and, from the experiments of Sir John Pringle and Mr Gaber we learn, that under ſtagnation the ſerum may undergo a particular change, by having the gluten preſent it in changed into a white, opaque, moderately viſcid, mild liquor, which we name PUS. When this change happens in the inflamed part, as it is at the ſame time attended with an abatement of the redneſs, heat, and pain, which formerly diſtinguiſhed the diſeaſe, it is ſaid to be terminated by SUPPURATION; and an inflamed part containing a collection of pus, is called an ABSCESS. In inflammation, the tendency of it to ſuppuration may be diſcovered by the continuance of the inflammation, without the ſymptoms of reſolution; by ſome remiſſion of the pain of diſtenſion; and by the pain being of a throbbing kind, more diſtinctly connected with the pulſation of the arteries; by the pulſe of the arteries being fuller and ſofter; and often by the patient's being afflicted frequently with cold ſhiverings. This happens at no determinate period; and when the tendency is determined, the time neceſſary to a complete ſuppuration is different in different caſes. When pus is completely formed, the pain formerly in the part entirely ceaſes, and a weight is felt in it. If the collection is formed immediately under the ſkin, the tumour becomes pointed, the part becomes ſoft, and the fluctuation of the fluid within can be commonly perceived; and, at the ſame time, the redneſs of the ſkin, which formerly prevailed, is entirely gone.

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By ſupp
ration.

In abſceſſes, while the pus is formed of one part of the matter which had been effuſed, the other and thinner parts are re-abſorbed; ſo that in the abſceſs, when opened, pus alone appears. This pus, however, is not the converted gluten alone: for the converſion of this being the effect of a particular fermentation, which may affect the ſolid ſubſtance of the part, and perhaps every ſolid of animal-bodies; ſo it moſt readily and particularly affects the cellular texture,

ture, and thereby a great deal of this is eroded, and forms a part of the pus; and it generally happens alſo, that ſome of the ſmaller red veſſels are eroded, and ſome red blood appears mixed with the pus in abſceſſes. Hence we may ſee how an abſceſs, when formed, may either ſpread into the cellular texture of the neighbouring parts, or, by eroding the incumbent teguments, be poured out upon the ſurface of the body, and produce an open ulcer.

The matter of abſceſſes, and of the ulcers following them, is various, according to the nature of what is effuſed, and which may be,

1. A matter thinner than ſerum. 2. An entire and pure ſerum. 3. A quantity of red globules. 4. A matter furniſhed by particular glands ſeated in the part. Of theſe, the ſecond only affords a proper pus, the effuſion of which, whether in abſceſſes or ulcers, ſeems to be the peculiar effect of an inflammatory ſtate of the veſſels; and from this cauſe it is, that, when ulcers do not produce a proper pus, we in many inſtances bring them to a ſtate of ſuppuration, by the application of ſtimulants exciting inflammation, ſuch as balſams, mercury, copper, &c.

When the matter effuſed into the cellular texture of an inflamed part is tainted with a putrid ferment, this produces, in the effuſed matter, a change approaching more or leſs to a complete putrefaction. When this is in a moderate degree, and affects only the fluids effuſed, with the ſubſtance of the cellular texture, the part is ſaid to be affected with a GANGRENE; but if the putrefaction affect alſo the veſſels and muſcles of the part, the diſeaſe is ſaid to be a SPHACELUS.

A gangrene may ariſe from a putrid ferment acting on the matter which is moſt commonly effuſed, and likewiſe from that matter being peculiarly diſpoſed to putrefaction; as particularly ſeems to be the caſe of the red globules of blood effuſed in a large quantity. In a third manner alſo, a gangrene ſeems frequently to ariſe from the violent excitement of the inflammation deſtroying the tone of the veſſels; whereby the whole fluids ſtagnate and run into putrefaction, which taking place in any degree deſtroys further the tone of the veſſels, and ſpreads the gangrene.

A tendency to gangrene may be apprehended from an extreme violence of pain and heat in the inflamed part, and from a great degree of pyrexia attending the inflammation. The actual coming on of it is perceived by a change of colour in the part from a clear to a dark red; by bliſters ariſing upon it; by its becoming ſoft, flaccid, and inſenſible; and by the ceaſing of all pain while theſe appearances take place. As the gangrene proceeds, the colour of the part becomes livid, and, by degrees, quite black, the heat entirely ceaſes, the ſoftneſs and flaccidity of the part increaſes; it loſes its conſiſtence, acquires a cadaverous ſmell, and may then be conſidered as affected with a ſphacelus.

The ſchools of phyſic have commonly reckoned a fourth way in which inflammation may terminate, viz. by a *ſcirrhus*, or an indolent hardneſs of the part. This, however, according to Dr Cullen, is a rare occurrence; and ſeems not to depend ſo much upon the nature of inflammation, as upon the circumſtances of the part affected. Scirrhoſity is chiefly obſerved in glandular parts, and is owing to the parts readily admitting a ſtagnation of the fluids.

Beſides theſe there are the following ways, not commonly taken notice of, in which inflammations terminate. One is, by the effuſſion of a portion of the entire maſs of blood, either by means of rupture or anaſtomoſis, into the adjoining cellular texture. This happens eſpecially in inflammations of the lungs, where the effuſed matter, by compreſſing the veſſels, and ſtopping the circulation, occaſions a fatal ſuffocation; and this is perhaps the manner in which the peripneumony moſt comonly proves fatal.—Another kind of termination is that of certain inflammations on the ſurface of the ſkin, when there is poured out under the cuticle a fluid too groſs to paſs through its pores; and which therefore ſeparates it from the ſkin, and raiſes it up into the form of a veſicle containing the effuſed fluid.—A third way is, when the internal viſcera are inflamed, there appears almoſt always upon their ſurface an exſudation, which appears partly in a viſcid concretion upon their ſurface, and partly in a thin ſerous fluid effuſed into the cavities in which the inflamed viſcera are placed. Though theſe appearances very conſtantly accompany thoſe inflammations which have proved fatal, it is however probable, that like circumſtances may attend thoſe inflammations terminated by reſolution, and may contribute to the event, as there are inſtances of a pneumonic inflammation terminating in an hydrothorax.

The remote cauſes of inflammation may be reduced to four heads. 1. The application of ſtimulant ſubſtances, among which are to be reckoned the action of fire, or burning. 2. External violence operating mechanically in wounding, bruiſing, or overſtretching the parts. 3. Extraneous ſubſtances lodged in any part of the body, though they be neither of an acrid quality, nor of a pointed form. 4. Cold, in a certain degree, not ſufficient immediately to produce gangrene.

We cannot perceive, that in different caſes of inflammation there is any difference in the ſtate of the proximate cauſe except in the degree: and though ſome difference of inflammation may ariſe from the difference of its remote cauſes, this is not neceſſary to be taken notice of here; becauſe the different appearances which attend different inflammations may be referred for the moſt part to the difference of the part affected, as will appear when we conſider the ſeveral genera and ſpecies of diſeaſes in the Noſology.

SECT. III. *Abſtract of Dr* GREGORY'*s Theory.*

158 Animal, vital, and natural functions explained.

IN his *Conſpectus Medicinæ Theoreticæ*, publiſhed at Edinburgh in 1780, the Doctor * begins with obſerving, that ſome functions of the human body relate to itſelf only, and others to external things. To the latter claſs belong thoſe which by phyſicians are called the *animal functions;* ſuch as ſenſe, and voluntary motion: to the former, thoſe named *vital functions*, becauſe, without them, life could not ſubſiſt but a very ſhort time; ſuch as the action of the brain and nerves, the circulation of the blood, and reſpiration.

By reaſon of the conſtant waſte of the ſolids, and evaporation of the fluid parts of the body, we ſtand in need of nouriſhment, which ſupplies this waſte; after which the putrid and excrementitious parts are thrown out by the proper paſſages. The digeſtion of the food, ſecretion of the humours, and excretion of the putrid parts of the food, are called the *natural* functions; which, though neceſſary to life, may be interrupted for a conſiderable time without danger.

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159
Diſeaſes ſimple and compound.

A *diſeaſe* takes place, when the body hath ſo far declined from a ſound ſtate, that its functions are either quite impeded, or performed with difficulty. A diſeaſe therefore may happen to any part of the body either ſolid or fluid, or to any one of the functions: and thoſe may occur either ſingle, or ſeveral of them joined together; whence the diſtinction of diſeaſes into *ſimple* and *compound*.

We have examples of the moſt ſimple kinds of diſeaſes, in the rupture or other injury of any of the corporeal organs, by which means they become leſs fit for performing their offices; or, though the organs themſelves ſhould remain ſound, if the ſolid or fluids have degenerated from a healthy ſtate; or if, having loſt their proper qualities, they have acquired others of a different, perhaps of a noxious nature; or laſtly, if the moving powers ſhall become too weak or too ſtrong, or direct their force in a way contrary to what nature requires.

160
Symptoms.

Diſeaſes of this kind, however, occur ſo rarely, that they may rather be accounted *imaginary* than otherwiſe; for the moſt ſimple diſeaſes are either productive of others, or of *ſymptoms*, by which alone they become known to us.—Every thing in which a ſick perſon is obſerved to differ from one in health is called a *ſymptom*; and the moſt remarkable of theſe ſymptoms, and which moſt conſtantly appear, define and conſtitute the diſeaſe.

161
Cauſes prediſponent and exciting.

The cauſes of diſeaſes are various; often obſcure, and ſometimes totally unknown. The moſt full and perfect proximate cauſe is that which, when preſent, produces a diſeaſe, when taken away removes it, and when changed alſo changes it.—There are alſo remote cauſes, which phyſicians have been accuſtomed to divide into the *prediſponent* and *exciting* ones. The former are thoſe which only render the body fit for a diſeaſe, or which put it into ſuch a ſtate that it will readily receive one. The exciting cauſe is that which immediately produces the diſeaſe in a body already diſpoſed to receive it.

The prediſponent cauſe is always inherent in the body itſelf, though perhaps it originally came from without; but the exciting cauſe may either come from within or from without.

162
Proximate cauſe.

From a junction of the prediſponent and exciting cauſes comes the *proximate* cauſe, which neither of the two taken ſingly is able to produce; ſeeing neither every exciting cauſe will produce a diſeaſe in every perſon, nor will every one prediſpoſed to a diſeaſe fall into it without an exciting cauſe.—A body prediſpoſed to diſeaſe therefore hath already declined ſomewhat from a ſtate of perfect health, although none of its functions are impeded in ſuch a manner that we can truly ſay the perſon is diſeaſed. Yet ſometimes the prediſponent cauſe, by continuing long, may arrive at ſuch an height, that it alone, without the addition of any exciting cauſe, may produce a real diſeaſe.—Of this we have examples in the debility of the ſimple ſolids, the mobility of the living ſolids, and in plethora.—The exciting cauſe alſo, though it ſhould not be able immediately to bring on a diſeaſe; yet if it continues long, will by degrees deſtroy the ſtrongeſt conſtitution, and render it liable to various diſeaſes; becauſe it either produces a prediſponent cauſe, or is converted into it, ſo that the ſame thing may ſometimes be an exciting cauſe, ſometimes a prediſponent one; of which the inclemencies of the weather, ſloth, luxury, &c. are examples.

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Whenc
diſeaſes
ginate.

Diſeaſes, however, ſeem undoubtedly to have their origin from the very conſtitution of the animal machine; and hence many diſeaſes are common to every body when a proper exciting cauſe occurs, though ſome people are much more liable to certain diſeaſes than others. Some are hereditary; for as healthy parents naturally produce healthy children, ſo diſeaſed parents as naturally produce a diſeaſed offspring. Some of theſe diſeaſes appear in the earlieſt infancy; others occur equally at all ages; nor are there wanting ſome which lurk unſuſpected even to the lateſt old age, at laſt breaking out with the utmoſt violence on a proper occaſion. Some diſeaſes are born with us, even though they have no proper foundation in our conſtitution, as when a fœtus receives ſome hurt by an injury done to the mother; while others, neither born with us, nor having any foundation in the conſtitution, are ſucked in with the nurſe's milk. Many diſeaſes accompany the different ſtages of life; and hence ſome are proper to infancy, youth, and old age. Some alſo are proper to each of the ſexes; eſpecially the weaker ſex, proceeding, no doubt, from the general conſtitution of the body, but particularly from the ſtate of the parts ſubſervient to generation. Hence the diſeaſes peculiar to virgins, to menſtruating women, to women with child, to lying-in women, to nurſes, and to old women. The climate itſelf, under which people live, produces ſome diſeaſes; and every climate hath a tendency to produce a particular diſeaſe, either from its exceſs of heat or cold, or from the mutability of the weather. An immenſe number of diſeaſes alſo may be produced by impure air, or ſuch as is loaded with putrid, marſhy, and other noxious vapours. The ſame thing may happen alſo from corrupted aliment, whether meat or drink; though even the beſt and moſt nutritious aliment will hurt if taken in too great quantity; not to mention poiſons, which are endowed with ſuch pernicious qualities, that even when taken in a very ſmall quantity they produce the moſt grievous diſeaſes, or perhaps even death itſelf. Laſtly, from innumerable accidents and dangers to which mankind are expoſed, they frequently come off with broken limbs, wounds, and contuſions, ſometimes quite incurable; and theſe misfortunes, though proceeding from an external cauſe at firſt, often terminate in internal diſeaſes.

Hitherto we have mentioned only the dangers which come from without; but thoſe are not leſs, nor fewer in number, which come from within. At every breath, man pours forth a deadly poiſon both to himſelf and others. Neither are the effluvia of the lungs alone hurtful: there flows out from every pore of the body a moſt ſubtile and poiſonous matter, perhaps of a putreſcent

ſcent nature, which being long accumulated, and not allowed to diffuſe itſelf through the air, infects the body with moſt grievous diſeaſes; nor doth it ſtop here, but produces a contagion which ſpreads devaſtation far and wide among mankind. From too much or too little exerciſe of our animal-powers alſo no ſmall danger enſues. By inactivity either of body or mind, the vigour of both is impaired; nor is the danger much leſs from too great employment. By moderate uſe, all the faculties of the mind, as well as all the parts of the body, are improved and ſtrengthened; and here nature hath appointed certain limits, ſo that exerciſe can neither be too much neglected, nor too much increaſed, with impunity. Hence thoſe who uſe violent exerciſe, as well as thoſe who ſpend their time in ſloth and idleneſs, are equally liable to diſeaſes; but each to diſeaſes of a different kind: and hence alſo the bad effects of too great or too little employment of the mental powers.

Beſides the dangers ariſing from thoſe actions of the body and mind which are in our own power, there are others ariſing from thoſe which are quite involuntary. Thus, paſſions of the mind, either when carried to too great exceſs, or when long continued, equally deſtroy the health; nay, will even ſometimes bring on ſudden death. Sleep alſo, which is of the greateſt ſervice in reſtoring the exhauſted ſtrength of the body, proves noxious either by its too great or too little quantity. In the moſt healthy body, alſo, many things always require to be evacuated. The retention of theſe is hurtful, as well as too profuſe an evacuation, or the excretion of thoſe things either ſpontaneouſly or artificially which nature directs to be retained. As the ſolid parts ſometimes become flabby, ſoft, almoſt diſſolved, and unfit for their proper offices, ſo the fluids are ſometimes inſpiſſated, and formed even into the hardeſt ſolid maſſes. Hence impeded actions of the organs, vehement pain, various and grievous diſeaſes. Laſtly, ſome animals are to be reckoned among the cauſes of diſeaſes; namely, ſuch as ſupport their life at the expence of others: and theſe either invade us from without, or take up their reſidence within the body, gnawing the bowels while the perſon is yet alive, not only with great danger and diſtreſs to the patient, but ſometimes even death itſelf.

Man, however, is not left without defence againſt ſo many and ſo great dangers. The human body is poſſeſſed of a moſt wonderful power, by which it preſerves itſelf from diſeaſes, keeps off many, and in a very ſhort time cures ſome already begun, while others are by the ſame means more ſlowly brought to a happy concluſion. This power, called the *autocrateia*, or *vis medicatrix naturæ*, well known both to phyſicians and philoſophers, by whom it is moſt juſtly celebrated; this alone is ſufficient for curing many diſeaſes, and is of ſervice in all. Nay, even the beſt medicines operate only by exciting and properly directing this force; for no medicine will act on a dead carcaſe. But though phyſicians juſtly put confidence in this power, and though it generally cures diſeaſes of a ſlighter nature, it is not to be thought that thoſe of the more grievous kind are to be left to the unaſſiſted efforts of the *vis medicatrix*. Phyſicians therefore have a twofold error to avoid, namely, either deſpiſing the powers of nature too much, or putting too great confidence in them; becauſe in many diſeaſes theſe efforts are either too feeble or too violent, inſomuch that ſometimes they are more to be dreaded than even the diſeaſe itſelf. So far therefore is it from being the duty of a phyſician always to follow the footſteps of nature, that it is often neceſſary for him to take a directly contrary courſe, and oppoſe her efforts with all his might.

164 Of the chemical analyſis of the animal ſolids.

In his ſecond chapter, Dr Gregory tells us, that the animal ſolid, when chemically examined, yields earth, oil, ſalt, water, phlogiſton, and a great quantity of mephitic air. Theſe elements are found in various proportions in the different parts of the body; and hence theſe parts are endowed with very different mechanical powers, from the hardeſt and moſt ſolid bone, to the ſoft and almoſt fluid retina. Nay, it is principally in this difference of proportion between the quantities of the different elements, that the difference between the ſolid and fluid parts of the animal conſiſt, the former having much more earth and leſs water in their compoſition than the latter. The coheſion, he thinks, is owing to ſomething like a chemical attraction of the elements for one another; and its cauſe is neither to be ſought for in the gluten, fixed air, nor earth. This attraction, however, is not ſo ſtrong, but that even during life the body tends to diſſolution; and immediately after death putrefaction commences, provided only there be as much moiſture in it as will allow an inteſtine motion to go on. The greater the heat, the ſooner does putrefaction take place, and with the greater rapidity doth it proceed; the mephitic air flies off, and together with it certain ſaline particles; after which, the coheſion of the body being totally deſtroyed, the whole falls into a putrid colluvies, of which at length all the volatile parts being diſſipated, nothing but the earth is left behind.

This analyſis, he owns, is far from being perfect; becauſe nobody hath ever been able, by combining the chemical principles of fleſh, to reproduce a compound any thing like what the fleſh originally was: but, however imperfect the analyſis may be, it ſtill hath the advantage of ſhowing in ſome meaſure the nature and cauſes of certain diſeaſes, and thus leads phyſicians to the knowledge of proper remedies.

165 Of the coheſion, flexibility, and elaſticity of the ſolids.

The ſolid parts are fitted for the purpoſes of life in three ſeveral ways; namely, by their coheſion, their flexibility, and their elaſticity, all of which are various in the various parts of the body. Moſt of the functions of life conſiſt in various motions. In ſome the moſt violent and powerful motions are required; and therefore ſuch a degree of coheſion is neceſſary in theſe parts as will be ſufficient for allowing them to perform their offices without any danger of laceration. It is therefore neceſſary that ſome of the ſolid parts ſhould be more flexible than others; and it is likewiſe neceſſary that theſe parts, along with their flexibility ſhould have a power of recovering their former ſhape and ſituation, after the removal of the force by which they were altered.

Theſe variations in flexibility, within certain limits, ſeldom produce any material conſequence with regard to the health: though ſometimes, by exceeding the proper bounds, they may bring on real and very dangerous diſeaſes; and this either by an exceſs or diminution of their coheſion, flexibility, or elaſticity. By augmenting the coheſion, the elaſticity is alſo for the moſt part augmented, but the flexibility diminiſhed; by diminiſhing the coheſion, the flexibility becomes greater, but the elaſticity is diminiſhed.

The cauſes of theſe affections, though various, may be reduced to the following heads. Either the chemical compoſition of the matter itſelf is changed; or, the compoſition remaining the ſame, the particles of the ſolid may be ſo diſpoſed, that they ſhall more or leſs ſtrongly attract one another. As to the compoſition, almoſt all the elements may exiſt in the body in an undue proportion, and thus each contribute its ſhare to the general diſorder. But of many of theſe things we know very little; only it is apparent, that the fluid parts, which conſiſt chiefly of water, and the ſolid, which are made up of various elements, are often in very different proportions: the more water, the leſs is the coheſion or elaſticity, but the greater the flexibility; and the reverſe, if the ſolid or earthy part predominates.

The remote cauſes of theſe different ſtates, whether prediſponent or exciting, are very various. In the firſt place, idioſyncraſy itſelf, or the innate conſtitution of the body, contributes very much to produce the abovementioned effects. Some have naturally a much harder and drier temperament of the body than others; men, for inſtance, more than women; which can with the utmoſt difficulty, indeed ſcarce by any means whatever, admit of an alteration. The ſame thing takes place at different periods of life; for, from firſt to laſt, the human body becomes always drier and more rigid. Much alſo depends on the diet made uſe, which always produces a correſponding ſtate of the ſolids, in proportion to its being more or leſs watery. Neither are there wanting the moſt weighty reaſons for believing, that not only the habit of the body, but even the diſpoſition of the mind, depends very much on the diet we make uſe of. The good or bad concoction of the aliment alſo, the application of the nouriſhment prepared from it, and likewiſe the ſtate of the air with regard to moiſture or dryneſs, affect the temperament of the body not a little; and hence thoſe who inhabit mountainous or dry countries, are very different from the inhabitants of low marſhy places. Laſtly, the manner of living contributes ſomewhat to this effect: Exerciſe preſſes out and exhales the moiſture of the body, if in too great quantity; on the contrary, ſloth and lazineſs produce an effect directly oppoſite, and cauſe a redundancy of humours.

But, putting the chemical compoſition of the ſolid parts out of the queſtion altogether, they may be affected by many other cauſes. The condenſation, for inſtance, or compreſſion of the particles, whether by mechanical cauſes, or by means of cold or heat, makes a conſiderable alteration in the ſtrength and elaſticity of every ſolid body. How much mechanical preſſure contributes to this may be underſtood from the experiments of Clifton Wintringham: and hence alſo are we to deduce the reaſon of many facts of the higheſt importance in the animal-œconomy; namely, the growth, ſtate, decreaſe, of the body; its rigidity daily increaſing; and at laſt the unavoidable death incident to old age from a continuance of the ſame cauſes.

Perhaps the different denſity of the ſolids is in ſome meaſure owing to Nature herſelf; but it ſeems rather to depend more on the powers of exerciſe or inactivity in changing the ſtate of the ſolids, the effects of which on the body, whether good or bad, may hence be eaſily underſtood.

Heat relaxes and expands all bodies, but cold renders them more denſe and hard; the effects of which on the human body are well known to moſt people. Though the body is found to preſerve a certain degree of heat almoſt in every ſituation, it is impoſſible but that its ſurface muſt be affected by the temperature of the ambient atmoſphere, and we have not the leaſt reaſon to doubt that every part of the body may thus feel the effects of that temperature. What a difference is there between one who, expoſed to the ſouth-wind, becomes lazy and languid, ſcarce able to drag along his limbs; and one who feels the force of the cold north-wind, which renders the whole body alert, ſtrong, and fit for action.

That theſe various cauſes, each of which is capable of affecting the conſtitution of the body when taken ſingly, will produce much greater effects when combined, is ſufficiently evident. The experiments of Bryan Robinſon, the effects of the warm bath, and indeed daily experience, ſhew it fully.

166 Of the ſtructu of the a mal ſoli

It is not yet certainly known what is the ultimate ſtructure of the minuteſt parts of the animal-ſolid; whether it conſiſts of ſtraight fibres or threads, whoſe length is very conſiderable in proportion to their breadth, variouſly interwoven with one another, as Boerhaave ſuppoſes; or of ſpiral ones, admirably convoluted and interwoven with one another, as ſome microſcopical experiments ſeem to ſhew; or whether the cellular texture is formed of fibres and *laminæ*, and from thence the greateſt part of the body, as the celebrated Haller hath endeavoured to prove.

167 The ce lar tex

The cellular texture is obſerved throughout the whole body: it ſurrounds and connects the fibres themſelves, which are ſufficiently apparent in many of the organs; and ſlightly joins the different parts which ought to have any kind of motion upon the neighbouring ones. By a condenſation of the ſame ſubſtance alſo, the ſtrongeſt, and what ſeem the thinneſt, membranes are formed; the moſt ſimple of which, being accurately examined, diſcover the cellular ſtructure. This cellular ſubſtance ſometimes increaſes to a ſurpriſing degree, and all parts formed of it, membranes, veſſels, &c. eſpecially by a gentle diſtenſion; for a ſudden and violent diſtenſion either breaks it altogether, or renders it thinner. Sometimes alſo it grows between neighbouring parts, and joins thoſe which nature hath left free. Preternatural concretions of this kind are often obſerved after an inflammation of the lungs or of the abdominal viſcera; and theſe new membranes are found to be truly cellular. This ſubſtance, when cut, or by any other means divided, grows together of its own accord; but if, by reaſon of very great inflammation and ſuppuration, a large portion of the cellular texture hath been deſtroyed, it is never again renewed, and an ugly ſcar is left. It is even ſaid, that this ſubſtance, in certain caſes, is capable of joining the parts either of the ſame body with one another, or of a foreign body with them; and upon this, if on any foundation, reſts the art of Taliacotius, and that of tranſplanting teeth, lately ſo much talked of.

The cellular texture is in ſome places merely a kind of network, in others filled with fat. Wherever too great bulk or compreſſion would have been inconvenient or dangerous, as in the head, lungs, eyes, eyebrows, penis, ſcrotum, &c. there it collects no fat, but is lax, and purely reticulated; but between the muſcles of the body and limbs below the ſkin, in the abdomen, eſpecially in the omentum and about the kidneys, very much fat is ſecreted and collected.

168 the fat. The fat is a pure animal-oil, not very different from the expreſſed and mild vegetable ones; during life it is fluid, but of different degrees of thickneſs in different parts of the body. It is ſecreted from the blood, and is often ſuddenly reabſorbed into it, though pure oil is very rarely obſerved in the blood. It is indeed very probable, that oil, by digeſtion, partly in the primæ viæ, and partly in the lungs, is converted into gluten, and this again into oil by means of ſecretion; though no organs ſecreting the fat can be ſhewn by anatomiſts. It is, however, probable that there are ſuch organs; and that the cellular texture has ſome peculiar ſtructure in thoſe parts which are deſtined to contain the fat already ſecreted, without ſuffering it to paſs into other places; for it never paſſes into thoſe parts which are purely reticulated, although the cellular texture is eaſily permeable by air or water over the whole body from head to foot.

The fat is augmented by the uſe of much animal-food, or of any other that is oily and nouriſhing, provided the digeſtion is good; by the uſe of ſtrong drink, eſpecially malt-liquor; by much reſt of body and mind, much ſleep and inactivity, caſtration, cold, repeated bloodletting, and in general by whatever diminiſhes the vital and animal powers. Much, however, depends on the conſtitution of the body itſelf; nor is it poſſible to fatten a human creature at pleaſure like an ox. A certain degree of fatneſs, according to the age of the perſon, is a ſign and effect of good health; but when too great, it becomes a diſeaſe of itſelf, and the cauſe of other diſeaſes. It may always be very certainly removed by ſtrong exerciſe, little ſleep, and a ſpare and ſolid diet. The fat always makes up a conſiderable part of the bulk of the body, and very often by far the greateſt part. Its uſe ſeems to be to make the motion of the body more eaſy and free by leſſening the friction of the moving parts, and thus preventing the abraſion of the ſolids, which would otherwiſe happen. It is alſo of uſe to hinder the parts from growing together, which ſometimes happens when, by an ulcer or any other accident, a part of the cellular texture containing the fat is deſtroyed. Beſides all this, the fat contributes not a little to the beauty of the body, by filling up the large interſtices between the muſcles, which would otherwiſe give the perſon a deformed and ſhocking appearance. It is thought to be nutritious, when abſorbed from its cells by the blood; but of this we have no great certainty. It ſeems to have ſome power of defending from the cold, ſeeing nature hath beſtowed it in very great quantity on thoſe animals which inhabit the colder regions.

169 vital Thoſe parts of the body which enjoy ſenſe and mobility, are called *living* or *vital* ſolids. They are the brain, cerebellum, medulla oblongata, ſpinal marrow, the nerves ariſing from theſe and diffuſed throughout the whole body, and which are diſtributed through the various organs of ſenſe and through the muſcles, and laſtly the muſcles themſelves. Senſation is much more general than mobility, as being common to all the parts already mentioned. Mobility is proper to the muſcular fibres alone: wherever there is ſenſation, therefore, we may believe that there are nerves; and wherever there is mobility, we may believe that muſcular fibres exiſt. Nay, even mobility itſelf ſeems to originate from the connection which the muſcles have with the nerves: for ſoon after the nerves are compreſſed, or tied, or cut, the muſcles to which they are diſtributed loſe their faculties; which happens, too, when the brain itſelf, or the origin of the nerves, is affected. Some reckon that the muſcles are produced from the nerves, and conſiſt of the ſame kind of matter. Both indeed have a ſimilar ſtructure, as being fibrous and of a white colour: for the muſcles when well freed from the blood, of which they contain a great abundance, are of this colour as well as the nerves; neither can the nervous fibres by any means be diſtinguiſhed from the muſcular fibres themſelves. Both have alſo ſenſation; and both ſtimulants and ſedatives act in the ſame manner, whether they be applied to the muſcles themſelves, or to the nerves.

It is difficult for us to diſcover the origin of many parts of the body, or to aſcertain whether they are produced all at the ſame time, or one after another: yet it muſt be owned, that many of the muſcular parts are obſerved to have attained a remarkable degree of ſtrength, while the brain is ſtill ſoft and almoſt fluid; and that the action of theſe muſcular parts is required for the action and growth of the brain. The muſcles are alſo of a much firmer contexture than the nerves; and enjoy a power of their own, namely, that of irritability, of which the nerves never participate. Of neceſſity, therefore, either the muſcles muſt be conſtructed of ſome kind of matter different from that of the nerves; or if both are made of the ſame materials, their organization muſt be exceedingly different. But if the ſubſtance of the muſcles and nerves is totally different, we may eaſily be convinced that much of the one is always mixed with the other; for it is impoſſible to prick a muſcle even with the ſmalleſt needle, without wounding or lacerating many nervous fibres at the ſame time. Seeing, therefore, there is ſuch a cloſe connection between the muſcles and nerves both as to their functions and ſtructure, they are deſervedly reckoned by phyſiologiſts to be parts of the ſame genus, called the *genus nervoſum*, or *nervous ſyſtem*.

170 Of the ſenſe of feeling. After treating of ſenſe in general, the Doctor proceeds to conſider particularly each of the ſenſes both external and internal. He begins with the ſenſe of feeling, as being the moſt ſimple, and common to every part of the nervous ſyſtem. In ſome places, however, it is much more acute than in others; in the ſkin, for inſtance, and eſpecially in the points of the fingers. Theſe are reckoned to have *nervous papillæ*, which by the influx of the blood are ſomewhat erected in the action of contact, in order to give a more acute ſenſation; though indeed this opinion ſeems rather to be founded on a conjecture derived from the ſtructure of the tongue, which is not only the organ of taſte, but alſo a moſt delicate organ of touch, than upon any certain obſervations.

From the ſenſe of feeling, as well as all the other ſenſes, either pain or pleaſure may ariſe; nay, to this ſenſe we commonly refer both pain and almoſt all other troubleſome ſenſations, tho' in truth pain may ariſe from every vehement ſenſation. It is brought on by any great force applied to the ſentient part; whether this force comes from within or from without. Whatever, therefore, pricks, cuts, lacerates, diſtends, compreſſes, bruiſes, ſtrikes, gnaws, burns, or in any manner of way ſtimulates, may create pain. Hence it is ſo frequently conjoined with ſo many diſeaſes, and is often more intolerable even than the diſeaſe itſelf. A moderate degree of pain ſtimulates the affected part, and by degrees the whole body; produces a greater flux of blood and nervous power to the part affected; and often ſtimulates to ſuch motions as are both neceſſary and healthful. Hence, pain is ſometimes to be reckoned among thoſe things which guard our life. When very violent, however, it produces too great irritation, inflammation and its conſequences, fever, and all thoſe evils which flow from too great force of the circulation; it diſorders the whole nervous ſyſtem, and produces ſpaſms, watching, convulſions, delirium, debility, and fainting. Neither the mind nor body can long bear very vehement pain; and indeed nature hath appointed certain limits, beyond which ſhe will not permit pain to be carried, without bringing on a delirium, convulſions, ſyncope, or even death, to reſcue the miſerable ſufferer from his torments.

171 Of pain.

Long continued pain, even though in a more gentle degree, often brings on a debility, torpor, palſy, and rigidity of the affected part. But if not too violent, nor accompanied with fever, ſickneſs, or anxiety, it ſometimes ſeems to contribute to the clearneſs and acuteneſs of the judgment, as ſome people teſtify who have been afflicted with the gout.

172 Anxiety.

Anxiety is another diſagreeable ſenſation, quite different from pain, as being more obtuſe and leſs capable of being referred to any particular part, though frequently more intolerable than any pain. But we muſt take care to diſtinguiſh between this anxiety of which we treat in a medical ſenſe, and that which is ſpoken of in common diſcourſe. The latter doth not at all depend on the ſtate of the body, but belongs entirely to the mind; and ariſes from a ſenſe of danger, or a foreſight of any misfortune. The former is truly corporeal; and derives, no leſs than pain, its origin from a certain ſtate of the body. Notwithſtanding this difference, however, it is very poſſible for both theſe kinds of anxiety to be preſent at the ſame time, or for the one to be the cauſe of the other. A very great bodily anxiety will ſtrike fear and anxiety into the moſt reſolute mind; and mental anxiety, on the contrary, if very violent and long-continued, may induce the former, by deſtroying the powers of the body, eſpecially thoſe which promote the circulation of the blood.

Anxiety, in the medical ſenſe of the word, ariſes in the firſt place from every cauſe diſturbing or impeding the motion of the blood through the heart and large veſſels near it. Anxiety, therefore, may ariſe from many diſeaſes of the heart and its veſſels, ſuch as its enlargement, too great conſtriction, oſſification, polypus, palpitation, ſyncope, inflammation, debility, and alſo ſome affections of the mind. It is likewiſe produced by every difficulty of breathing, from whatever cauſe it may ariſe; becauſe then the blood paſſes leſs freely through the lungs: anxiety of this kind is felt deep in the breaſt. It is ſaid alſo to ariſe from the difficult paſſage of the blood through the liver or other abdominal viſcera.

A certain kind of anxiety is very common and troubleſome to hypochondriacal people; and ariſes from the ſtomach and inteſtines being either loaded with indigeſted and corrupted food, or diſtended with air produced by fermentation and extricated from the aliments. By ſuch a load, or diſtenſion, the ſtomach, which is a very delicate organ, becomes greatly affected. Beſides, the free deſcent of the diaphragm is thus hindered, and reſpiration obſtructed. Anxiety of this kind is uſually very much and ſuddenly relieved by the expulſion of the air; by which, as well as by other ſigns of a bad digeſtion, it is eaſily known. In theſe caſes the anxiety is uſually, tho' with little accuracy, referred to the ſtomach.

Anxiety alſo frequently accompanies fevers of every kind, ſometimes in a greater and ſometimes in a leſſer degree. In this caſe it ariſes as well from the general debility, as from the blood being driven from the ſurface of the body and accumulated in the large veſſels; as in the beginning of an intermittent fever. Or it may ariſe from an affection of the ſtomach, when overloaded with crude, corrupted aliment; or diſtended and nauſeated with too much drink, eſpecially medicated drink. As the fever increaſes, the anxiety of the patient becomes greater and greater; remarkably ſo, according to the teſtimony of phyſicians, either immediately before the criſis, or on the night preceding it; as before the breaking out of exanthemata, hæmorrhagy, ſweat, or diarrhœa, which ſometimes remove fevers. The patient feels likewiſe an anxiety from the ſtriking in of any eruption or critical metaſtaſis. This ſenſation alſo accompanies fevers and moſt other diſeaſes, when the vital power is exhauſted, and death approaches, of which it is the forerunner and the ſign. It happens at that time, becauſe the vital powers, unable to perform their functions, cannot make the blood circulate. But what kind of anxiety this is, the other ſigns of approaching death ſhew very evidently. Moreover, even in the time of ſleep, anxiety may ariſe from the ſame cauſes: hence frightful dreams, which frequently diſturb our repoſe with ſurpriſe and terror.

173 Itching.

Itching, an uneaſy ſenſation, with a deſire of ſcratching the place affected, is often very troubleſome, altho' it ſeems to be more akin to pleaſure than to pain. As pain proceeds from too great an irritation, either chemical or mechanical, ſo does itching proceed from a ſlight one. Titillation, or friction, of a woollen ſhirt, for inſtance, upon the ſkin of a perſon unaccuſtomed to it, and of a delicate conſtitution, excites itching; as do alſo many acrid foſſils, vegetables, and animals. Hence an itching is the firſt ſenſation after the application of cantharides, although the ſame, when augmented, becomes painful. The ſame effect is produced by any thing acrid thrown out upon the ſkin; as in exanthematic fevers, the diſeaſe called the *itch*, &c. Lice, worms, eſpecially aſcarides, irritating either the ſkin or the inteſtines, excite a troubleſome itching. Certain ſpecies of internal itching excites people to many neceſſary actions both in a diſeaſed and healthy ſtate; ſuch as the excretion of the fæces and urine, coughing,

ing, ſneezing, and the like.

Too acute a ſenſation over the whole body is very rarely if ever obſerved. In a particular part the ſenſe of feeling is often more acute than it ought to be, either from the cuticle itſelf being too thin and ſoft, or being removed; or from the part itſelf being inflamed, or expoſed to too great heat. It becomes obtuſe, or is even quite deſtroyed over the whole body, or in great part of it, from various affections of the brain and nerves; as when they are wounded, compreſſed, or defective in vital power. This is called *anaeſtheſia*, and ſometimes accompanies palſy.

This ſenſe may be deficient in a particular part, either from the nerve being diſeaſed, or from its being compreſſed or wounded, or from the part itſelf being expoſed to too great a degree of cold;—or from the ſcarf-ſkin which covers it being vitiated, either becoming too thick or hard, by the handling of too rough, or hard, or hot bodies, as is the caſe with glaſs-makers and ſmiths; or from the elevation of the cuticle from the ſubjacent cutis, or true ſkin itſelf, by the interpoſition of blood, ſerum, or pus; or from the cutis being macerated, relaxed, or become torpid, which ſometimes happens to hydropic perſons; or laſtly, from the whole organ being corrupted by gangrene, burning, cold, or contuſion. This ſenſe is very rarely depraved, unleſs perhaps in the caſe of delirium, when all the functions of the brain are diſturbed in a ſurpriſing manner.

174 taſte. The ſenſe next to be conſidered is that of taſte, the principal organ of which is the tongue; and the nearer the tip of it, the more acute is the ſenſe, and the nearer the glottis ſo much the more obtuſe. It muſt be owned, however, that ſome kind of acrid ſubſtances, the taſte of which is ſcarce perceived upon the tip of the tongue, excite a moſt vehement ſenſation about its roots, or even in the throat itſelf. The tongue is endowed with many large and beautiful nervous papillæ, which ſeem to be the chief ſeat of this ſenſe, and in the act of taſting are elevated and erected in order to give the more acute ſenſation.

Nothing can be taſted which is not ſoluble in the ſaliva, that, being applied in a fluid form, it may pervade the involucra of the tongue, and affect its nervous pulp; and hence inſoluble earths are quite inſipid. Neither is it ſufficient for a body to be ſoluble that it may be taſted: it muſt alſo have ſomething in it ſaline, or at leaſt acrid, in order to ſtimulate the nervous ſubſtance; and hence, whatever has leſs ſalt than the ſaliva is totally inſipid.

The taſte is rarely found to be too acute, unleſs through a fault in the epidermis which covers the tongue. If this is removed or wounded, or covered with ulcers, aphthæ, &c. then the taſte, becoming too acute, is painful; or ſometimes no other ſenſation than that of pain is felt. It may be impaired, as well as the ſenſe of feeling, from various diſeaſes of the brain and nerves; of which, however, the inſtances are but rare. In ſome people it is much more dull than in others; and in ſuch the ſenſe of ſmelling is uſually deficient alſo. The taſte is moſt commonly deficient on account of the want of ſaliva; for a dry tongue cannot perceive any taſte: hence this ſenſe is very dull in many diſeaſes, eſpecially in fevers, catarrhs, &c. as well on account of the defect of ſaliva, as of appetite, which is of ſo much ſervice in a ſtate of health; or by reaſon of the tongue being covered with a viſcid mucus.

The taſte is frequently depraved; namely, when we have a perception of taſte without the application of any thing to the tongue; or, if any thing is applied to it, when we perceive a taſte different from what it ought to be. This happens for the moſt part from a vitiated condition of the ſaliva, which is itſelf taſted in the mouth. Hence we may perceive a ſweet, ſaline, bitter, putrid, or rancid taſte, according to the ſtate of the ſaliva: which may be corrupted either from the general vitiated condition of the maſs of humours, or the glands which ſecrete it; of the mouth itſelf; or even of the ſtomach, the vapours and eructations of which riſe into the mouth, eſpecially when the ſtomach is diſeaſed.

Beſides the faults of the ſaliva, however, the taſte may be vitiated from other cauſes; as for inſtance the condition of the nervous papillæ. This, however, is as yet but little known to us; for the taſte is ſometimes plainly vitiated when at the ſame time the ſaliva appears quite inſipid when taſted by other people.

Phyſicians, in almoſt every diſeaſe, but eſpecially in fevers, inquire into the ſtate of the tongue; not, indeed, without the greateſt reaſon: for from this they can judge of the condition of the ſtomach; of the thirſt, or rather the occaſion the patient has for drink, when, on account of his delirium or ſtupor, he neither feels his thirſt, nor is able to call for drink. And laſtly, from an inſpection of the tongue, phyſicians endeavour to form ſome judgment concerning the nature, increaſe, and remiſſion of the fever.

The next ſenſe conſidered by our author is that of ſmell. 175 Of ſmell. Its ſeat is in that very ſoft and delicate membrane, filled with nerves and blood-veſſels, which covers the internal parts of the noſe, and the various ſinuſes and cavities proceeding from thence. This ſenſe is more acute about the middle of the ſeptum, and the *oſſa ſpongioſa*, where the membrane is thicker and ſofter, than in the deeper cavities, where the membrane is thinner, leſs nervous, and leſs filled with blood-veſſels; although even theſe do not ſeem to be altogether deſtitute of ſmelling.

As by our taſte we judge of the ſoluble parts of bodies, ſo by our ſmell we judge of thoſe very volatile and ſubtile parts which fly off into the air; and like the organ of taſte, that of ſmell is kept moiſt, that it may have the more exquiſite ſenſation, partly by its proper mucus, and partly by the tears which deſcend from the eyes.

Some kinds of odours greatly affect the nervous ſyſtem, and produce the moſt ſurpriſing effects. Some gratefully excite it, and immediately recruit the ſpirits when almoſt ſinking; while ſome produce fainting, nay, as it is alleged, even ſudden death. To this head alſo are we to refer thoſe antipathies, which, though truly ridiculous, are often not to be ſubdued by any force of mind.

This ſenſe is ſometimes too acute, as well from ſome diſeaſe in the organ itſelf, which happens more rarely, as from the too great ſenſibility of the nervous ſyſtem in general, as is ſometimes obſerved in nervous fevers, phrenitis, and hyſterics. It is more frequently, however, too dull, either from diſeaſes of the brain and nerves, as from ſome violence done to the head, or from ſome internal cauſe; or it may proceed from a dryneſs of the organ itſelf, either on account of the cuſtomary humours being ſuppreſſed or turned another way, or from the membranes being oppreſſed with too great a quantity of mucus or of tears. Of both theſe caſes we have inſtances in the catarrh, where at firſt the noſtrils are dry, but afterwards are deluged with a thin humour, or ſtopped up with a thick one. But in theſe, and many other examples, the membrane of the noſe itſelf is affected with inflammation, relaxation, or too great tenſion, by which it is impoſſible but the nerves, which conſtitute a great part of it, muſt be vitiated. It is evident alſo, that whatever obſtructs the free entrance of the air into the noſtrils, or impedes its paſſage thro' them, muſt prove detrimental to the ſenſe of ſmelling.

176 Of hearing. The ſenſe of hearing is more frequently vitiated than almoſt any of the reſt, as having a moſt delicate organ, and one compoſed of many and very ſmall parts, of which an account is given under the article Anatomy, n° 405.—It frequently becomes too acute; either from the general habit of the body being too irritable, ſuch as often happens to hyſterical and lying-in women; or from too great a ſenſibility of the brain itſelf, which is not unfrequently obſerved in fevers, as well as in phrenitis, and ſometimes in the true mania; or it may be from a diſeaſe of the ear itſelf, as when it is affected with inflammation, pain, or too great tenſion.—It may be rendered dull, or even be altogether deſtroyed, ſo that the perſon ſhall become totally deaf, from the ſame cauſes acting with different degrees of force. This happens eſpecially from the want of the external ear; or the from meatus auditorius being ſtopped up with mucus, wax, or other matters; or from the ſides of the canal growing together, as ſometimes happens after ſuppuration, or the ſmall-pox; or by the membrane of the tympanum becoming rigid or relaxed, or being eroded or ruptured; or the tympanum itſelf, or the euſtachian tube, may from certain cauſes be obſtructed; or ſome of the little bones or membranes, or ſome of the muſcles of the labyrinth itſelf, may be affected with concretion, ſpaſm, palſy, or torpor; or laſtly, it may happen from diſeaſes of the brain and nerves, all the organs of hearing remaining ſound. Hence deafneſs is often a nervous diſeaſe, coming ſuddenly on, and going off of its own accord. Hence alſo it is common in old people, all of whoſe ſolid parts are too rigid, while their nervous parts have too little ſenſibility.

Perſons labouring under fevers, eſpecially of the typhus kind, often become deaf. When this comes on along with other ſigns of an oppreſſed brain, and a great proſtration of ſtrength, it may be a very bad ſign; but for the moſt part it is a very good one, even though accompanied with ſome degree of torpor or ſleepineſs.

A very common diſeaſe in the ſenſe of hearing is when certain ſounds, like thoſe of a drum, a bell, the falling of water, &c. are heard without any tremor in the air, or without a ſound perſon's hearing any thing. This diſeaſe is called *tinnitus aurium*, of which various kinds have been obſerved. For the moſt part it is a very ſlight tranſient diſorder; but ſometimes it is moſt obſtinate, long-continued, and troubleſome. It ſometimes ariſes from the ſlighteſt cauſe, ſuch as any thing partially ſtopping up the meatus auditorius or euſtachian tube itſelf, ſo that acceſs is in part denied to the air; whence it happens that the latter ſtrikes the membrane of the tympanum, or perhaps the interior parts, unequally, and with too much force. Hence *bombi*, a kind of tinnitus, are heard even by the moſt healthy when they yawn.

A much more frequent and troubleſome ſpecies of tinnitus accompanies many diſeaſes both of the febrile and nervous kind. This is occaſioned partly by the increaſed impetus of the blood towards the head, with an increaſe of ſenſibility in the nervous ſyſtem itſelf, ſo that the very beatings of the arteries are heard; and partly from the increaſed ſenſation and mobility of the nerves and muſcles of the labyrinth: whence it happens, that the parts which ought to be at reſt until excited by the tremor of the air, begin to move of their own accord, and impart their motion to other parts which are already in a morbid ſtate of too great ſenſibility.

A tinnitus ſometimes ariſes from any vehement affection of the mind; ſometimes from a diſorder in the ſtomach; ſometimes from a rheumatic diſorder affecting the ears and head; or from a catarrh, which commonly affects the tube. Sometimes, however, the tinnitus alone affects the patient; and even this is a diſeaſe of no ſmall conſequence. Theſe various cauſes, however, both of this and other diſorders of the hearing, are often very difficult to be diſtinguiſhed, as well on account of the inacceſſible ſituation of the organ, as on account of the little knowledge we have of its action. But from whatever cauſe it ariſes, both this and the other various affections of the hearing, can neither be cured certainly nor eaſily.

177 Of viſion. Concerning the nature of the ſenſe of ſight, ſee Anatomy, n° 406, and (the *Index* ſubjoined to) Optics.—Of this ſenſe ſome ſlight diſorders, or rather varieties, are often obſerved. 178 Of ſhort-ſighted people. Thoſe perſons are called *ſhort-ſighted* who cannot ſee diſtinctly unleſs the object be very near them. This diſorder ariſes from too great a refraction of the rays by reaſon of their being too ſoon collected into a focus by the cryſtalline lens, and diverging again before they fall upon the retina, by which means they make an indiſtinct picture upon it. The moſt uſual cauſe is too great a convexity of the eye or ſome of its humours, as too prominent a cornea. It is a diſorder common to young people, which is ſometimes removed when they grow older.—As ſoon as the firſt approaches of ſhort-ſightedneſs are obſerved, it is ſuppoſed it may be obviated by the perſon's accuſtoming himſelf to view remote objects, and keeping his eyes off very ſmall and near ones; as, on the contrary, it may be brought on by the oppoſite cuſtom; becauſe the eye accommodates itſelf ſomewhat to the diſtances of thoſe objects which it is accuſtomed to view. But a concave glaſs, which cauſes the rays of light to diverge more than naturally they would before falling upon the cornea, is the moſt ſimple and certain remedy.

179 Long-ſighted people. *Long-ſighted* people are thoſe who cannot ſee an object diſtinctly unleſs it be at a conſiderable diſtance from them. This ariſes from cauſes contrary to the former; namely, the eye being too flat, ſo that there is no room for refracting the rays and bringing them

into a focus. Hence this defect is common in old people, and remedied by the uſe of convex glaſſes.

Thoſe are called *nyctalopes* who ſee better with a very weak than with a ſtrong light. It is a defect very ſeldom to be met with in the human race, though every perſon is ſenſible of it who hath been long kept in the dark and is then ſuddenly brought into the light. The diſeaſe ariſes from too great a ſenſibility of the retina, and the pupil being too open.

180 The ſight is liable to many and grievous diſorders. It is ſharpened beyond meaſure, ſo that the perſon either perceives nothing diſtinctly, or with great pain, from the ſame cauſes that induce a ſimilar diſorder in the other ſenſes; namely, exceſſive ſenſibility in the general habit of body; or a particular ſtate of the brain common in phrenitics, or even in thoſe afflicted with fevers ariſing from inflammation or too great excitement; though more frequently from the condition of the eye itſelf, one becomes unable to bear the light. The inflammation of the tunica adnata, and the fore-part of the ſclerotica, is communicated to the back parts of it, and from thence to the choroides and retina itſelf. Hence the light becomes intolerable, and viſion is attended with pain and great irritation, ſometimes inducing or augmenting a delirium.

The ſenſe of ſeeing is made dull, or even totally aboliſhed, by age; the aqueous humour not being ſupplied in ſufficient quantity, and the cornea and lens, or the vitreous humour, becoming ſhrivelled or decayed. It may likewiſe happen from the cornea becoming dry and opaque; which is to be imputed to the languid motion of the blood, and to great numbers of the ſmall veſſels being obſtructed or having their ſides concreted;—or from the cryſtalline lens becoming yellow like amber, and the retina itſelf leſs ſenſible, for old age diminiſhes every ſenſation. It is totally aboliſhed by injuries of the brain, the optic nerve, or the retina, even though the ſtructure of the organ ſhould remain ſound. This diſeaſe is called an *amauroſis*; and is eaſily known by the dilatation and immobility of the pupil, the humours of the eye remaining clear. It is commonly owing to congeſtion of blood; and ſometimes, where no congeſtion of blood can be ſhown, to mere ſtupor of the nerves. If it be only a torpor of part of the retina, we ſee black ſpots in thoſe things at which we look; or flies ſeem to paſs before our eyes, a very bad ſign in fevers, and almoſt always mortal.—The ſight is aboliſhed alſo by the obſcurity or opacity of any of the parts through which the rays ought to paſs and be refracted; as if the cornea loſe its tranſparency by being covered with ſpots; or the aqueous humours become corrupted with blood, ſerum, or pus; or the lens (which often happens and which is called a *cataract*) becomes of a grey or brown colour, or the vitreous humour be in like manner corrupted; or laſtly, when all the humours being diſſolved, confuſed, and mixed together, by inflammation and ſuppuration, either do not ſuffer the light to paſs at all, or to paſs imperfectly and unequally; whence either no image is formed on the retina, or it appears obſcure, diſtorted, imperfect, and ill-coloured.

The ſight is alſo depraved, when things appear to it of a colour different from their own, or even in another ſituation and of another ſhape than they ought to have. This happens from the humours being tinctured with any unuſual colour, as is ſaid to happen in the jaundice; or from an extravaſation and mixture of the blood with the aqueous humour. A ſurpriſing depravation alſo, or conſtant and perpetual defect of viſion, is not unfrequently obſerved in men otherwiſe very healthy, and who ſee quite clearly; namely, that they cannot diſtinguiſh certain colours, green, for example, from red *. Another depravation is, when, without any light being admitted to the eyes, ſparks, ſmall drops of a flame or gold colour, and various other colours, are obſerved to float before us. This is generally a very ſlight and tranſient diſorder, common to thoſe whoſe conſtitutions are very irritable; and ariſes from the ſlight impulſe, as it would ſeem, on the retina, by the veſſels beating more vehemently than uſual. A fiery circle is obſerved by preſſing the eye with the finger after the eye-lids are ſhut. The ſame reaſon, perhaps, may be given for thoſe ſparks which are ſeen by perſons labouring under the falling-ſickneſs, and inceaſing to the ſize of an immenſe and luminous beam before they fall down in convulſions. A ſimilar beam thoſe who have recovered from hanging or drowning teſtify that they have obſerved: for by reaſon of the reſpiration being ſuppreſſed, the veſſels of the head ſwell and compreſs the whole brain and nervous parts of the head. Sparks of the ſame kind, and theſe too of no good omen, are obſerved in patients labouring under a fever, where a phrenitis or fierce delirium is at hand; and likewiſe in thoſe who are threatned with palſy, apoplexy, or epilepſy.—A diſtinct but falſe perception, namely of viſible things which do not exiſt, is to be imputed to ſome injury of the brain, to madneſs or a delirium, not to any diſeaſe of the eye.

181 Squinting. A very frequent defect of viſion remains to be mentioned; namely, ſquinting. A perſon is ſaid to ſquint who has the axes of the eyes more oblique than uſual, and directed to different points. Hence a great deformity, and often an imperfect and confuſed viſion by which the objects are ſometimes ſeen double. It is an evil for the moſt part born with the perſon, and often corrected by thoſe attempts which an infant makes to ſee more pleaſantly and diſtinctly; and this even without being conſcious of its own defects. It is alſo eaſily learned, eſpecially in infants, even without their own knowledge, by that kind of imitation which has a great influence over the human race, eſpecially in their tender years.—It is by no means, however, ſo eaſily unlearned.

Squinting is frequently occaſioned by a ſpaſm, palſy, rigidity, &c. of the muſcles which manage the eye; by epilepſy; by certain diſeaſes of the head, the hydrocephalus eſpecially; or by any great injury done to the head. Sometimes, though very rarely, it comes on ſuddenly without any known cauſe. It is very probable, however, that ſquinting often ariſes from a fault of the retinæ, when their central points, for inſtance, and thoſe ſimilarly placed with reſpect to the centre, do not agree. In this caſe there muſt be a contorſion of the eye, that the object may not be ſeen double. This ſeems alſo to be the reaſon that ſquinting is horribly increaſed when the perſon brings the object near his eye in order to view it more perfectly. Or if the central point of either, or both, of the retinæ be inſenſible,

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* See the article Colours (*incapacity of diſtinguiſhing.*)

ſible, or nearly ſo, it is neceſſary for the perſon to diſtort his eyes that he may have any diſtinct viſion of objects, If the optic nerve had not entered the retina obliquely, but paſſed directly through its centre, we would all either have ſquinted, or ſeen double.

182 Of vertigo.

Phyſicians have referred to the ſenſe of viſion that moſt troubleſome ſenſation which we call a *vertigo:* though it ſeems rather to belong to that of feeling, or of conſciouſneſs; for the diſorder is not removed either in the dark, or by ſhutting the eye-lids. The vertigo takes place when external objects really at reſt ſeem to reel, to whirl round, to tremble, or to move in any manner of way. If the diſorder be very violent, the perſon is neither able to ſee, on account of a dimneſs of ſight; nor can he ſtand, as the powers fail which ought to govern the limbs. A nauſea alſo uſually accompanies the vertigo, and the one generally produces the other.

This diſorder is obſerved to be both the ſymptom and forerunner of ſome dangerous diſeaſes; ſuch as apoplexy, epilepſy, hyſteria; hæmorrhages from the noſe and other parts; ſuppreſſions of the menſes; great plethora; fevers, as well ſuch as are accompanied with debility, as thoſe in which there is an increaſed impetus of the blood towards the head. An injury done to the head alſo, but rarely one done to the eyes unleſs in ſo far as it affects the whole head, brings on a vertigo. A vertigo may be likewiſe produced by a very great and ſudden loſs of blood or other fluid; debility; ſyncope; various diſeaſes of the alimentary canal, of the ſtomach eſpecially; poiſons admitted into the body, particularly of the narcotic kind, as opium, wine, &c and hence vertigo is a ſymptom of every kind of drunkenneſs. Various motions alſo, either of the head or the whole body, being toſſed in a ſhip, eſpecially if the veſſel is ſmall and the ſea runs high, produce a vertigo. In theſe and ſimilar examples, the unuſual and inordinate motions of the blood are communicated to the nervous parts which are in the head; or theſe being affected by ſympathy from the neighbouring parts, produce a confuſed ſenſation as if of a rotatory motion. Nay, it is often produced from an affection of the mind itſelf, as from beholding any thing turned ſwiftly round, or a great cataract, or looking down a precipice, or even by intenſe thought without looking at any thing.

Though a vertigo be for the moſt part a ſymptom and concomitant of other diſeaſes, yet it is ſometimes a primary diſeaſe, returning at intervals, increaſing gradually, and equally impeding and deſtroying the functions of the body and mind.

183 Diſorders of the internal ſenſes.

Having thus treated of the external ſenſes, the Doctor next proceeds to conſider thoſe properly called *internal;* which are, the *memory*, the *imagination*, and the *judgment*. The firſt is leſſened, diſturbed, or even totally deſtroyed, in many diſeaſes, eſpecially thoſe which affect the brain; as the apoplexy, palſy, internal tumours of the head, external violence applied, fevers, eſpecially thoſe in which there is an increaſed motion of the blood towards the head, or where the brain is any other way very much affected. It is very rarely, however, depraved in ſuch a manner that ideas are not repreſented to the mind in their proper order; or if at any time ſuch a diſorder occurs, it is conſidered rather as a diſorder of the imagination, or as a delirium, than a failure of the memory. The mind is ſaid to be diſordered when the perceptions of memory or imagination are confounded with thoſe of ſenſe, and of conſequence thoſe things believed to be now preſent which are really paſt or which never exiſted; or when the ſenſe of the perſon concerning ordinary things is different from that of other people. The general name for ſuch diſorders is *veſania:* if from fever, it is called *delirium*. A general fury without a fever, is called *mania*, or *madneſs:* but a partial madneſs, on one or two points, the judgment remaining ſound in all other reſpects, is called *melancholia*. There is, however, no exact and accurate limits between a ſound mind and madneſs. All immoderate vivacity borders upon madneſs; and, on the other hand, a ſorrowful and gloomy diſpoſition approaches to melancholy.

184 Delirium.

Delirium accompanies fevers of many different kinds. Sometimes it is ſlight, eaſily removed, and ſcarce to be accounted a bad ſign. Often, however, it is very violent, and one of the very worſt of ſigns, requiring the utmoſt care and attention.

A delirium is either fierce or mild. The fierce delirium is preceded and accompanied by a redneſs of the countenance, a pain of the head, a great beating of the arteries, and noiſe in the ears; the eyes in the mean time looking red, inflamed, fierce, ſhining, and unable to bear the light; there is either no ſleep at all, or ſleep troubled with horrid dreams; the wonted manners are changed; an unuſual peeviſhneſs and ill-nature prevail. The depravation of judgment is firſt obſerved between ſleep and waking, and by the perſon's crediting his imagination, while the perceptions of ſenſe are neglected, and the ideas of memory occur in an irregular manner. Fury at laſt takes place, and ſometimes an unuſual and incredible degree of bodily ſtrength, ſo that ſeveral people can ſcarce keep a ſingle patient in his bed.

The mild delirium, on the contrary, is often accompanied with a weak pulſe, a pale collapſed countenance, and a vertigo when the patient ſits in an erect poſture; he is ſeldom angry, but often ſtupid, and ſometimes remarkably grieved and fearful. The loſs of judgment, as in the former kind, is firſt perceived when the patient is half awake; but a temporary recovery enſues upon the admiſſion of the light and the converſation of his friends. The patient mutters much to himſelf, and attends little to the things around him; at laſt, becoming quite ſtupid, he neither feels the ſenſations of hunger or thirſt, nor any of the other propenſities of nature, by which means the urine and excrements are voided involuntarily. As the diſorder increaſes, it terminates in ſubſultus tendinum, tremors, convulſions, fainting, and death. The other ſpecies of delirium alſo frequently terminates in this, when the ſpirits and ſtrength of the patient begin to fail.

The ſymptoms accompanying either of theſe deliria, ſhew an unuſual, inordinate, and unequal motion of the blood through the brain, and a great change in that ſtate of it which is neceſſary to the exerciſe of the mental powers. It is ſufficiently probable, that an inflammation of the brain, more or leſs violent and general, ſometimes takes place, although the ſigns of univerſal inflammation are frequently ſlight. This we learn from the diſſection of dead bodies, which often ſhew an unuſual redneſs of the brain or of ſome of its parts, or ſometimes an effuſion or ſuppuration.

The ſtate of the brain, however, may be much affected, and a delirium induced, by many other cauſes beſides the motion of the blood. In many fevers, typhus, for inſtance, the nervous ſyſtem itſelf is much ſooner and more affected than the blood; and though the morbid affections of the nervous ſyſtem are as inviſible to the ſenſes as the healthy ſtate of it, the ſymptoms of its injuries plainly ſhew that its action, or *excitement* as ſome call it, is unequal and inordinate. In this way, too, a delirium is produced by ſeveral poiſons.

185 The pathology of melancholy and mania is much more obſcure; as coming on without any fever, or diſturbance in the blood's motion. Often alſo they are hereditary, depending on the original ſtructure of the body, eſpecially of the brain; the fault of which, however, cannot be detected by the niceſt anatomiſt. It is known, however, that various diſeaſes of the brain, obſtructions, tumours, either of the brain itſelf, or of the cranium preſſing upon it, any injury done to the head, and, as ſome phyſicians relate, the hardneſs and dryneſs of the brain, and ſome peculiar irritations affecting the nervous ſyſtem, are capable of bringing on this malady. And indeed ſo great is the irritation of the nervous ſyſtem in mad people, that they often ſleep little or none for a long time.—Yet even this ſo defective and imperfect knowledge of the diſeaſes of the brain and nerves, is by no means free from difficulties. For tho' we know that the brain, or a certain part of it, is hurt, or that it is irritated by a ſwelling, or a pointed bone growing into it, nobody can foretel how great, or what may be the nature of the malady from ſuch a hurt: for examples are not wanting of people who, after loſing a large part of the brain, have recovered and lived a long time; or of thoſe who have perceived no inconvenience from a large portion of that viſcus being corrupted, until at length they have fallen ſuddenly down and died in convulſions.

Another diſeaſe of the internal ſenſes, quite different from theſe, is *fatuity* or *idiotiſm*. Thoſe are called *idiots*, who are deſtitute either of judgment or memory, or elſe have theſe faculties unequal to the common offices of life. A kind of idiotiſm is natural and common to all infants; neither is it to be accounted a diſeaſe. But if it laſts beyond the ſtate of infancy, it is a real diſeaſe, and for the moſt part incurable. It hath the ſame cauſes with the other diſeaſes of the internal ſenſes; although theſe can ſcarcely be detected by the eye or by the knife of the anatomiſt. It frequently accompanies, or is the effect of, epilepſy. Hence, if the epilepſy derives its origin from cauſes not ſeated in the head, as from worms lodging in the inteſtines, the fatuity may be cured by diſlodging theſe, and removing the epilepſy. It is not unlikely that the fatuity of children, and the dotage of old men, may ariſe from the brain being in the former too ſoft, and in the latter too hard.

The muſcular power may be diſeaſed in a great number of ways. The mobility itſelf may be too great; but this muſt be carefully diſtinguiſhed from vigour. The mobility is the eaſe with which the muſcular fibres are excited into contraction. The vigour, on the other hand, is that power with which the contraction is performed. They are ſometimes joined, but more frequently ſeparate, and for the moſt part the exceſſes of each are owing to contrary cauſes.

187 Too great mobility.

Too great mobility is when motions are excited by too ſlight a ſtimulus, or when too violent motions are produced by the cuſtomary ſtimulus. A certain habit of body, ſometimes hereditary, renders people liable to this diſeaſe. Women have a greater ſhare of mobility than men have. Infants have a great deal of mobility, often too great; youth has leſs than infancy, but more than man's eſtate; tho' old age has commonly too little. A lazy, ſedentary life, full diet, a ſuppreſſion of the uſual evacuations, fulneſs of the blood-veſſels, and ſometimes their being ſuddenly emptied, laxity, flaccidity of the ſolids in general, but ſometimes too great a tenſion of the moving fibres, the uſe of diluents, eſpecially when warm, or heat applied in any manner, produce too great mobility. And this may be either general or particular, according as the cauſes have been applied to the whole body, or only to a part of it.

188 Too great vigour, and phlogiſtic diatheſis.

Vigour in general is rarely morbid; although ſometimes certain muſcular parts appear to have too great ſtrength. In maniacs and phrenitics, an immenſe ſtrength is obſerved in all the muſcles, eſpecially in thoſe that ſerve for voluntary motion; which is not unjuſtly reckoned morbid. The reaſon of this exceſs is very obſcure; however, it is plainly to be referred to a diſeaſed ſtate of the brain.

A more frequent and more important exceſs of vigour is obſerved in thoſe muſcular fibres that do not obey the will, ſuch as thoſe which move the blood. Its circulation is thus often increaſed, not without great inconvenience and danger to the patient. But a ſlighter exceſs of this kind, pervading the whole body, renders people apt to receive inflammatory diſeaſes, and is uſually called a *phlogiſtic diatheſis*. But this is better obſerved when local, as in inflammation itſelf.

Too great vigour of the muſcular fibres may ariſe, from the nervous power increaſed beyond meaſure, as in mania, phrenitis, or violent affections of the mind; from too great a tenſion of the fibres, by which they more eaſily and vehemently conceive motions, as of the arteries when filled with too much blood; from catching cold, by being expoſed either to cold or heat, as uſually happens in the ſpring; or laſtly, though the nervous power and tenſion of the fibres ſhould not at all be changed, their action may become too great, from a ſtimulus more violent than uſual being applied, or from the uſual ſtimulus if the fibres themſelves having already acquired too great a ſhare of mobility.

189 Of torpor and mobility.

The oppoſite to too great mobility is torpor, and to too great vigour is debility. Torpor is ſuch a diminution of mobility as renders the parts unequal to their functions. It ariſes from cauſes directly oppoſite to mobility; ſuch as, in the firſt place, a harder and more rigid contexture of the parts themſelves, or even ſometimes from one too lax and flaccid; from old age; from ſome peculiar temperament of body, ſuch as one phlegmatic, frigid, or inſenſible; too great and inceſſant labour, cold, ſpare diet, and an exhauſted body. This evil is the more to be dreaded, becauſe, the powers of the body being deficient, nature is neither able to make any effort of herſelf, nor are the remedies, in other caſes the moſt efficacious, capable of affording her any aſſiſtance.

Debility takes place, when the motion of the muſcles, either voluntary or involuntary, is not performed with ſufficient ſtrength. A greater or leſſer ſhare of debility, either general or of ſome particular part, accompanies almoſt all diſeaſes, and is indeed no ſmall part of them. It likewiſe renders a man obnoxious to innumerable diſorders, and throws him as it were defenceleſs in their way. It often depends on the original ſtructure of the body, ſo that it can be corrected neither by regimen nor medicines of any kind. A different degree of ſtrength alſo accompanies the different ages of mankind; and thus, in ſome caſes, debility cannot be reckoned morbid. But a truly morbid and unwonted debility ariſes from the nervous force being diminiſhed; from diſeaſes of the brain and nerves, or of the muſcles through which they are diſtributed; from a decay of the nerves themſelves; from a want of the due tenſion of the fibres, or the fibres themſelves becoming torpid; from the body exhauſted by ſpare diet, want, evacuations; or laſtly, from diſeaſes affecting the whole body, or ſome particular parts of it.

190 Of palſy.

The higheſt degree of debility, namely, when the ſtrength of the muſcles is altogether or nearly deſtroyed, is called *paralyſis* or *palſy;* and is either univerſal, or belonging only to ſome particular muſcles. An univerſal palſy ariſes from diſeaſes of the brain and nerves, ſometimes very obſcure, and not to be diſcovered by the anatomiſt; for the nervous power itſelf is often deficient, even when the ſtructure of the nerves remains unhurt: yet often, a compreſſion obſtruction, or injury of the veſſels, extravaſation of blood, or ſerum, collections of pus, ſwellings, &c. are diſcovered. It frequently ariſes from certain poiſons acting on the nerves; from the fumes of metals; from the diſeaſes of parts, and affections of the muſcles, very remote from the brain, as in the colic of Poictou. A palſy of ſingle muſcles, but leſs perfect, often ariſes without any defect of the brain or nerves, from any violent and continued pain, inflammation, too great tenſion, relaxation, reſt, or deſtruction of the contexture of the parts, ſuch as commonly happens after the rheumatiſm, gout, luxations, fractures of the bones, and iſchuria.

An *univerſal* palſy, however, as it is called, ſeldom affects the whole body, even though it ſhould originate from a diſeaſe of the brain. We moſt commonly ſee thoſe that are paralytic affected only on one ſide, which is called an *hemiplegia*. It is ſaid that the ſide of the body oppoſite to the diſeaſed ſide of the brain is moſt commonly affected. If all the parts below the head become paralytic, it is called a *paraplegia*. In theſe diſeaſes the ſenſes for the moſt part remain; though ſometimes they are aboliſhed, and at others rendered dull. Sometimes, tho' rarely, and which is an exceeding bad ſymptom, the motion, ſenſation, pulſe, and heat of the paralytic limbs are loſt; in which caſe the arteries themſelves become paralytic. A palſy of the whole body, as far as regards the voluntary motions, with anæſtheſia and ſleep, is called an *apoplexy*. This proceeds from ſome injury of the brain: though a ſtate very ſimilar to it is induced by narcotics, opium, wine itſelf, or any generous liquor taken to exceſs; and laſtly, by breathing in fixed or mephitic air, or that which is poiſoned and corrupted with phlogiſton.

191 Spaſm.

Another diſeaſe to which muſcular motion is liable, and that neither ſlight nor unfrequent, is called *ſpaſm*. This is a violent and irregular motion of the muſcles, of which there are two kinds, the tonic and clonic. The latter is frequently called a *convulſion;* in order to diſtinguiſh it from the other, which is more peculiarly called *ſpaſm*.

Spaſm therefore is a violent, conſtant, and preternatural contraction of the muſcular fibres; but a convulſion is an unuſual and violent contraction alternated with relaxation. People are rendered liable to ſpaſm by too ſenſible an habit of body, or too great mobility; and hence it is a diſeaſe common in women, in infants, and in weak, luxurious, lazy, and plethoric people. It is brought on thoſe already prediſpoſed to it, by any kind of ſtimulus applied to the brain, or to any nerve, muſcle, or nervous part connected with it: of which we have examples in dentition; worms lodged in the inteſtines, and irritating them; any acrid matter infecting the blood, or much affecting the ſtomach and inteſtines; the irritation of any nerve, or of the brain itſelf, by an exoſtoſis, ſwelling, too great fulneſs of the veſſels, pain, vehement affections of the mind, ſudden evacuation, or poiſons admitted into the body. Frequently, however, the malady originates from ſlight cauſes, little known, and not eaſily obſerved.

Spaſm is both the cauſe and effect, and frequently conſtitutes the greateſt part, of moſt diſeaſes. It is often very difficult either to be known or cured; becauſe it is ſo multiform, and produces as many different ſymptoms as there are organs affected; of which it ſurpriſingly diſturbs, impedes, or increaſes the functions. It is a diſeaſe ſeated in the original ſtamina of the conſtitution; and neither to be removed by ſlight remedies, nor in a ſhort time.

192 Sleep.

With regard to ſleep, our author obſerves, that its uſe is ſufficiently apparent from the effects which it produces in the body. It reſtores the powers both of mind and body when exhauſted by exerciſe, giving vigour to the one and reſtoring its wonted alacrity to the other. It renders the muſcles again active and moveable, after they have become wearied, rigid, painful, and trembling by hard labour. It moderates the quickneſs of the pulſe, which uſually increaſes at night; and brings it back to its morning ſtandard. It ſeems alſo to aſſiſt the digeſtion of the aliment; leſſens both the ſecretions and excretions; and renders the fluids thicker than otherwiſe they would be, eſpecially in a body endowed with little ſenſibility or mobility. Hence ſleep is not only uſeful, but abſolutely neceſſary for preſerving life and health; and is a moſt excellent remedy both for alleviating, and totally removing, a great many diſeaſes.

Want of ſleep is hurtful in a great many different ways, eſpecially to the nervous ſyſtem. It renders the organs of ſenſe both external and internal, as well as thoſe of every kind of motion, unfit for performing their offices. Hence the ſenſations are either aboliſhed, or become imperfect or depraved; and hence imbecillity of mind, defect of memory, a kind of delirium, mania itſelf, pain of the head, weakneſs of the joints, an imperfect or inordinate action of the vital organs, quickneſs of pulſe, heat, fever, depraved digeſtion, atrophy, leanneſs, and an increaſe or perturbation of the ſecretions and excretions.

193
Cauſes preventing and bringing on ſleep.

Sleep may be prevented both in healthy and ſick people from various cauſes; ſuch as ſtrong light, noiſe, pain, anger, joy, grief, fear, anxiety, hunger, thirſt, vehement deſire, motion of the body, memory, imagination, intenſe thought, &c. On the other hand, ſleep is brought on by a ſlight impreſſion on the organs of ſenſe, or none at all; by the humming of bees, the noiſe of falling water, cold and inſipid diſcourſe; or laſtly, by ſuch an exerciſe of the memory as is neither too laborious nor diſturbing to the mind. Too great an impulſe of the blood towards the head, ſuch as often happens in fevers, prevents ſleep; but a free and equal diſtribution of the blood through the whole body, eſpecially the extreme parts, frequently brings it on. Whatever weakens the body alſo favours ſleep; and hence various kinds of evacuations, the bath, fomentations, ſometimes heat itſelf, are uſeful for promoting it. It alſo comes on eaſily after taking food, or indulging venery; the violent ſenſation being then quieted, and the body itſelf ſomewhat weakened. Cold produces a deep ſleep of long continuance, not eaſily diſturbed, and often terminating in death. Laſtly, there are certain ſubſtances which, when applied to the body, not only do not excite the nervous ſyſtem, but plainly lay us aſleep, and render us unfit for ſenſation: of this kind are thoſe called *narcotics*, as opium and the like; among which alſo we may reckon wine taken in too great quantity. Laſtly, watching itſelf is often the cauſe of ſleep; becauſe while a man is awake he always more or leſs exerciſes the organs of his body, by which the nervous power is diminiſhed and conſumed; and thus the more violently the body is exerciſed, in the ſame proportion is the perſon under a neceſſity of ſleeping.

Sleep is deficient in many diſeaſes; for there are few which do not excite pain, anxiety, or uneaſineſs, ſufficient to prevent the approach of ſleep, or to diſturb it. Fevers generally cauſe thoſe who labour under them to ſleep ill; as well on account of the uneaſineſs which accompanies this kind of diſeaſes, as by reaſon of the impetus of the blood towards the head being frequently increaſed; and likewiſe from the ſtomach being diſordered, loaded with meat, or diſtended with drink. Hence alſo we may ſee the reaſon why many hypochondriac and hyſteric patients ſleep ſo ill; namely, becauſe they have a bad digeſtion, and their ſtomach is diſpoſed to receive many though frequently ſlight diſorders; the ſlighteſt of which, however, is ſufficient to deprive the patient of reſt, provided the body be already irritable, and endowed with too great a ſhare of mobility.

194
Is occa-ed by little or much p.

Want of ſleep will hurt in diſeaſes as well as in health, and for the ſame reaſon; but in a greater degree, and more quickly, in the former than in the latter; and is therefore not only a very troubleſome ſymptom of itſelf, but often produces other very dangerous ones.

Too much ſleep, on the other hand, produces many miſchiefs, rendering the whole body weak, torpid, lazy; and even almoſt takes away the judgment. It alſo diſturbs the circulation, and diminiſhes moſt of the ſecretions and excretions. Hence plethora, fatneſs, flaccidity, and an inability for the common offices of life.—The cauſes of this exceſs are, either the uſual cauſes of ſleep above-mentioned increaſed beyond meaſure, or ſome fault in the brain, or a compreſſion of it by an extravaſation of the humours; or ſometimes, as it would ſeem, from great debility produced by an unuſual cauſe, as in thoſe who are recovering from typhous fevers and other diſeaſes. In theſe examples, however, this exceſs of ſleep is by no means hurtful; not even, perhaps, in thoſe caſes where an exceſs of grief continued for a long time, or a great fright, have produced a ſurpriſing and unexpected ſomnolency. Laſtly, many people have accuſtomed themſelves, and that not without a great deal of hurt to their conſtitutions, to ſleep too much. Nor are there examples wanting of ſome who have paſſed whole days, and even months, in ſleep almoſt uninterrupted.

195
Veins ſtronger in youth, and the arteries in old age.

With regard to the manner in which the circulation of the blood is performed, and the various principles of which it is compoſed, ſee the articles Blood, and Anatomy chap. x—xiv.—As for the diſorders to which the blood and its circulation are ſubject, our author obſerves, that in our younger years the veins are much more denſe, firm, and ſtrong, than the arteries; but the latter, by reaſon of the continual preſſure upon them, and the ſtrength which they exert, become daily more firm, hard, and ſtrong, until at laſt they equal or exceed the veins themſelves in ſtrength; and it is not uncommon in old men to find ſome part of the arteries converted into an horny ſubſtance, or even into a ſolid bone. Hence in the ſtate of infancy the greateſt part of the blood is contained in the arteries, and in old age in the veins: an affair indeed of no ſmall moment, as it ſhews the reaſon in ſome meaſure of the ſtate of increaſe and decreaſe of the body. Beſides, if any diſeaſe happens from too great a quantity of blood, it thence appears that it muſt ſhew itſelf in young ſubjects in the arteries, and in old ones in the veins; and this is the reaſon of many diſeaſes which accompany certain periods of life.

196
Arteries of women more capacious and lax than of men.

In moſt if not in all ſpecies of animals, the arteries of the females are much more lax and capacious when compared with the veins, and the veins much leſs, than in the males of the ſame genus. The deſign of nature in this conformation is evident, namely, that they may be the better able to nouriſh the fœtus in their womb. The ſame likewiſe ſeems to be the reaſon why women are more inclined to plethora than men; and to this greater capacity of the arteries and ſmallneſs of the veins are we to aſcribe that beauty and elegant ſhape of the arms in women, not disfigured or livid with veins as in men.

197
Effects of the diſtribution of the blood.

The blood is alſo diſtributed in various proportions to the different parts of the body, and that proportion too differs at different periods of our lives. At firſt an immenſe quantity is ſent to the head, becauſe that part of the body is firſt to be evolved and fitted for its offices: but as ſoon as the parts begin to make a conſiderable reſiſtance to the efforts of the blood, and the veſſels cannot eaſily be further dilated, it is neceſſarily ſent off to other parts; by which means the reſt of the body increaſes in bulk, and becomes fitted for performing its proper functions. The effect of this change is alſo very ſoon obſerved, namely, when none of the blood paſſes through the navel, and of conſequence a greater quantity is ſent by the iliac arteries time; why it ſometimes returns at intervals, often coming on and being increaſed by every kind of irritation and exerciſe, and ſometimes relieved or totally removed by ſtimulants or exerciſe.

207 Syncope.

A ſyncope is when the action of the heart, and, alongſt with it that of the arteries, is ſuddenly and very much leſſened; whence the animal-powers, the ſenſes, and voluntary motions, immediately ceaſe. This may be produced by almoſt all the cauſes of palpitation; becauſe whatever can diſturb and diſorder the motion of the heart, may alſo weaken or ſuſpend it. The vitiated ſtructure of the heart itſelf therefore, violent paſſions of the mind, whether of the depreſſing kind, or thoſe which ſuddenly and vehemently excite, various kinds of nervous diſeaſes, thoſe of the ſtomach, every kind of debility and evacuation, eſpecially a great loſs of blood, exceſſive and unremitting labour, long watching, heat, pain, many kinds of poiſons, &c. produce fainting.

Hence we ſee, that whatever weakens the motion of the blood through the brain tends to produce fainting; and, on the contrary, whatever tends to augment that motion, alſo tends to refreſh, and prevent the perſon from fainting. Hence alſo we ſee how the mere poſture of the body may either bring on or keep off fainting, or remove it after it hath already come on. We likewiſe ſee how this diſorder may ſometimes be of little conſequence, and eaſily removed; at others very dangerous, not only as a ſymptom, but even in itſelf, as ſometimes terminating in death; and laſtly, how it may be uſed as a remedy by a ſkilful phyſician, and artificially induced, either to free the patient from violent pain, or to ſtop an immoderate effuſion of blood ſcarce to be reſtrained by any other method.

208 Diſorders of the blood itſelf.

With regard to the diſorders of the blood itſelf, our author obſerves, that the glutinous part of it produces that buff-coloured appearance often ſeen upon blood drawn from people afflicted with inflammatory diſorders, and even ſometimes when no ſuch diſeaſes are preſent. This cruſt indeed is nothing elſe than the pure gluten of the blood taking longer time than uſual to coagulate, by which means the red particles have an opportunity of falling to the bottom. This indicates no lentor, denſity, thickneſs, or tenacity of the blood, as was formerly thought; but rather its thinneſs, or at leaſt a leſs tendency in it to coagulate. It ariſes for the moſt part from a violent agitation and conquaſſation of the blood within the body; and hence it accompanies many fevers, all inflammations, hæmorrhages ſometimes, exanthemata, plethora, pain, and many irritations. Nor is this cruſt always to be accounted morbid, as it often happens to the moſt healthy; and may even be produced or deſtroyed by the ſlighteſt cauſes while the blood is running from the vein, ſo that frequently we ſhall ſee a very thick and tenacious cruſt on the blood flowing into one cup, while that which runs into another has little or none at all. In general, however, the appearance of this cruſt ſhews, that the patient will bear bloodletting well, though thoſe have been in a great miſtake who directed this operation to be repeated till no more cruſt appeared on the blood.

209 Polypi and moles.

The glutinous part of the blood alſo frequently produces thoſe maſſes called *polypi*, which ſometimes take place during life, but more frequently after death, in the large veſſels near the heart, or even in the cavities of that organ. Similar maſſes alſo are frequently formed in the uterus, and are called *moles*.

210 Diſeaſes from plethora.

The quantity of blood contained in a healthy body is very various, and difficult to be aſcertained. Many diſeaſes, however, may ariſe from its being either too ſcanty or too abundant. Too great a quantity of blood is produced by the uſe of rich, nouriſhing diet, ſtrong drink, accompanied with a good digeſtion; from a lazy, ſedentary life, or much ſleep, eſpecially in thoſe who have been formerly accuſtomed to much exerciſe; with many other cauſes of the ſame kind. It renders the perſon dull, weak, and languid, and ſometimes almoſt totally oppreſſes him; nor are thoſe organs deſtined for moving the blood ſufficient for driving forward ſuch a load. The pulſe ſinks; and ſometimes a ſyncope, vertigo, or palpitation, takes place. More frequently, however, the veſſels are too much diſtended, and ready to be thrown into violent and irregular motions. Hence a diſpoſition to fevers, inflammations, an unequal diſtribution of the blood, unuſual congeſtions, rupture of the veſſels, and hæmorrhages. Moreover, by reaſon of the cloſe connection between the ſanguiferous and the nervous ſyſtem, a fulneſs of blood produces a diſpoſition to ſpaſm and other diſeaſes of that kind.

Hence we may underſtand why a plethora is ſometimes accompanied with a weak and ſometimes with a ſtrong and hard pulſe, why it is the cauſe as well as a part of ſo many diſtempers, why it is the effect of a high ſtate of health, &c.

211 From a ſcarcity o blood.

The want of a due quantity of blood is no leſs pernicious than too great an abundance of it. It debilitates the perſon, and renders him unable to perform the proper offices of life; produces a languid circulation, ſyncope, ſpaſms, and at laſt death itſelf. In a ſlighter degree of the diſeaſe the body is emaciated thro' want of nouriſhment, and its functions are vitiated in various ways. It may ariſe from want, bad food, or ſuch as affords little nouriſhment: from bad digeſtion, or the chyle being hindered from paſſing into the blood: from fevers, or other diſeaſes which exhauſt the body and hinder nutrition: or laſtly, from various evacuations, particularly of blood; and that the more eſpecially if they are ſudden, for in ſlow evacuations the veſſels accommodate themſelves ſurpriſingly to the quantity left in them. Beſides, if the body is ſlowly exhauſted, the excretions are leſſened by reaſon of the deficiency of the vital power; ſo that the unuſual expence is eaſily compenſated by the unuſual retention. But if the evacuation happens to be very ſudden and great, it may either prove mortal in a ſhort time, or break the conſtitution to a degree beyond recovery.

By a great and long-continued deficiency of blood the quality of it alſo is impaired; becauſe the thin part of it is eaſily and ſoon made up; but the glutinous, thick, and red part, not ſo eaſily. Hence the blood becomes thin, pale, ſcarcely capable of coagulation, or affording a proper ſupport to the body.

212 From to thin blo

Too great thinneſs of the blood alſo proceeds from uſing much drink, eſpecially of the aqueous kind, ſlender and little nouriſhing diet, a bad digeſtion in the ſtomach; from diſeaſes of the lungs and thoſe organs which elaborate the red part; or from ſuppreſſions of the uſual evacuations of thin humours, as ſweat or urine, induced by cold, a fault of the ſecreting organs, or by putreſcency. But along with this other diſorders of the blood concur.

A too thin and watery blood makes the face pale, the body weak, languid and torpid; the ſolid parts become flaccid from want of nouriſhment and having too great a quantity of water in their compoſition. It brings on hydropic effuſions of water in all parts of the body, by reaſon of the increaſed exhalation of that thin fluid which moiſtens all the inward parts; partly by reaſon of the blood itſelf being in ſome meaſure diſſolved, ſo that it paſſes out of the veſſels more eaſily and plentifully than it ought to do; and partly by reaſon of the veſſels being relaxed beyond their uſual pitch, and not making a proper reſiſtance. Beſides, in this caſe, the lymphatic veins are ſo far from abſorbing more than uſual, that, partaking likewiſe of general debility, they are ſcarce ſufficient for performing their proper offices.

Nature, however, hath taken care, by the moſt ſimple means, to provide againſt ſo many and ſo great evils; for neither doth the blood ſo eaſily become thin as ſome have imagined, nor when this quality takes place doth it want a proper remedy. For almoſt inſtantly, if the perſon be otherwiſe in health, the excretions of the thinner matters are greatly augmented, and the whole maſs of blood in a ſhort time becomes as thick as formerly.

The oppoſite to this, namely, too great a thickneſs of the blood, though often ſpoken of by phyſicians, is very rarely, if ever obſerved; and thoſe fevers and inflammations which have been thought to ariſe from thence, are now found to originate from other cauſes. The following would ſeem to be the law of the human conſtitution. As ſoon as the blood hath attained the due degree of thickneſs, or gone in the leaſt beyond it, the excretions are either ſuppreſſed or diminiſhed, the body attracts more moiſture from the air, the perſon is thirſty, and drinks as much as is neceſſary for diluting the blood. But if water is wanting, and the perſon cannot ſatisfy his thirſt, then the blood is ſo far from being thickened, that by reaſon of a putreſcency begun or augmented, it is much diſſolved, becomes acrid, and is with difficulty contained in the veſſels.

The acrimony of the fluids hath afforded a large field for declamation to the ſpeculative phyſicians, and upon this ſlender foundation many perplexed and intricate theories have been built. It is certain indeed, that the blood in a ſtate of health hath ſome ſmall ſhare of acrimony; and this acrimony, from certain cauſes, may be a little increaſed ſo as to produce various diſeaſes of a dangerous nature. This we are aſſured of from the increaſe of motion in the heart and arteries, and the ſimilar augmentation of the action of the ſecretory organs, from acrid ſubſtances taken inwardly. The ſame thing alſo appears from the unuſual acrimony of the ſecreted fluids in ſuch caſes, by which the veſſels are ſometimes greatly ſtimulated, and ſometimes even quite eroded. Very many acrid ſubſtances, however, are daily taken into the ſtomach; ſo that theſe muſt either be corrected in the *primæ viæ*, or changed by digeſtion before they paſs into the blood; or at leaſt, by dilution with much water, or being blunted by an admixture with gluten, oil, or phlogiſton, they muſt depoſit much of their acrimony, and at laſt be thrown out of the body as noxious ſubſtances. Thus a vaſt quantity of ſalts, acid, alkaline, and neutral, may paſs through the body without in the leaſt affecting the health; though theſe ſalts, if taken in very large quantity, undiluted, or not thrown out of the body, will do much hurt.

216 Putreſcency.

Moreover, even while life continues, putrefaction is going on, and produces much of that ſubſtance called *animal* ſalt; for into this a great part of our food is converted and paſſes off by the urine. But if this putreſcent diſpoſition be too great, it will produce too large a quantity of animal ſalt; eſpecially if much of any ſaline ſubſtance is otherwiſe thrown into the body without proper dilution: and this kind of diſeaſe is well known to ſailors who have been long at ſea without having an opportunity of getting freſh proviſions.

For this ſpontaneous putreſcency, nature hath ſuggeſted a proper remedy, namely, freſh meat, eſpecially of the vegetable and aceſcent kind, and ſuch as is well impregnated with fixed air, which it may impart to the body. But where this kind of food is wanting, the putrefaction goes on apace, and a very great thinneſs and acrimony of the juices take place; eſpecially if there be alſo a ſcarcity of water, or the excretions which ought to carry the putrid matters out of the body languiſh, either from cold, ſloth, torpor, depreſſing paſſions of the mind, or from the conſtitution being broken by diſeaſes; or laſtly, from too great heat, which always favours putrefaction.

Beſides, it would ſeem, that, ſometimes a diſpoſition to putrefaction is much increaſed by the reception of a putrid ferment into the body; of which we have examples in ſome infectious fevers, where the contagion is very much aſſiſted by heat, animal-diet, certain kinds of ſalts, debility, and naſtineſs.

Laſtly, any ſingle part of the body may putrefy from various cauſes, as from inflammation, gangrene, cold, &c. and thus may the whole body be infected; although for the moſt part the diſeaſe proves mortal before the corruption hath ſpread over the whole body.

But when the maſs of blood begins to putrefy greatly, it not only becomes very acrid, but thin alſo, ſo that it either will not coagulate at all, or ſhews only a ſlight and very looſe craſſamentum. Nay, even the red globules are broke down and deſtroyed; in which caſe it is impoſſible but the blood muſt become very acrid, as well on account of the evolution of the ſalt, as by reaſon of the rancid and putrid gluten, which ſtimulates, and frequently even erodes, the veſſels; producing ſpots, firſt red, then livid and black, tumours, and ulcers ſcarce poſſible to be cured without firſt removing the putreſcent diſpoſition of the humours. From the ſame cauſes proceed hæmorrhages from every part of the body, ſcarce to be reſtrained; a moſt intolerable fætor of the breath and all the excrements; the higheſt debility and laxity of the ſolids; the putrefaction acting as a poiſon to the nervous ſyſtem, and at length bringing on death.

217 Acid and alkaline acrimonies.

An acrimony of the acid kind never takes place in the human blood, nor in any of the humours ſecreted from it; though one of them, namely the milk, turns acid ſpontaneouſly in a very ſhort time after it is drawn from the breaſt. Neither, indeed, doth an alkaline acrimony ſeem ever to take place in the blood. Putreſcency,

treſcency indeed tends this way, and at laſt terminates in it; but ſcarcely while the perſon lives, though the nature of the urine, even while recent, ſeems to be but little diſtant from that of an alkali.

Many kinds of acrimony indeed may exiſt in the blood from too liberal an uſe of ſpices, wine, &c. but of theſe we know nothing certain. We are aſſured, however, that the body is often infected with various kinds of morbid acrimony, which bring on many and dangerous diſeaſes, as the ſmall-pox, meaſles, cancers, lues venerea, &c. of which the origin and manner of acting are very little known, though the effects are abundantly evident. In moſt caſes, however, nature hath taken no leſs care to provide againſt the *acrimony* than againſt the too great *thickneſs* of the blood. Sometimes an antidote is afforded, either by the excitement of thirſt, that the acrid ſubſtance may be diluted with plenty of drink; or by increaſing the evacuations, that it may be thrown out of the body; or laſtly, by exciting various motions and actions of the vital powers, by which it may be either ſubdued, changed, rendered innocent, or expelled from the body by new and unwonted paſſages.

218 Of reſpiration. With regard to reſpiration, our author obſerves, that it may be obſtructed from various cauſes ſeated either in the lungs themſelves, or the ſurrounding parts. But from whatever cauſe this obſtruction may ariſe, it undoubtedly produces all thoſe diſeaſes which proceed from an interrupted circulation. The lungs themſelves alſo being at length compreſſed, and not ſuffered to dilate ſufficiently, cannot throw off the vapour which ariſes from them; and hence they are frequently oppreſſed with moiſture. At the ſame time they are irritated, ſo that a greater quantity of mucus, and that of a thicker kind than uſual, is ſecreted; by which means the paſſages through which the air enters them are ſtopped up, and a violent cough at length throws off the load.

The reſpiration is alſo ſubject to ſome other diſorders, as a cough and ſneezing; which, though at firſt ſight they may ſeem very dangerous, are not deſtitute of uſe, and may even be reckoned among the moſt ſalutary attempts of nature to relieve the patient. Often, however, they are attended with danger, or very great uneaſineſs; namely, when they are either too violent, or exerted in vain. At any rate, it is neceſſary for a phyſician to know the nature, cauſes, and effects of theſe, that he may be enabled to promote them when neceſſary, to moderate them when too violent, and to ſtop them when noxious or to no purpoſe.

219 A cough. A cough is a violent, frequently involuntary, and ſonorous exſpiration, ſuddenly expelling the air with great force through the glottis ſomewhat contracted. The convulſion of the muſcles ſerving for exſpiration, gives a great force to the air, while the contraction of the glottis produces the ſound. It is often long continued, being repeated at certain intervals, during each of which the inſpiration is imperfect and obſtructed by reaſon of the contraction of the glottis. It is excited by any kind of acrid ſubſtance, either chemically or mechanically applied to thoſe paſſages through which the air enters. Theſe are lined with a membrane ſo exceedingly delicate and impatient of ſtimulus, that it cannot even bear the touch of the mildeſt ſubſtance, ſuch as a ſmall drop of water, without throwing the muſcles ſerving for exſpiration into a violent convulſion; the glottis at the ſame time contracting by means of the ſympathy between it and the neighbouring parts. Thus the air is thrown out with ſuch violence, that it drives the irritating ſubſtance along with it; and thus a cough becomes not only uſeful, but abſolutely neceſſary for the preſervation of life, as being able to free the lungs from every kind of irritating ſubſtance or foulneſs, which might ſoon bring on a ſuffocation. Hence a cough is almoſt an inſeparable companion of every inflammation of the lungs, as well as every difficulty in reſpiration; and even frequently accompanies the entrance of the pureſt air when the trachea and bronchiæ are excoriated, or become too ſenſible. Examples alſo are not wanting, where a violent and troubleſome cough hath ariſen from an irritation of the nervous ſyſtem, or even of ſome particular part, of the ear, for inſtance, the ſtomach and inteſtines by worms, the liver by inflammation, &c.

Coughing may alſo be voluntarily excited, and may then be managed at pleaſure. Even when involuntary, it may be moderated, or ſuppreſſed, by a contrary effort; though a violent fit of coughing cannot by any means be reſiſted. When once it is excited, the cough goes on till the irritating ſubſtance be expelled, or the ſenſe of irritation aboliſhed, or perhaps overcome by a more uneaſy ſenſation than even the cough itſelf; after which, the irritation again returning at a certain interval, the cough alſo comes on. Hence we are taught a method of allaying and quieting this moſt troubleſome malady, though frequently it is not in our power to remove the cauſe of it altogether.

A very violent cough is often dangerous. For by the retention of the breath, and the ſtrong efforts made in coughing, a great quantity of blood is collected in the lungs, of which the veſſels are diſtended, and frequently broken; and hence there ſometimes happens a violent, and even fatal hæmorrhage. More frequently, however, it is the cauſe of a ſlower, though equally fatal diſeaſe. Nay, a frequent and troubleſome cough, without any great hæmorrhage, or even without any hæmorrhage at all, may damage the lungs to ſuch a degree, eſpecially if they be of a more tender ſtructure than uſual, as to lay the foundation of a phthiſis almoſt always incurable.

Again, by a long-continued and violent cough, the paſſage of the blood through the lungs being impeded, it muſt neceſſarily flow through the veins towards the head: hence redneſs and lividneſs in the countenance, hæmorrhages, palſies, apoplexies, and ſometimes mortal convulſions. Laſtly, by a violent cough the abdominal viſcera are perpetually compreſſed with remarkable violence; and if any part happens to be weaker than uſual, hernia, a prolapſus uteri, abortion, or ſimilar accidents, may happen.

Even when the cough is more gentle, if it happens to be importunate and frequent, although we have nothing of this kind to fear, yet the patient is by no means free from danger; as he is thereby agitated, fatigued, has his conſtitution broken, is deprived of reſt, has a fever brought upon him, his lungs are ſhaken and irritated, digeſtion and all the other functions are impeded, till at laſt he ſinks under a complication of maladies.

Sneezing is ſomewhat akin to the cough, as conſiſting

ing of a very full inſpiration, to which ſucceeds a moſt violent exſpiration, by which the air is driven out through the noſtrils with immenſe violence, and ſweeps the paſſage through them as it goes out. It is a convulſion much more violent than a cough, and is beſides very difficult to be ſtopped when once a propenſity to it hath taken place. As a cough proceeds from an irritation of the glottis, trachea, bronchia, and lungs, ſo doth ſneezing ariſe from an irritation of the membrane of the noſtrils, but rarely from ſympathy with any diſtant part. It is ſometimes of ſervice, as well as a cough; though it is alſo ſometimes prejudicial, for the reaſons which have been already aſſigned.

221 ates a bad ſtion.

The laſt part of the Doctor's treatiſe neceſſary to be taken notice of here, is that which conſiders diſeaſes ariſing from a bad digeſtion, diſordered motion of the inteſtines, and ſome of the principal ſecretions. The firſt of theſe, he ſays, are ſometimes very troubleſome, though ſeldom dangerous. The principal ſymptoms are oppreſſion, anxiety, pain at the ſtomach; eructations, by reaſon of air extricated from the fermenting aliments, and irritating the ſtomach; nauſea and vomiting, from the irritation and diſtenſion of the ſame organ; the belly ſometimes too coſtive, and ſometimes too looſe; a defect of nouriſhment; a general debility; relaxation of the ſolid parts; too great thinneſs of the fluids; all the functions impeded; pain of the head; vertigo, ſyncope, aſthma, palpitation; great ſinking of the ſpirits, eſpecially if the patient hath been of a peculiar conſtitution; ſometimes the gout, ſometimes a dropſy, or a ſlow fever which may prove mortal.

22 ſtive.

The motion of the inteſtines may be either too great or too little; and hence proceeds either coſtiveneſs, or looſeneſs. The former is frequently not to be accounted morbid; but, when it is, it may ariſe from the ſtructure of the inteſtines being injured, or from their being ſhut up or obſtructed by ſpaſm or otherwiſe, or from a deficiency of thoſe humours which moiſten the inteſtines; or it may ariſe from mere debility, from a palſy of the fibres perhaps, or from a deficiency of the uſual ſtimulus, of the gall, for inſtance, or from too dry or ſlender a diet.

The conſequences of long-continued coſtiveneſs, are firſt an affection of the alimentary canal, and then of the whole body. The ſtomach is diſeaſed, and does not digeſt the aliments properly; the whole body is left deſtitute of its uſual ſtimulus; the blood is corrupted, perhaps from the reſorption of the putrid matter into it. The circulation through the abdominal viſcera is impeded; hence frequent and irregular congeſtions, varices of the veins, hæmorrhoids, &c. Nay, the inteſtines themſelves being overloaded, diſtended and irritated by an heavy, acrid, and putrid load of aliment or other matters, are excited to new and unuſual contractions, which, if they do not get the better of the obſtruction, bring on tormina, colic, or an iliac paſſion, inflammation and gangrene, fatal in a very ſhort time.

hœa

Looſeneſs, or diarrhœa, is a malady extremely common; being ſometimes a primary diſeaſe, and ſometimes only a ſymptom or an effect of others. Sometimes it is a ſalutary effort of nature, ſuch as the phyſician ought to imitate and bring on by art. It is alſo familiar to infants, and to people of a certain conſtitution, and to them coſtiveneſs is very prejudicial. It may ariſe, in the firſt place, from ſomething taken into the body, or generated in the inteſtines; from a fermentation and corruption of the maſs of aliments; from the gall being too abundant and acrid, or from blood or pus poured into the inteſtines; from the inteſtines themſelves being eroded, or deprived of their natural mucus; from the humours being driven from the ſurface of the body towards the inward parts, as by cold, eſpecially when applied to the feet; or from a general corruption of the whole body, as in the phthiſis, hectic, or putrid fever, eſpecially towards the end of theſe diſorders. In fevers it is ſometimes ſalutary, or even puts an end to the diſeaſe altogether, or at leaſt renders it milder: more frequently, however, deriving its origin from putreſcency, it is of no ſervice, but rather exhauſts the ſtrength of the patient. A diarrhœa likewiſe, almoſt incurable, and often mortal in a ſhort time, frequently ariſes after the operation for the fiſtula in ano. Some have their inteſtines ſo extremely weak and moveable, that from the ſlighteſt cauſe, ſuch as catching cold, any violent commotion of the mind, &c. they are ſubject to a violent diarrhœa. Laſtly, whatever be its origin, if it hath continued for a long time, the viſcera are rendered ſo weak and irritable, that the diſeaſe, though often removed, ſtill returns from the ſlighteſt cauſes, and even ſuch as are not eaſily diſcovered.

A diarrhœa proves very pernicious, by hindering digeſtion and the nouriſhment of the body; for the ſtomach is commonly affected, and the aliments paſs thro' the inteſtines ſo quickly, that they can neither be properly digeſted, nor are the lacteals able to abſorb the chyle from them as they go along. Such a violent evacuation is alſo hurtful by exhauſting the body, and carrying off a great quantity of the nutritious matter from the blood. Neither, indeed, is it only the alimentary maſs which is thrown out ſooner than it ought to be; but at the ſame time a great quantity of the fluids ſecreted in the inteſtines, ſo that the whole body quickly partakes of the debility.

224 Cœliac paſſion.

Sometimes a violent and long-continued diarrhœa riſes to ſuch a height, that the aliment is diſcharged with little or no alteration. Sometimes alſo, though rarely, from a ſimilar cauſe, or from the obſtruction of the meſenteric glands, and its other paſſages into the blood, the chyle itſelf is thrown out like milk along with the excrements; and this diſeaſe is called the *cœliac paſſion*.

225 Dyſentery.

A dyſentery is attended with very ſevere gripes in the belly, a frequent deſire of going to ſtool, and vain efforts which excrete nothing beſides the mucus of the inteſtines mixed with a little blood; and is accompanied with exceſſive debility, and frequently with putreſcency and fever. It is thought to ariſe from the conſtriction of ſome part of the inteſtines, of the colon eſpecially: by which means the bowels, though ever ſo much irritated, can paſs nothing; neither can the diſeaſe be removed until the belly hath been well purged by proper medicines.

226 Teneſmus.

A teneſmus is a frequent and inſatiable propenſity to ſtool, without being able to paſs any thing, notwithſtanding the moſt violent efforts. It may be occaſioned by any kind of irritation, either of the rectum itſelf or of the neighbouring parts, by acrid ſub-

22 Sneez

ſubſtances taken into the body; by ſome of the ſtronger purges, eſpecially aloes, which is very difficult of ſolution, and will paſs even to the rectum with very little alteration; by a violent and obſtinate diarrhœa, dyſentery, hæmorrhoids, worms, fiſtula, calculus, ulcer in the bladder, urethra, &c. It is often very pernicious, both from the exceſſive uneaſineſs it occaſions to the patient, and from its exhauſting his ſtrength, by the frequent and vain efforts bringing on a prolapſus ani, and communicating the violent irritation to the neighbouring parts, as the bladder, &c.

227 Nauſea and vomiting.

A nauſea and vomiting are diſorders very common, and owing to almoſt innumerable cauſes; not only to affections of the ſtomach itſelf, but alſo to affections and irritations of the remoteſt parts of the body which may act upon the ſtomach by ſympathy. Every irritation and diſtention of that viſcus therefore, a load of crude aliment, an obſtruction about the pylorus, all acrid ſubſtances taken into it, diſeaſes of the liver, inteſtines, kidneys, uterus, the head, the feet, of the whole ſkin, or indeed the whole body, inflammation, the ſtone, king's evil, ſcirrhus, apoplexy, compreſſion of the brain, fracture of the ſkull, vertigo, ſyncope, violent pain, the gout, eſpecially when repelled, fevers, paſſions of the mind, diſagreeable imaginations or diſcourſes, frequently induce nauſea and vomiting.

Theſe affections are often ſerviceable by freeing the ſtomach from ſomething with which it was overloaded; promoting ſpitting in ſome caſes where the lungs are overcharged with mucus, blood, pus, or water; producing ſweat, and a free and proper diſtribution of blood to the ſurface of the body; partly, perhaps, by the great ſtraining which accompanies vomiting, but rather by that wonderful ſympathy which takes place between the ſtomach and ſkin: and hence, in many diſeaſes, vomiting is a moſt excellent remedy. It is however in ſome caſes hurtful, if too violent or too frequently repeated, partly by debilitating and making the ſtomach more eaſily moved; and partly by fatiguing the patient with violent ſtrainings, which occaſion hernias, abortions, &c.

228 Iliac paſſion.

Sometimes we find the motion of the inteſtines totally inverted, from the anus to the mouth; a moſt dangerous diſtemper, which hath obtained the name of the *iliac paſſion*. It moſt frequently ariſes from ſome obſtruction in the alimentary canal hindering the deſcent of the excrements, as ſcirrhus, ſpaſm, inflammation, &c.: though the moſt perfect iliac paſſion takes place without any obſtruction, ſo that clyſters will be vomited; and even after this has continued for ſeveral days, the patients have at length recovered.

A ſlighter degree of the iliac paſſion, namely the inverſion of the periſtaltic motion of the duodenum, always takes place in long continued and violent vomiting, as in ſea-ſickneſs, or when a perſon hath taken too large a doſe of an emetic; by which means a vaſt quantity of bile frequently aſcends into the ſtomach, and is diſcharged by vomit.

229 Cholera.

An exceſſive vomiting with looſeneſs is called a *cholera*. It ariſes from a very great irritation of the alimentary canal without any obſtruction; and is for the moſt part occaſioned by too great a quantity, or from an acrimony of the bile, from whence it takes its name. It may originate from ſeveral cauſes, as too ſtrong a doſe of an emetic and cathartic medicine, eating too great a quantity of ſummer-fruits, &c. and is a very violent malady, often killing the patient in a few hours, unleſs proper remedies be applied in time.

23 Diſorde from di niſhed ſpiratio

From a ſuppreſſion of any of the ſecretions, or a diſorder of any of the ſecretory organs, many miſchiefs may ariſe. A diminution of perſpiration produces plethora, laſſitude, languor, depreſſion of mind, bad digeſtion, loſs of appetite, and even a general corruption of the humours from the retention of ſuch a quantity of putreſcent matter.—The more ſuddenly the diminution or ſuppreſſion of the perſpiration takes place, the ſooner the miſchief is produced, and the greater it is; not only by retaining the matter which ought to be thrown out, but by repelling the humours from the ſurface of the body, and directing them to other parts; whence fevers, inflammations, congeſtions of the blood, &c. frequently take place.

This ſuppreſſion of perſpiration may ariſe from many different cauſes; as from cold ſuddenly applied to the body when very hot; ſometimes from very violent paſſions of the mind; or from ſpaſmodic diſeaſes, as the hyſterics, &c. It may be ſuppreſſed alſo by that kind of conſtriction of the veſſels of the ſkin which is produced by various kinds of fevers, and the nature of which hath hitherto been but little known.

23 From ceſſive ſpiratio

Exceſſive perſpiration or ſweating is injurious by debilitating the body, relaxing the ſkin, and expoſing the patient to all the evils which ariſe from catching cold. It may even be carried to ſuch a height as to produce fainting and death; though it muſt be owned that we cannot eaſily bring examples of people having from this cauſe their blood inſpiſſated, corrupted, or being thence made liable to inflammations and fevers.

23 Iſchuri ſuppre of uri

A ſuppreſſion of urine is ſtill more dangerous than that of perſpiration, and unleſs relieved in a ſhort time will certainly prove fatal. This diſorder, which is called *iſchuria*, may ariſe from various diſeaſes of the kidneys, ureters, bladder, urethra, &c. Thus any obſtruction or irritation of one or other of the kidneys or ureters, by a ſtone, gravel, mucus, blood, inflammations, ſpaſm, ſuppuration, ſcirrhus, ſwellings of the neighbouring parts, &c. may either prevent the urine from being ſecreted, or may change its nature in ſuch a manner as to prevent it from entering the bladder.

The urine alſo, after it hath entered the bladder, is there frequently ſuppreſſed, by reaſon of various diſorders to which that organ is liable, as an irritation or inflammation, ſpaſm, acrid ſubſtances injected, or ſympathy with the neighbouring parts; or by reaſon of the texture of the bladder itſelf being deſtroyed, or from a palſy, ſcirrhus, ulcer, &c. in the bladder. Or, laſtly, the urine may be retained in the bladder from a general ſtupor, as from a diſeaſe of the brain, which happens in ſome fevers, when the patient is neither ſenſible of the uſual ſtimulus, nor even of one much greater, ſo that the fibres can ſcarcely be excited to contraction by any means whatever. This, in fevers, is always a bad ſign, and ſometimes even mortal.

A ſuppreſſion of urine for any length of time produces an immenſe diſtenſion of the bladder, oppreſſion, uneaſineſs, and pain, not only of the part itſelf, but of the ſurrounding ones, and even of the whole body; a ſpaſm, or inſuperable conſtriction of the ſphincter; an inflammation, gangrene, or laceration of the bladder itſelf; a violent irritation of the whole habit; then a nauſea, vomiting, vertigo, general ſtupor, and an oppreſſion of the whole maſs of blood, with a humour of an urinous nature, which at laſt being poured out into various cavities of the body, eſpecially of the head, ſoon brings on a deep ſleep, convulſions, and death.

233 ſuria. From the ſame cauſes, but acting with leſs force, proceeds that diſeaſe called a *dyſuria*, when the urine paſſes with difficulty and pain, and is frequently red, black, bloody, purulent, mucous and ſandy; the reaſon of all which appearances is very much unknown.—The moſt frequent complaint, however, in making water, is where the patient has a continual and violent deſire of paſſing his urine, while at the ſame time only two or three drops can be paſſed at once, and that not without ſome pain. This is occaſioned, even in healthy people, by ſome acrid ſubſtance taken into the ſtomach; and is very common to old people who are generally ſubject to diſorders of the kidneys and bladder. It ariſes alſo frequently from a ſtone irritating the bladder, or from an inflammation of it, or its being deprived of its mucus, or this laſt being ſomehow or other corrupted; or laſtly, from certain diſeaſes or ſome particular ſtate of the neighbouring parts, as of the uterus, vagina, urethra, proſtate gland, &c.

34 angury. Akin to the ſtrangury is an incontinence of urine, when the patient's water either comes away againſt his will, or altogether without his knowledge. This diſorder may ariſe from debility, palſy, an ulcer or wound, or any long-continued and violent irritation of the bladder, eſpecially of its ſphincter, as from a ſtone, a general palſy, or difficult labour injuring the neighbouring parts.—This ſymptom occurs in a great number of diſeaſes, eſpecially in the hydrocephalus.—Sometimes the urine is expelled with violence, either by reaſon of univerſal ſpaſms, or by violent contractions of the muſcles of reſpiration, as in ſneezing, laughter, &c.

35 culi. Among the diſorders incident to the urine we may reckon the production of calculi, which frequently bring on the moſt excruciating and dangerous diſeaſes.—The urine, beſides the water and ſalts, contains no ſmall ſhare of the glutinous part of the blood already ſomewhat corrupted, and ſtill inclined to farther corruption. Hence the urine even of the moſt healthy people depoſits a ſediment after it has ſtood for ſome time; and though none of this ſediment is formed in an healthy body, yet if the ſmalleſt particle of foreign matter is introduced into the bladder, a cruſt ſoon gathers round it, and it is ſure to become the baſis of a ſtone, which by degrees grows to a very great ſize. It is not unlikely, alſo, that ſome unknown fault of the fluids may contribute to the production of thoſe calculi, as the ſtone is well known to be an hereditary diſeaſe, and to be born with the patient. Calculous perſons alſo are commonly ſubject to complaints of the ſtomach, eſpecially to an acidity of it; and many have received no little relief from aklaleſcent or alkaline medicines.—From the ſame cauſes may calculi be formed in the kidneys, from which proceed a horrid train of ſymptoms deſcribed in the ſubſequent part of this treatiſe.

226 Cancer. The laſt diſorder here to be taken notice of is a diſorder of the glands themſelves, owing to ſome kind of obſtruction, and is one of the moſt dreadful diſeaſes incident to human nature. Hence happens a great ſwelling and ſurpriſing hardneſs, not only without pain, but ſometimes even with a diminution of ſenſation in the part affected; and when the gland is thus affected, it is called a *ſcirrhus*. Sometimes it remains in this ſtate for a long time; but ſooner or later produces the moſt excruciating torment. By degrees it is infected with a ſlow and malignant ſuppuration, degenerating into an horrid ulcer, conſuming not only the part itſelf, but eating away the neighbouring ones, and corrupting the whole body with the moſt acrid and incurable poiſon. This diſeaſe is called a *cancer*, of which the cauſes are very little known.

Sect. IV. *Of Noſology*.

Nosology is the general hiſtory or deſcription of diſeaſes, arranged in a ſyſtematic order.

The diſeaſes deſcribed by medical writers are ſo extremely numerous, that unleſs they were arranged according to ſome regular plan, we ſhould never be able to retain their deſcriptions, nor remember how they are to be treated.

Different writers have adopted different ſchemes; but the moſt uſeful and ſatisfactory of all is that which was firſt propoſed by Sydenham.

By this, which is termed the *ſyſtematic method*, the hiſtories of diſeaſes, like the ſubjects of natural hiſtory, are arranged into claſſes, orders, genera, and ſpecies.

The claſſes are marked by certain ſymptoms and circumſtances, which are common to each; the orders all agree in having the ſame marks with the claſs to which they belong, together with ſome additional ones peculiar to the order: the genera have all the marks and circumſtances of the claſs and the order, and beſides have ſome which diſtinguiſh the genus; and the ſpecies have all the marks and tokens of claſs, order, and genus, with the ſtill further addition of ſymptoms or circumſtances which give the ſpecific character.

There are people who, probably, have not been at the trouble to make themſelves maſters of it, and yet pretend to decry the ſyſtematic way of arranging the hiſtories of diſeaſes: but if ſuch as have capacity to underſtand it will take the pains of examining, they will ſee that this method is more ſatisfactory than any that has yet been adopted, and tends to eſtabliſh practice on the moſt rational foundations; ſince, by bringing thoſe diſeaſes together which agree in the greater number of circumſtances, and demand nearly ſimilar remedies, it ſhews, that though there may be great variety in the names, there needs not much in the methods of treatment.

This, as hath been already mentioned, is the ſcheme which Sydenham recommends in the preface to his juſtly celebrated works, where he inſiſts ſtrongly on the neceſſity and advantage of "reducing diſeaſes to a certain and determinate ſpecies with the ſame exactneſs that we ſee it done by botanic writers in their hiſtories of plants.”

Sauvages was the firſt who ottempted to execute this great taſk. Linnæus, Vogel, Sagar, and Cullen, have ſince endeavoured to improve his method. Sauvages enumerates 315 genera, Linnæus 326, Vogel 560, Sagar 350, and Cullen 150. The bare inſpection of theſe numbers, it muſt be acknowledged, ſhews that phyſicians are far from being agreed with regard to what conſtitutes the generic or ſpecific characters of a diſeaſe. Nor is it perhaps probable that they ever can agree in this point: The diagnoſtic ſymptoms of diſeaſes are not ſo eaſily diſcovered as the ſtamina or petals of a flower, or the number of teeth or toes in a quadruped. At the ſame time, as the utility of a ſyſtematic arrangement is indiſputable, there can be no heſitation in preferring a method chargeable with ſome defects, to no method at all. To give our readers therefore an idea of the ſcheme of claſſing diſeaſes, we ſhall lay before them the ſhorteſt diſtribution, being that of Dr Cullen. To exhibit the others would be ſuperfluous to the medical reader, who is already acquainted with them, or can at pleaſure conſult the *Synopſis Noſologiæ Methodicæ* publiſhed by the laſt-mentioned learned profeſſor; and to ordinary readers, the detail would be equally uſeleſs and unintereſting. In the ſubſequent or practical part of this treatiſe, however, the ſynonyma of different noſologiſts will be carefully noted at the beginning of each diſeaſe, and referred to their reſpective claſſes, orders, &c.

CULLEN's *Arrangement*.

CLASS I. PYREXIÆ. A frequent pulſe coming on after an horror; conſiderable heat; many of the functions injured; the ſtrength of the limbs eſpecially diminiſhed.

ORDER I. Febres. Pyrexia without any primary local affection, following the languor, laſſitude, and other ſymptoms of debility.

Sect. I. *Intermittentes.* Fevers ariſing from the miaſma of marſhes; with an apyrexia, or at leaſt a very evident remiſſion; but the diſeaſe returns conſtantly, and for the moſt part with a horror or trembling. There is only one paroxyſm in a day.

Genus I. Tertiana. Similar paroxyſms at an interval of about 48 hours, coming on at mid-day. A tertian hath either,

I. An apyrexia interpoſed;

1. Varying the duration of the paroxyſm.

A. The tertian whoſe paroxyſms are not extended beyond 12 hours.

B. The tertian with paroxyſms extended beyond 12 hours.

2. Varying in the return of the paroxyſms.

C. The tertian returning every day with unequal paroxyſms alternately ſimilar to one another.

D. The tertian returning every third day, with two paroxyſms on the ſame day.

E. The tertian returning every day, with two paroxyſms on every third day, and only one on the intermediate ones.

F. The tertian returning every day, with a notable remiſſion interpoſed between the odd and the even days, but a leſs remarkable one between the even and the odd one.

3. Varying in its ſymptoms.

G. The tertian accompanied with a diſpoſition to ſleep.

H. Accompanied with ſpaſms and convulſive motions.

I. Accompanied with an effloreſcence on the ſkin.

K. With phlegmaſia.

4. Varying in being complicated with other diſeaſes.

5. Varying as to its origin.

II. With the interpoſition only of a remiſſion between the paroxyſms.

Genus II. Quartana. Similar paroxyſms, with an interval of about 72 hours, coming on in the afternoon.

I. With the interpoſition of an apyrexia.

1. Varying in the type.

A. The quartan with ſingle paroxyſms, returning every fourth day, none on the other days.

B. With two paroxyſms every fourth day, and none on the other days.

C. With three paroxyſms every fourth day, and none on the intermediate days.

D. Of the four days having only the third free from fever, with ſimilar paroxyſms every fourth day.

E. The quartan coming on every day, with ſimilar paroxyſms every fourth day.

2. Varying in its ſymptoms.

3. Varying in being complicated with other diſeaſes.

II. With a remiſſion only between the paroxyſms.

Genus III. Quotidiana. Similar paroxyſms with an interval of about 24 hours, coming on in the morning.

I. With the interpoſition of an apyrexia.

1. Varies in being ſolitary.

A. Univerſal.

B. Partial.

2. Complicated with other diſeaſes.

II. With a remiſſion only between the paroxyſms.

Sect. II. *Continuæ.* Fevers without any intermiſſion, and not occaſioned by marſh miaſmata; attended with exacerbations and remiſſions, though not very remarkable.

Genus IV. Synocha. Great heat; a frequent, ſtrong, and hard pulſe; high-coloured urine; the functions of the ſenſorium a little diſturbed.

Genus V. Typhus. A contagious diſeaſe; the heat not greatly above the natural; the pulſe ſmall, weak, and for the moſt part frequent; the urine little changed; the functions of the ſenſorium very much diſturbed, and the ſtrength greatly diminiſhed.

The ſpecies are,

I. Typhus *petechialis*. Typhus for the moſt part with petechiæ.

Varying in degree. 1. Mild typhus. 2. Malignant typhus.

II. Typhus *icterodes*. Typhus with a yellowneſs of the ſkin.

Genus VI. Synochus. A contagious diſeaſe. A fever compoſed of a ſynocha and typhus; in the beginning a ſynocha, but towards the end a typhus.

ORDER II. Phlegmaſiæ. A ſynocha fever, with inflammation or topical pain, the internal function of the part being at the ſame time injured; the blood covered with ſize.

Genus VII. Phlogoſis. Pyrexia; redneſs, heat, and painful tenſion, of ſome external part.

The ſpecies are,

I. Phlogoſis (*phlegmone*) of a vivid red colour; a ſwelling well defined, for the moſt part elevated to a point, and frequently degenerating into an abſceſs, with a beating or throbbing pain.

The variations are, 1. In the form. 2. In the ſituation.

II. Phlogoſis (*erythema*) of a reddiſh colour, vaniſhing by preſſure; of an unequal and creeping circumference, with ſcarce any ſwelling; ending in the ſcaling off of the cuticle, in phlyctenæ, or bliſters.

The variations are, 1. In the degree of violence. 2. In the remote cauſe. 3. In being complicated with other diſeaſes.

The conſequences of a phlogoſis are, an impoſthume, gangrene, ſphacelus.

Genus VIII. Ophthalmia. A redneſs and pain of the eye, with an inability to bear the light; for the moſt part with an effuſion of tears.

The ſpecies and varieties of the ophthalmia, are,

I. Idiopathic.

1. Ophthalmia (*of the membranes*), in the tunica adnata, and the membranes lying under it, or the coats of the eye.

A. Varying in the degree of the external inflammation.

B. In the internal coats affected.

2. Ophthalmia (of the *tarſus* or cartilaginous edge) of the eye-lids, with ſwelling, eroſion, and glutinous exſudation.

II. Symptomatic.

1. From a diſeaſe of the eye itſelf.

2. From diſeaſes of other parts, or of the whole body.

Genus IX. Phrenitis. Violent pyrexia; pain of the head; redneſs of the face and eyes; inability to endure the light or any noiſe; watchfulneſs; a fierce delirium, or typhomania.

I. Idiopathic.

II. Symptomatic.

Genus X. Cynanche. Pyrexia ſometimes inclining to a typhus; difficulty of ſwallowing and breathing; with a ſenſation of narrowneſs in the fauces.

The ſpecies are,

I. Cynanche (*tonſillaris*) affecting the mucous membrane of the fauces, but eſpecially the tonſils, with redneſs and ſwelling, accompanied with a ſynocha.

II. Cynanche (*maligna*) affecting the tonſils and mucous membrane of the fauces with ſwelling, redneſs, and mucous cruſts of a whitiſh or aſh-colour, creeping, and covering ulcers; with a typhous fever and exanthemata.

III. Cynanche (*trachealis*) attended with difficult reſpiration, noiſy and hoarſe inſpiration, loud cough, without any apparent tumour in the fauces, ſomewhat difficult deglutition, and a ſynocha.

IV. The pharyngæa, attended with redneſs in the bottom of the fauces, very difficult and painful deglutition, reſpiration ſufficiently free, and a ſynocha.

V. The parotidæa; with great ſwelling of the parotids and maxillary glands appearing on the outſide; the reſpiration and deglutition but little injured; a ſynocha, for the moſt part mild.

Diſeaſes of this genus are ſymptomatic, either from external or internal cauſes.

Genus XI. Pneumonia. Pyrexia, with a pain in ſome part of the thorax, difficult reſpiration, and cough. The ſpecies are,

I. Peripneumony, with a pulſe not always hard, but ſometimes ſoft; an obtuſe pain of the breaſt; the reſpiration always difficult; ſometimes the patient cannot breathe unleſs in an upright poſture; the face ſwelled, and of a livid colour; the cough for the moſt part moiſt, frequently bloody.

1. Simple idiopathic peripneumonies.

Varying in degree.

2. Idiopathic peripneumonies complicated with fever.

3. Symptomatic peripneumonies.

II. Pleuriſy, with a hard pulſe; for the moſt part attended with a pungent pain of one ſide, augmented chiefly during the time of inſpiration; an uneaſineſs when lying on the ſide; a moſt painful cough, dry in the beginning of the diſeaſe, afterwards moiſt, and frequently bloody.

1. Simple idiopathic pleuriſies.

2. Pleuriſies, complicated (1.) With fever. (2.) With catarrh.

3. Symptomatic pleuriſies.

4. Falſe pleuriſies.

The conſequences of pleuriſy are a vomica or empyema.

Genus XIII. Carditis. Pyrexia; pain about the heart; anxiety; difficulty of breathing; cough; unequal pulſe; palpitation of the heart, and fainting.

I. Idiopathic.

II. Symptomatic.

Genus XIV. Peritonitis. Pyrexia; pain of the belly, exaſperated by an upright poſture, without the proper ſigns of other abdominal phlegmaſiæ. If the diagnoſtics of the following diſeaſes are given, they may be reckoned as ſo many ſpecies of this genus.

I. Peritonitis (*propria*) ſituated in the peritonæum, properly ſo called, ſurrounding the inſide of the abdomen.

II. Peritonitis (*omentalis*) in the peritonæum extended through the omentum.

III. Peritonitis (*meſenterica*) in the peritonæum ſpread through the meſentery.

Genus XV. Gaſtritis. Pyrexia inclining to a typhus; anxiety; pain and heat of the epigaſtrium, augmented when any thing is taken into the ſtomach; an inclination to vomit, and an immediate rejection of every thing ſwallowed; an hickup.

I. Idiopathic.

1. From internal cauſes.

A. Gaſtritis (*phlegmonodea*) attended with acute pain and violent pyrexia.

2. From external cauſes.

B. Gaſtritis (*eryſipelatoſa*), with a leſs violent fever and pain; an eryſipelatous redneſs appearing on the fauces.

II. Symptomatic.

Genus XVI. Enteritis. Pyrexia of a typhous nature; pungent pain of the belly, ſtretching and twiſting round the navel; vomiting; the belly obſtinately bound.

I. Idiopathic.

1. Enteritis (*phlegmonodæa*), with acute pain, vio-

lent fever, vomiting, and conſtipation of the belly.

2. Enteritis (*eryſipelatoſa*) with leſs acute fever and pain, without vomiting; but accompanied with a diarrhœa.

II. Symptomatic.

Genus XVII. Hepatitis. Pyrexia; tenſion and pain of the right hypochondrium; ſometimes pungent like that of a pleuriſy, but more frequently obtuſe; a pain reaching to the clavicle and top of the right ſhoulder; a difficulty of lying on the left ſide; dyſpnœa; dry cough, vomiting, and hickup.

Genus XVIII. Splenitis. Pyrexia; tenſion, heat and ſwelling of the left hypochondrium, the pain increaſing by preſſure; without the ſigns of nephritis.

Genus XIX. Nephritis. Pyrexia; pain in the region of the kidney, often following the courſe of the ureter; frequent making of water, either thin and colourleſs, or very red; vomiting; ſtupor of the thigh; with a retraction or pain of the teſticle of the ſame ſide. The ſpecies are,

I. Idiopathic. Spontaneous.

II. Symptomatic.

Genus XX. Cyſtitis. Pyrexia; pain and ſwelling of the hypogaſtrium; frequent and painful making of water, or iſchuria; and teneſmus. The ſpecies are,

I. Thoſe ariſing from internal cauſes.

II. Thoſe from external cauſes.

Genus XXI. Hyſteritis. Pyrexia; heat, tenſion, ſwelling, and pain, of the hypogaſtrium; the os uteri painful when touched; vomiting.

Genus XXII. Rheumatiſmus. A diſeaſe ariſing from an external and frequently very evident cauſe; pyrexia; pain about the joints, frequently purſuing the courſe of the muſcles; infeſting the knees and other large joints rather than thoſe of the feet or hands; increaſed by external heat.

The ſpecies are either idiopathic or ſymptomatic. The former varies in ſituation.

A. In the muſcles of the loins.

B. In the muſcles of the coxendix.

C. In the muſcles of the breaſt.

Genus XXIII. Odontalgia; a rheumatiſm of the jaws from a caries of the teeth.

Genus XXIV. Podagra. An hereditary diſeaſe, ariſing without any evident external cauſe, but for the moſt part preceded by an unuſual affection of the ſtomach; pyrexia; pain of a joint for the moſt part of the great toe of the foot, but certainly infeſting chiefly the wriſts and ankles; returning by intervals; and often alternated with affections of the ſtomach and other internal parts.

I. Podagra (*regularis*) with a pretty violent inflammation of the joints remaining for ſome days, and by degrees going off with ſwelling, itching, and deſquamation of the affected part.

II. Podagra (*atonica*) with an atony of the ſtomach, or ſome other internal part; and either without the uſual inflammation of the joints, or only with ſlight and wandering pains; and frequently alternated with dyſpepſia, or other ſymptoms of atony.

III. Podagra (*retrograda*) with the inflammation of the joints ſuddenly receding, and an atony of the ſtomach and other parts immediately following.

IV. Podagra (*aberrans*) with the inflammation of an internal part either preceding or not, and ſuddenly receding; an inflammation of the joints.

Genus XXV. Arthropuoſis. Deep, obtuſe, and long-continued pains of the joints or muſcular parts, frequently following contuſions; with either no ſwelling, or a moderate and diffuſed one; no phlogoſis; pyrexia, at firſt gentle, afterwards hectic, and at length an impoſthume.

ORDER III. Exanthemata. Contagious diſeaſes; affecting a perſon only once in their life; beginning with fever; after a certain time appear phlogoſes, for the moſt part ſmall and in conſiderable number, and diſperſed over the ſkin.

Genus XXVI. Eryſipelas. A ſynocha of two or three days, for the moſt part attended with drowſineſs, often with a delirium. In ſome part of the ſkin, moſt frequently the face, appears a phlogoſis *erythema.* (G. VII. Sp. 2.) The ſpecies are,

I. Eryſipelas (*veſiculoſum*), with erythema, redneſs creeping, occupying a large ſpace, and in ſome parts ending in large bliſters.

II. Eryſipelas (*phlyctænodes*), with an erythema formed of a number of papulæ, chiefly occupying the trunk of the body, ending in phlyctenæ or ſmall bliſters.

The diſeaſe is alſo ſymptomatic.

Genus XXVII. Peſtis. An exceedingly contagious typhus, with the higheſt debility. On an uncertain day of the diſeaſe buboes and carbuncles break forth. It is various in degree, but the ſpecies are uncertain.

Genus XXVIII. Variola; a contagious ſynocha, with vomiting, and pain on preſſing the epigaſtrium. On the third day begins, and on the fifth is finiſhed, the eruption of inflammatory puſtules, which ſuppurate in the ſpace of eight days, and at laſt go off in cruſts; frequently leaving depreſſed cicatrices or pock-pits in the ſkin. The ſpecies are,

I. Variola (*diſcreta*) with few, diſtinct, turgid puſtules, having circular baſes; the fever ceaſing immediately after the eruption.

II. Variola (*confluens*) with numerous, confluent, irregularly ſhaped puſtules, flaccid, and little elevated; the fever remaining after the eruption.

Genus XXIX. Varicella. Synocha; papulæ breaking out after a ſhort fever, ſimilar to thoſe of the ſmall-pox, but hardly ever coming to ſuppuration; after a few days going off in ſmall ſcales, but never leaving any mark.

Genus XXX. Rubeola. A contagious ſynocha, with ſneezing, epiphora, and dry hoarſe cough. On the fourth day, or a little later, break forth ſmall, cluſtered, and ſcarce elevated papulæ; after three days going off in very ſmall branny ſcales.

I. Rubeola (*vulgaris*) with very ſmall confluent, corymboſe papulæ, ſcarce riſing above the ſkin.

Varying,

1. In the ſymptoms being more ſevere, and the courſe of the diſeaſe leſs regular.

2. In being accompanied with a quinſey.

3. With a putrid diatheſis.

II. Rubeola (*variolodes*) with diſtinct papulæ, raiſed above the ſkin.

Genus XXXI. Miliaria. Synochus with anxiety, frequent ſighing, fœtid ſweat, and points on the ſkin. On an uncertain day of the diſeaſe, break out red, ſmall, diſtinct papulæ, ſpread over the whole body as well as the face; the apices of which, after one or two days, become very ſmall, white puſtules, remaining for a ſhort time.

Genus XXXII. Scarlatina. A contagious ſynocha, On the fourth day of the diſeaſe the face ſwells a little; at the ſame time an univerſal redneſs occupies the ſkin in large ſpots, at length running together; after three days, going off in branny ſcales; frequently ſucceeded by an anaſarca. The ſpecies are,

I. Scarlatina (*ſimplex*), not accompanied with cynanche.

II. Scarlatina (*cynanchica*), with an ulcerous cynanche.

Genus XXXIII. Urticaria. An amphemerina fever. On the ſecond day of the diſeaſe, red ſpots reſembling the ſtinging of nettles, almoſt vaniſhing during the day, but returning in the evening with the fever, and after a few days going off altogether in very ſmall ſcales.

Genus XXXIV. Pemphigus. A contagious typhus. On the firſt, ſecond, or third day of the diſeaſe, bliſters break out in ſeveral parts of the body, of the bigneſs of a bean, remaining for many days, and at laſt pouring out a thin ichor.

Genus XXXV. Aphtha. Synochus; the tongue ſomewhat ſwelled and of a livid colour, as well as the fauces; eſchars firſt appearing in the fauces, but at length occupying the whole internal part of the mouth, of a white colour, ſometimes diſtinct, often running together; quickly growing again when taken off; and remaining for an uncertain time.

The ſpecies are, 1. Idiopathic. 2. Symptomatic.

Order IV. Hæmorrhagiæ. Pyrexia, with a profuſion of blood, without any external violence; the blood drawn from a vein hath the ſame appearance as in phlegmaſiæ.

Genus XXXVI. Epiſtaxis. Pain or weight of the head, redneſs of the face; a profuſion of blood from the noſe.

I. Idiopathic.

Varying according to the time of life.

1. Epiſtaxis of young people, with ſymptoms of an arterious plethora.
2. Epiſtaxis of old people, with ſymptoms of a venous plethora.

II. Symptomatic.

1. From internal cauſes.
2. From external cauſes.

Genus XXXVII. Hæmoptyſis. Redneſs of the cheeks; a ſenſation of uneaſineſs, or pain, and ſometimes of heat, in the breaſt; difficulty of breathing; tickling of the fauces; either a ſevere or leſs violent cough, bringing up florid and frequently frothy blood.

The idiopathic ſpecies are,

1. Hæmoptyſis (*plethorica*), without any external violence, and without being preceded by any cough or ſuppreſſion of a cuſtomary evacuation.
2. Hæmoptyſis (*violenta*), from external violence applied.
3. Hæmoptyſis (*phthiſica*), after a long-continued cough, with leanneſs and debility.
4. Hæmoptyſis (*calculoſa*), in which ſome calculous molecules, for the moſt part of a calcareous nature, are thrown up.
5. Hæmoptyſis (*vicaria*), after the ſuppreſſion of a cuſtomary evacuation.

Beſides theſe, there are a number of ſymptomatic ſpecies mentioned by different authors. The conſequence of an hæmoptyſis is, a

Phthiſis. A waſting and debility of the body, with a cough, hectic fever, and for the moſt part a purulent expectoration. The ſpecies are,

I. An incipient pthiſis, without any expectoration of pus.

II. A confirmed phthiſis, with an expectoration of pus.

Both ſpecies vary, 1. As to their remote cauſe. 2. As to the origin of the purulent matter.

Genus XXXVIII. Hæmorrhois. Weight and pain of the head; vertigo; pain of the loins; pain of the anus; livid painful tubercles, from which for the moſt part blood flows out; which ſometimes alſo drops out of the anus, without any apparent tumour. The ſpecies are,

1. Hæmorrhois (*tumens*), external from mariſcis.
   Varying.
   A, Bloody.
   B, Mucous.
2. Hæmorrhois (*procidens*), external from a *procidentia ani*.
3. Hæmorrhois (*fluens*), internal, without any ſwelling or *procidentia ani*.
4. Hæmorrhois (*cæca*), with pain and ſwelling of the anus, without any profuſion of blood.

Genus XXXIX. Menorrhagia. Pains of the back, belly, and loins, like thoſe of child-birth; an unuſually copious flux of the menſes or blood from the vagina. The ſpecies are,

1. Menorrhagia (*rubra*), bloody in women neither with child nor in child-birth.
2. Menorrhagia (*abortus*) bloody in women with child.
3. Menorrhagia (*lochialis*) bloody in child-bed women.
4. Menorrhagia (*vitiorum*) bloody from ſome local diſeaſe.
5. Menorrhagia (*alba*) ſerous, without any local diſeaſe, in women not with child.
6. Menorrhagia (*Nabothi*) ſerous in women with child.

Order V. Profluvia. Pyrexia, with an increaſed ſecretion, naturally not bloody.

Genus XL. Catarrhus. Pyrexia frequently contagious; an increaſed excretion of mucus, at leaſt efforts to excrete it.

The ſpecies are for the moſt part ſymptomatic.

1. From cold.
2. From contagion.

Genus XLI. Dyſenteria. Contagious pyrexia; frequent mucous or bloody ſtools, while the alvine fæces are for the moſt part retained; gripes; teneſmns.

Varying:

1. Accompanied with worms.
2. With the excretion of ſmall fleſhy or ſebaceous bodies.
3. With an intermittent fever.
4. Without blood.
5. With a miliary fever.

CLASS II. Neuroses.—An injury of the ſenſe and motion, without an idiopathic pyrexia or any local affection.

Order I. Comata.—A diminution of voluntary motion, with ſleep, or a deprivation of the ſenſes.

Genus XLII. Apoplexia.—Almoſt all voluntary motion diminiſhed, with ſleep more or leſs profound; the motion of the heart and arteries remaining.

The idiopathic ſpecies are,

1. Apoplexia (*ſanguinea*) with ſymptoms of univerſal plethora, eſpecially of the head.

2. Apoplexia (*ſeroſa*) with a leucophlegmatia over the whole body, eſpecially in old people.

3. Apoplexia (*hydrocephalica*) coming on by degrees; affecting infants, or thoſe below the age of puberty, firſt with laſſitude, a ſlight fever and pain of the head, then with ſlowneſs of the pulſe, dilatation of the pupil of the eye, and drowſineſs.

4. Apoplexia (*atrabiliaria*) taking place in thoſe of a melancholic conſtitution.

5. Apoplexia (*traumatica*) from ſome external injury mechanically applied to the head.

6. Apoplexia (*veneneta*) from powerful ſedatives taken internally or applied externally.

7. Apoplexia (*mentalis*) from a paſſion of the mind.

8. Apoplexia (*cataleptica*) in the contractile muſcles, with a mobility of the limbs by external force.

9. Apoplexia (*ſuffocata*) from ſome external ſuffocating power.

The apoplexy is frequently ſymptomatic.

1 Of an intermitting fever. 2 Continued fever. 3 Phlegmaſia. 4 Exanthema. 5 Hyſteria. 6 Epilepſy. 7 Podagra. 8 Worms. 9 Iſchuria 10 Scurvy.

Genus XLIII. Paralyſis. Only ſome of the voluntary motions diminiſhed, frequently with ſleep.

The idiopathic ſpecies are,

1 Paralyſis (*partialis*) of ſome particular muſcles only.

2. Paralyſis (*hemiplegica*) of one ſide of the body.

Varying according to the conſtitution of the body.

a. Hemiplegia in a plethoric habit.

b. In a leucophlegmatic habit.

3. Paralyſis (*paraplegica*) of one half of the body taken tranſverſely.

4. Paralyſis (*venenata*) from ſedative powers applied either internally or externally.

A ſymptom either of an Aſthenia or Palſy is,

Tremor; an alternate motion of a limb by frequent ſtrokes and intervals.

The ſpecies are, 1 Aſthenic. 2 Paralytic. 3 Convulſive.

Order II. Adynamiæ. A diminution of the involuntary motions whether vital or natural.

Genus XLIV. Syncope; a diminution, or even a total ſtoppage, of the motion of the heart for a little.

I. Idiopathic.

1. Syncope (*cardiaca*), returning frequently without any manifeſt cauſe, with violent palpitations of the heart during the intervals.—From a fault of the heart or neighbouring veſſels.

2. Syncope (*occaſionalis*) ariſing from ſome evident cauſe.—From an affection of the whole ſyſtem.

II. Symptomatic; or ſymptoms of diſeaſes either of the whole ſyſtem, or of other parts beſides the heart.

Genus XLV. Dyſpepſia. Anorexia, nauſea, vomiting, inflation, belching, rumination, cardialgia, gaſtrodynia, more or fewer of thoſe ſymptoms at leaſt concurring; for the moſt part with a conſtipation of the belly, and without any other diſeaſe either of the ſtomach itſelf or of other parts.

I. Idiopathic.

II. Symptomatic.

1. From a diſeaſe of the ſtomach itſelf.

2. From a diſeaſe of other parts, or of the whole body.

Genus XLVI. Hypochondriaſis. Dyſpepſia with languor, ſadneſs and fear without any adequate cauſes, in a melancholic temperament.

Genus XLVII. Chloroſis. Dyſpepſia, or a deſire of ſomething not uſed as food; a pale or diſcoloured complection; the veins not well filled; a ſoft tumour of the whole body; aſthenia; palpitation; ſuppreſſion of the menſes.

Order III. Spaſmi. Irregular motions of the muſcles or muſcular fibres.

Sect. I. *In the animal functions.*

Genus XLVIII. Tetanus;—a ſpaſtic rigidity of almoſt the whole body.

Varying according to the remote cauſe, as it ariſes either from ſomething internal, from cold, or from a wound. It varies likewiſe, from whatever cauſe it may ariſe, according to the part of the body affected.

Genus XLIX. Triſmus. A ſpaſtic rigidity of the lower jaw.—The ſpecies are,

1. Triſmus (*naſcentium*) ſeizing infants under two months old.

2. Triſmus (*traumaticus*) ſeizing people of all ages either from a wound or cold.

Genus L. Convulſio.—An irregular clonic contraction of the muſcles without ſleep.

I. Idiopathic.

II. Symptomatic.

Genus LI. Chorea, attacking thoſe who have not yet arrived at puberty, moſt commonly within the 10th or 14th year, with convulſive motions for the moſt part of one ſide in attempting the voluntary motion of the hands and arms, reſembling the geſticulations of mountebanks; in walking, rather dragging one of their feet after them than lifting it.

Genus LII. Raphania. A ſpaſtic contraction of the joints, with a convulſive agitation, and moſt violent periodical pain.

Genus LIII. Epilepſia. A convulſion of the muſcles, with ſleep.

The idiopathic ſpecies are,

1. Epilepſia (*cerebralis*) ſuddenly attacking without any manifeſt cauſe, without any ſenſe of uneaſineſs preceding, excepting perhaps a ſlight vertigo or ſcotomia.

2. Epilepſia (*ſympathica*) without any manifeſt cauſe, but preceded by the ſenſation of a kind of air riſing from a certain part of the body towards the head.

3. Epilepſia (*occaſionalis*) ariſing from a manifeſt irritation, and ceaſing on the removal of that irritation.

Varing according to the difference of the irritating matter. And thus it may ariſe,

From injuries of the head; pain; worms; poiſon; from the repulſion of the itch, or an effuſion of any other acrid humour; from crudities in the ſtomach;

from paſſions of the mind; from an immoderate hæmorrhage; or from debility.

Sect. II. *In the vital functions.*

In the action of the heart.

Genus LIV. Palpitatio. A violent and irregular motion of the heart.

In the action of the lungs.

Genus LV. Aſthma. A difficulty of breathing returning by intervals, with a ſenſe of ſtraitneſs in the breaſt, and a noiſy reſpiration with hiſſing. In the beginning of the paroxyſm there is either no cough at all, or coughing is difficult; but towards the end the cough becomes free, frequently with a copious ſpitting of mucus.—The idiopathic ſpecies are,

1. Aſthma (*ſpontaneum*) without any manifeſt cauſe or other concomitant diſeaſe.
2. Aſthma (*exanthematicum*) from the repulſion of the itch or other acrid effuſion.
3. Aſthma (*plethoricum*) from the ſuppreſſion of ſome cuſtomary ſanguineous evacuation, or from a ſpontaneous plethora.

Genus LVI. Dyſpnoea. A continual difficulty of breathing, without any ſenſe of ſtraitneſs, but rather of fullneſs and infarction in the breaſt; a frequent cough throughout the whole courſe of the diſeaſe.

The idiopathic ſpecies are,

1. Dyſpnœa, (*catarrhalis*) with a frequent cough, bringing up plenty of viſcid mucus.
2. Dyſpnœa (*ſicca*), with a cough for the moſt part dry.
3. Dyſpnœa (*aërea*), increaſed by the leaſt change of weather.
4. Dyſpnœa (*terrea*), bringing up with the cough an earthy or calculous matter.
5. Dyſpnœa (*aquoſa*), with ſcanty urine and œdematous feet; without any fluctuation in the breaſt, or other ſigns of an hydrothorax.
6. Dyſpnœa (*pinguedinoſa*), in very fat people.
7. Dyſpnœa (*thoracica*), from an injury done to the parts ſurrounding the thorax, or from ſome bad conformation of them.
8. Dyſpnœa (*extrinſeca*), from evident external cauſes.

The ſymptomatic ſpecies of dyſpnœa are ſymptoms,

1. Of diſeaſes of the heart or large veſſels.
2. Of a ſwelling in the abdomen.
3. Of various diſeaſes.

Genus LVII. Pertuſſis. A contagious diſeaſe; convulſive ſtrangulating cough reiterated with noiſy inſpiration; frequent vomiting.

Sect. III. *In the natural functions.*

Genus LVIII. Pyroſis. A burning pain in the epigaſtrium with plenty of aqueous humour, for the moſt part inſipid, but ſometimes acrid, belched up.

Genus LIX. Colica. Pain of the belly, eſpecially twiſting round the navel; vomiting; a conſtipation.

The idiopathic ſpecies are,

1. Colica (*ſpaſmodica*), with retraction of the navel, and ſpaſms of the abdominal muſcles.

Varying, by reaſon of ſome ſymptoms ſuperadded. Hence.

a, Colica, with vomiting of excrements, or of matters injected by the anus.

b, Colica, with inflammation ſupervening.

2. Colica (*pictonum*), preceded by a ſenſe of weight or uneaſineſs in the belly, eſpecially about the navel; then comes on the colic pain, at firſt ſlight and interrupted, chiefly augmented after meals; at length more ſevere and almoſt continual, with pains of the arms and back, at laſt ending in a palſy.

Varying according to the nature of the remote cauſe; and hence,

a, From metallic poiſon.

b, From acids taken inwardly.

c, From cold.

d, From a contuſion of the back.

3. Colica (*ſtercorea*), in people ſubject to coſtiveneſs.
4. Colica (*accidentalis*), from acrid matter taken inwardly.
5. Colica (*meconialis*), in new-born children from a retention of the meconium.
6. Colica (*calloſa*), with a ſenſation of ſtricture in ſome part of the inteſtines, and frequently of a collection of flatus with ſome pain before the conſtricted part; which flatus alſo paſſing through the part where the ſtricture is felt, gradually vaniſhes; the belly ſlow, and at laſt paſſing only a few liquid fæces.
7. Colica (*calculoſa*), with a fixed hardneſs in ſome part of the abdomen, and calculi ſometimes paſſing by the anus.

Genus LX. Cholera. A vomiting of bilious matter, and likewiſe a frequent excretion of the ſame by ſtool; anxiety; gripes; ſpaſms in the calves of the legs.

I. Idiopathic.

1. Cholera (*ſpontanea*) ariſing in a warm ſeaſon, without any manifeſt cauſe.
2. Cholera (*accidentalis*) from acrid matters taken inwardly.

II. Symptomatic.

Genus LXI. Diarrhœa. Frequent ſtools; the diſeaſe not infectious; no primary pyrexia.

I. Idiopathic.

1. Diarrhœa (*crapuloſa*), in which the excrements are voided in greater quantity than naturally.
2. Diarrhœa (*bilioſa*), in which yellow fæces are voided in great quantity.
3. Diarrhœa (*mucoſa*), in which either from acrid ſubſtances taken inwardly, or from cold, eſpecially applied to the feet, a great quantity of mucus is voided.
4. Diarrhœa (*cœliaca*), in which a milky humour of the nature of chyle is paſſed.
5. Diarrhœa (*lienteria*), in which the aliments are diſcharged with little alteration ſoon after eating.
6. Diarrhœa (*hepatirrhœa*), in which a bloody ſerous matter is diſcharged without pain.

II. Symptomatic.

Genus LXII. Diabetes. A chronical profuſion of urine, for the moſt part preternatural, and in immoderate quantity.

I. Idiopathic.

1. Diabetes (*mellitus*), with urine of the ſmell, colour, and taſte of honey.
2. Diabetes (*inſipidus*), with limpid, but not ſweet urine.

II. Symptomatic.

Genus LXIII. Hyſteria. Rumbling of the bowels;

a ſenſation as of a globe turning itſelf in the belly, aſcending to the ſtomach and fauces, and there threatening ſuffocation; ſleep; convulſions; a great quantity of limpid urine; the mind involuntarily fickle and mutable.

The following are by Sauvages reckoned diſtinct idiopathic ſpecies; but, by Dr Cullen, only varieties of the ſame ſpecies.

A, From a retention of the menſes.
B, From a menorrhagia cruenta.
C, From a menorrhagia ſeroſa, or fluor albus.
D, From an obſtruction of the viſcera.
E, From a fault of the ſtomach.
F, From too great ſalacity.

Genus LXIV. Hydrophobia. A diſlike and horror at any kind of drink, as occaſioning a convulſion of the pharynx; induced, for the moſt part, by the bite of a mad animal. The ſpecies are,

I. Hydrophobia (*rabioſa*), with a deſire of biting the byſtanders, occaſioned by the bite of a mad animal.

II. Hydrophobia (*ſimplex*), without madneſs, or any deſire of biting.

Order IV. Veſaniæ. Diſorders of the judgment, without any pyrexia or coma.

Genus LXV. Amentia; an imbecillity of judgement, by which people either do not perceive, or do not remember, the relations of things. The ſpecies are,

I. Amentia (*congenita*), continuing from a perſon's birth.

II. Amentia (*ſenilis*), from the diminution of the perceptions and memory through extreme old age.

III. Amentia (*acquiſita*), occurring in people formerly of a ſound mind, from evident external cauſes.

Genus LXVI. Melancholia; a partial madneſs, without dyſpepſia.

Varying according to the different ſubjects concerning which the perſon raves; and thus is

1. With an imagination in the patient concerning his body being in a dangerous condition, from ſlight cauſes.; or that his affairs are in a deſperate ſtate.
2. With an imagination concerning a proſperous ſtate of affairs.
3. With violent love, without ſatyriaſis or nymphomania.
4. With a ſuperſtitious fear of a future ſtate.
5. With an averſion from motion and all the offices of life.
6. With reſtleſſneſs, and an impatience of any ſituation whatever.
7. With a wearineſs of life.
8. With a deception concerning the nature of the patient's ſpecies.

The Doctor reckons that there is no ſuch diſeaſe as that called *dæmonomania*, and that the diſeaſes mentioned by Sauvage under that title are either

1. Species of melancholy or mania; or
2. Of ſome diſeaſe by the ſpectators falſely aſcribed to the influence of an evil ſpirit; or
3. Of a diſeaſe entirely feigned; or
4. Of a diſeaſe partly true and partly feigned.

Genus LXVII. Mania; univerſal madneſs.

1. Mania (*mentalis*), ariſing entirely from paſſions of the mind.
2. Mania (*corporea*), from an evident diſeaſe of the body.

Varying according to the different diſeaſe of the body.

3. Mania (*obſcura*), without any paſſion of mind, or evident diſeaſe of the body preceding.

The ſymptomatic ſpecies of mania are,

1. Paraphroſyne from poiſons.
2. Paraphroſyne from paſſion.
3. Paraphroſyne febrilis.

Genus LXVIII. Oneirodynia. A violent and troubleſome imagination in time of ſleep.

1. Oneirodynia (*activa*), exciting to waking and various motions.
2. Oneirodynia (*gravans*), from a ſenſe of ſome weight incumbent, and preſſing on the breaſt eſpecially.

CLASS III. Cachexiæ; a depraved habit of the whole or greateſt part of the body, without primary pyrexia or neuroſis.

Order I. Marcores; a waſting of the whole body.

Genus LXIX. Tabes. Leanneſs, aſthenia, hectic pyrexia. The ſpecies are,

1. Tabes (*purulenta*), from an external or internal ulcer, or from a vomica.

Varying in its ſituation; hence,

2. Tabes (*ſcrophuloſa*), in ſcrophulous conſtitutions.
3. Tabes (*venenata*), from poiſon taken inwardly.

Genus LXX. Atrophia. Leanneſs and aſthenia, without hectic pyrexia. The ſpecies are,

1. Atrophia (*inanitorum*), from too great evacuation.

1. Atrophia (*famelicorum*), from a deficiency of nouriſhment.

3. Atrophia (*cacochymica*), from corrupted nouriſhment.
4. Atrophia (*debilium*), from the function of nutrition being depraved, without any extraordinary evacuation or cacochymia having preceded.

Order II. Intumeſcentiæ. An external tumour of the whole or greateſt part of the body.

Sect. I. Adipoſæ.

Genus LXXI. Polyſarcia; a troubleſome ſwelling of the body from fat.

Sect. II. Flatuoſæ.

Genus LXXII. Pneumatoſis; a tenſe elaſtic ſwelling of the body, crackling under the hand. The ſpecies are,

1. Pneumatoſis (*ſpontanea*), without any manifeſt cauſe.
2. Pneumatoſis (*traumatica*), from a wound in the breaſt.
3. Pneumatoſis (*venenata*), from poiſon injected or applied.
4. Pneumatoſis (*hyſterica*), with hyſteria.

Genus LXXIII. Tympanites; a tenſe, elaſtic, ſonorous ſwelling of the abdomen; coſtiveneſs; a decay of the other parts. The ſpecies are,

1. Tympanites (*inteſtinalis*), with a tumour of the abdomen frequently unequal, and with a frequent evacuation of air relieving the tenſion and pain.

2. Tympanites (*abdominalis*), with a more evident noiſe, a more equable tumour, and a leſs frequent emiſſion of flatus, which alſo gives leſs relief.

Genus LXXIV. Phyſometra; a ſlight elaſtic ſwelling in the epigaſtrium, having the figure and ſituation of the uterus.

Sect. III. Aquoſæ or Hydropes.

Genus LXXV. Anaſarca. A ſoft, inelaſtic ſwelling of the whole body, or ſome part of it. The ſpecies are,

1. Anaſarca (*ſeroſa*) from a retention of ſerum on account of the ſuppreſſion of the uſual evacuations, or from an increaſe of the ſerum on account of too great a quantity of water taken inwardly.

2. Anaſarca (*oppilata*) from a compreſſion of the veins.

3. Anaſarca (*exanthematica*) ariſing after exanthemata, eſpecially after the eryſipelas.

4. Anaſarca (*anæmia*) from the thinneſs of the blood produced by hæmorrhage.

5. Anaſarca (*debilium*) in weak people after long diſeaſes, or from other cauſes.

Genus LXXVI. Hydrocephalus. A ſoft inelaſtic ſwelling of the head, with the ſutures of the cranium opened.

Genus LXXVII. Hydrorachitis. A ſoft, ſlender tumour above the vertebræ of the loins; the vertebræ gaping from each other.

Genus LXXVIII. Hydrothorax. Dyſpnœa; paleneſs of the face; oedematous ſwellings of the feet; ſcanty urine; lying down difficult; a ſudden and ſpontaneous waking out of ſleep, with palpitation; water fluctuating in the breaſt.

Genus LXXIX. Aſcites. A tenſe, ſcarce elaſtic, but fluctuating ſwelling of the abdomen. The ſpecies are,

1. Aſcites (*abdominalis*), with an equal ſwelling of the whole abdomen, and with a fluctuation ſufficiently evident.

Varying according to the cauſe.
A, From an obſtruction of the viſcera.
B, From debility.
C, From a thinneſs of the blood.

2. Aſcites (*ſaccatus*), with a ſwelling of the abdomen, in the beginning at leaſt, partial, and with a leſs evident fluctuation.

Genus LXXX. Hydrometra. A ſwelling of the hypogaſtrium in women, gradually increaſing, keeping the ſhape of the uterus, yielding to preſſure, and fluctuating; without iſchuria or pregnancy.

Genus LXXXI. Hydrocele. A ſwelling of the ſcrotum, not painful; increaſing by degrees, ſoft, fluctuating, and pellucid.

Sect. IV. Solidæ.

Genus LXXXII. Phyſconia. A ſwelling chiefly occupying a certain part of the abdomen, gradually increaſing, and neither ſonorous nor fluctuating. The ſpecies are,

Phyſconia hepatica.
Phyſconia ſplenica.
Phyſconia renalis.
Phyſconia uterina.
Phyſconia ab ovario.
Phyſconia meſenterica.
Phyſconia inteſtinalis.
Phyſconia omentalis.
Phyſconia polyſplachna.
Phyſconia viſceralis.
Phyſconia externa lupialis.
Phyſconia externa ſcirrhodea.
Phyſconia externa hydatidoſa.
Phyſconia ab adipe ſubcutaneo.
Phyſconia ab excreſcentia.

Genus LXXXIII. Rachitis. A large head, ſwelling moſt in the forepart; the ribs depreſſed; abdomen ſwelled, with a decay of the other parts.

Varying.
1. Simple, without any other diſeaſe.
2. Joined with other diſeaſes.

Order III. Impetigines. Cachexies chiefly deforming the ſkin and external parts of the body.

Genus LXXXIV. Scrophula. Swellings of the conglobate glands, eſpecially in the neck; ſwelling of the upper lip and ſupport of the noſe; the face florid, ſkin thin, abdomen ſwelled. The ſpecies are,

1. Scrophula (*vulgaris*), ſimple, external, and permanent.

2. Scrophula (*meſenterica*), ſimple, internal, with paleneſs of the face, want of appetite, ſwelling of the abdomen, and unuſual fœtor of the excrements.

3. Scrophula (*fugax*), moſt ſimple, appearing only about the neck; for the moſt part proceeding from the reſorption of the matter of ulcers in the head.

4. Scrophula (*Americana*), joined with the yaws.

Genus LXXXV. Syphilis. A contagious diſeaſe, after impure venery, and a diſorder of the genitals; ulcers of the tonſils; of the ſkin, eſpecially about the margin of the hair; corymboſe papulæ, ending in cruſts and cruſty ulcers; pains of the bones; exoſtoſes.

Genus LXXXVI. Scorbutus; in cold countries, attacking after putreſcent diet, eſpecially ſuch as is ſalt and of the animal-kind, where no ſupply of freſh vegetables is to be had; aſthenia; ſtomacace; ſpots of different colours on the ſkin, for the moſt part livid, and appearing chiefly among the roots of the hair.

Varying in degree.
a, Scorbutus incipiens.
b, Scorbutus creſcens.
c, Scorbutus inveteratus.
Varying alſo in its ſymptoms.
d, Scorbutus lividus.
e, Scorbutus petechialis.
f, Scorbutus pallidus.
g, Scorbutus ruber.
h, Scorbutus calidus.

Genus LXXXVII. Elephantiaſis; a contagious diſeaſe; thick, wrinkled, rough, unctuous ſkin, deſtitute of hairs, anæſtheſia in the extremities, the face deformed with pimples, the voice hoarſe and naſal.

Genus LXXXVIII. Lepra; the ſkin rough, with white, branny, and chopped eſchars, ſometimes moiſt beneath, with itching.

Genus LXXXIX. Frambœſia; ſwellings reſembling fungi, or the fruit of the mulberry or raſpberry, growing on various parts of the ſkin.

Genus XC. Trichoma; a contagious diſeaſe; the hairs thicker than uſual, and twiſted into inextricable knots and cords.

Genus XCI. Icterus; yellowneſs of the ſkin and eyes; white fæces; urine of a dark red, tinging what is put into it of a clay colour.

The idiopathic ſpecies are,

1. Icterus (*calculoſus*), with acute pain in the epigaſtric region, increaſing after meals; biliary concretions voided by ſtool.

2. Icterus (*ſpaſmodicus*), without pain, after ſpaſmodic diſeaſes and paſſions of the mind.

3. Icterus (*hepaticus*), without pain, after diſeaſes of the liver.

4. Icterus (*gravidarum*), ariſing during the time of pregnancy, and going off after delivery.

5. Icterus (*infantum*), coming on in infants a few days after birth.

CLASS IV. Locales. An affection of ſome part, but not of the whole body.

Order I. Dyſetheſiæ. The ſenſes depraved or deſtroyed, from a diſeaſe of the external organs.

Genus XCII. Caligo. The ſight impaired or totally deſtroyed, on account of ſome opaque ſubſtance interpoſed between the objects and the retina, inherent in the eye itſelf or the eye-lids. The ſpecies are,

1. Caligo (*lentis*), occaſioned by an opaque ſpot behind the pupil.

2. Caligo (*corneæ*), from an opacity of the cornea.

3. Caligo (*pupillæ*), from an obſtruction of the pupil.

Varying according to the different cauſes from which it proceeds.

4. Caligo (*humorum*), from a diſeaſe or defect of the aqueous humour.

Varying according to the different ſtate of the humour.

5. Caligo (*palpebrarum*) from a diſeaſe inherent in the eye-lids.

Varying according to the nature of the diſeaſe in the eye-lids.

Genus XCIII. Amauroſis. The ſight diminiſhed, or totally aboliſhed, without any evident diſeaſe of the eye; the pupil for the moſt part remaining dilated and immoveable. The ſpecies are,

1. Amauroſis (*compreſſionis*), after the cauſes and attended with the ſymptoms of congeſtion in the brain. Varying according to the nature of the remote cauſe.

2. Amauroſis (*atonica*), after the cauſes and accompanied with ſymptoms of debility.

3. Amauroſis (*ſpaſmodica*), after the cauſes and with the ſigns of ſpaſm.

4. Amauroſis (*venenata*), from poiſon taken into the body or applied outwardly to it.

Genus XCIV. Dyſopia. A depravation of the ſight, ſo that objects cannot be diſtinctly perceived except at a certain diſtance and in a certain ſituation. The ſpecies are,

1. Dyſopia (*tenebrarum*), in which objects are not ſeen unleſs they are placed in a ſtrong light.

2. Dyſopia (*luminis*), in which objects are not diſtinctly ſeen unleſs by a weak light.

4. Dyſopia (*diſſitorum*), in which diſtant objects are not perceived.

4. Dyſopia (*proximorum*), in which the neareſt objects are not perceived.

5. Dyſopia (*lateralis*), in which objects are not perceived unleſs placed in an oblique poſture.

Genus XCV. Plendoblepſis; when the ſight is diſeaſed in ſuch a manner that the perſon imagines he ſees things which really do not exiſt, or ſees things which do exiſt after ſome other manner than they really are. The ſpecies are,

1. Pſeudoblepſis (*imaginaria*), in which the perſon imagines he ſees things which really do not exiſt.

Varying according to the nature of the imagination.

2. Pſeudoblepſis (*mutans*), in which objects really exiſting appear ſomehow changed.

Varying according to the change perceived in the objects, and according to the remote cauſe.

Genus XCVI. Dyſecœa. A diminution or total abolition of the ſenſe of hearing. The ſpecies are,

1. Dyſecœa (*organica*), from a diſeaſe in the organs tranſmitting ſounds to the internal ear.

Varying according to the nature of the diſeaſe and of the part affected.

2. Dyſecœa (*atonica*), without any evident diſeaſe of the organs tranſmitting the ſounds.

Varying according to the nature of the cauſe.

Genus XCVII. Paracuſis; a depravation of the hearing. The ſpecies are,

1. Paracuſis (*imperfecta*), in which though ſounds coming from external objects are heard, yet it is neither diſtinctly nor in the uſual manner.

Varying,

a, With a dulneſs of hearing.

b, With an hearing too acute and ſenſible.

c, When a ſingle external ſound is doubled by ſome internal cauſes.

d, When the ſounds which a perſon deſires to hear are not perceived, unleſs ſome other violent ſound is raiſed at the ſame time.

2. Paracuſis (*imaginaria*), in which ſounds not exiſting externally are excited from internal cauſes.

Varying according to the nature of the ſound perceived, and according to the nature of the remote cauſe.

Genus XCVIII. Anoſmia; a diminution or abolition of the ſenſe of ſmell. The ſpecies are,

1. Anoſmia (*organica*), from a diſeaſe in the membrane lining the internal parts of the noſtrils.

Varying according to the nature of the diſeaſe.

2. Anoſmia (*atonica*), without any evident diſeaſe of the membrane of the noſe.

Genus XCIX. Agheuſtia; a diminution or abolition of the ſenſe of taſte.

1. Agheuſtia (*organica*), from a diſeaſe in the membrane of the tongue, keeping off from the nerves thoſe ſubſtances which ought to produce taſte.

2. Agheuſtia (*atonica*), without any evident diſeaſe of the tongue.

Genus C. Anæſtheſia; a diminution or abolition of the ſenſe of feeling. The ſpecies from Sauvages, adopted by Dr Cullen, are,

1. Anæſtheſia a ſpina bifida.
2. Anæſtheſia plethorica.
3. Anæſtheſia naſcentium.
4. Anæſtheſia melancholica.

Order II. Dyſorexia; error or defect of appetite.

Sect. I. Appetitus erronei.

Genus CI. Bulimia; a deſire for food in greater quantities than can be digeſted.

The idiopathic ſpecies are,

1. Bulimia (*helluonum*), an unuſual appetite for food, without any diſeaſe of the ſtomach.

2. Bulimia (*ſyncopalis*), a frequent deſire of meat on account of a ſenſation of hunger threatening ſyncope.

3. Bulimia (*emetica*), an appetite for a great quantity of meat, which is thrown up immediately after it is taken.

Genus CII. Polydipſia; an appetite for an unuſual quantity of drink.

The polydipſia is almoſt always ſymptomatic, and varies only according to the nature of the diſeaſe which accompanies it.

Genus CIII. Pica; a deſire of ſwallowing ſubſtances not uſed as food.

Genus CIV. Satyriaſis; an unbounded deſire of venery in men. The ſpecies are,

1. Satyriaſis (*juvenilis*), an unbounded deſire of venery, the body at the ſame time being little diſordered.

2. Satyriaſis (*furens*), a vehement deſire of venery, with a great diſorder of the body at the ſame time.

Genus CV. Nymphomania; an unbounded deſire of venery in women.

Varying in degree.

Genus CVI. Noſtalgia; a violent deſire in thoſe who are abſent from their country of reviſiting it.

1. Noſtalgia (*ſimplex*), without any other diſeaſe.

2. Noſtalgia (*complicata*), accompanied with other diſeaſes.

Sect. II. Appetitus deficientes.

Genus CVII. Anorexia. Want of appetite for food. Always ſymptomatic.

1. Anorexia (*humoralis*), from ſome humour loading the ſtomach.

2. Anorexia (*atonica*), from the tone of the fibres of the ſtomach being loſt.

Genus CVIII. Adipſia; a want of thirſt. Always a ſymptom of ſome diſeaſe affecting the ſenſorium commune.

Genus CIX. Anaphrodiſia; want of deſire for, or impotence to venery.

The true ſpecies are,

1. Anaphrodiſia paralytica.
2. Anaphrodiſia gonorrhoica.

The falſe ones are,

1. Anaphrodiſia a mariſcis.
2. Anaphrodiſia ab urethræ vitio.

ORDER III. Dyſcineſiæ. An impediment, or depravation of motion from a diſorder of the organs.

Genus CX. Aphonia; a total ſuppreſſion of voice without coma or ſyncope. The ſpecies are,

1. Aphonia (*gutturalis*), from the fauces or glottis being ſwelled.

2. Aphonia (*trachealis*), from a compreſſion of the trachea.

3. Aphonia (*atonica*), from the nerves of the larynx being cut.

Genus CXI. Mutitas; a want of power to pronounce words. The ſpecies are,

1. Mutitas (*organica*), from the tongue being cut out or deſtroyed.

2. Mutitas (*atonica*), from injuries done to the nerves of the tongue.

3. Mutitas (*ſurdorum*), from people being born deaf, or the hearing being deſtroyed during childhood.

Genus CXII. Paraphonia; a depraved ſound of the voice. The ſpecies are,

1. Paraphonia (*puberum*), in which, about the time of puberty, the voice, from being acute and ſweet, becomes more grave and harſh.

2. Paraphonia (*rauca*), in which, by reaſon of the dryneſs or flaccid tumour of the fauces, the voice becomes rough and hoarſe.

3. Paraphonia (*reſonans*), in which, by reaſon of an obſtruction in the noſtrils, the voice becomes hoarſe, with a ſound hiſſing through the noſtrils.

4. Paraphonia (*palatina*), in which, on account of a defect or diviſion of the uvula, for the moſt part with an hare-lip, the voice becomes obſcure, hoarſe, and unpleaſant.

5. Paraphonia (*clangens*), in which the voice is changed to one acute, ſhrill, and ſmall.

6. Paraphonia (*comatoſa*), in which, from a relaxation of the velum palati and glottis, a ſound is produced during inſpiration.

Genus CXIII. Pſelliſmus; a defect in the articulation of words. The ſpecies are,

1. Pſelliſmus (*hæſitans*), in which the words, eſpecially the firſt ones of a diſcourſe, are not eaſily pronounced, and not without a frequent repetition of the firſt ſyllable.

2. Pſelliſmus (*ringens*), in which the ſound of the letter R is always aſpirated, and, as it were, doubled.

3. Pſelliſmus (*lallans*), in which the ſound of the letter L becomes more liquid, or is pronounced inſtead of R.

4. Pſelliſmus (*emolliens*), in which the hard letters are changed into the ſofter ones, and thus the letter S is much uſed.

5. Pſelliſmus (*balbutiens*), in which, by reaſon of the tongue being large or ſwelled, the labial letters are better heard, and often pronounced inſtead of others.

6. Pſelliſmus (*acheilos*), in which the labial letters cannot be pronounced at all, or with difficulty.

7. Pſelliſmus (*logoſtomatum*), in which, on account of the diviſion of the palate, the guttural letters are leſs perfectly pronounced.

Genus CXIV. Strabiſmus; the optic axes of the eyes not converging. The ſpecies are,

1. Strabiſmus (*habitualis*), from a bad cuſtom of uſing only one eye.

2. Strabiſmus (*commodus*), from the greater debility or mobility of one eye above the other; ſo that both eyes cannot be conveniently uſed.

3. Strabiſmus (*neceſſarius*), from a change in the ſituation or ſhape of the parts of the eye.

Genus CXV. Contractura; a long-continued and rigid contraction of one or more limbs. The ſpecies are,

1. Contractura (*primaria*,) from the muſcles becoming contracted and rigid.

a, From the muſcles becoming rigid by inflammation.

b, From muſcles become rigid by ſpaſm.

c, From muſcles contracted by reaſon of their antagoniſts having become paralytic.

d, From muſcles contracted by an irritating acrimony.

e, Contractura (*articularis*), from ſtiff joints.

Order IV. Apocenoſes. A flux either of blood or ſome other humour flowing more plentifully than uſual, without pyrexia, or an increaſed impulſe of fluids.

Genus CXVI. Profuſio; a flux of blood.

Genus CXVII. Ephidroſis; a preternatural evacuation of ſweat.

Symptomatic ephidroſes vary according to the nature of the diſeaſes which they accompany, the different nature of the ſweat itſelf, and ſometimes the different parts of the body which ſweats moſt.

Genus CXVIII. Epiphora; a flux of the lacrymal humour.

Genus CXIX. Ptyaliſmus; a flux of ſaliva.

Genus CXX. Enureſis; an involuntary flux of urine without pain. The ſpecies are,

1. Enureſis (*atonica*), after diſeaſes injuring the ſphincter of the bladder.

2. Enureſis (*irritata*), from a compreſſion or irritation of the bladder.

Genus CXXI. Gonorrhœa; a preternatural flux of humour from the urethra in men, with or without a deſire of venery. The ſpecies are,

1. Gonorrhœa (*pura*), in which, without any impure venery having preceded, a humour reſembling pus, without dyſuria or propenſity to venery, flows from the urethra.

2. Gonorrhœa (*impura*), in which, after impure venery, an humour like pus flows from the urethra with dyſuria. The conſequence of this is,

Gonorrhœa (*mucoſa*), in which, after an impure gonorrhœa, a mucus humour flows from the urethra with little or no dyſuria.

3. Gonorrhœa (*laxorum*), in which an humour for the moſt part pellucid, without any erection of the penis, but with a propenſity to venery, flows from the urethra while the perſon is awake.

4. Gonorrhœa (*dormientium*), in which the ſeminal liquor is thrown out, with erection and deſire of venery, in thoſe who are aſleep and have laſcivious dreams.

Order V. Epiſcheſes; ſuppreſſions of evacuations.

Genus CXXII. Obſtipatio; the ſtools either ſuppreſſed, or ſlower than uſual. The ſpecies are,

1. Obſtipatio (*debilium*), in lax, weak, and for the moſt part dyſpeptic perſons.

2. Obſtipatio (*rigidorum*), in people whoſe fibres are rigid, and frequently of an hypochondriac diſpoſition.

3. Obſtipatio (*obſtructorum*), with ſymptoms of the colica 1ſt, 2d, 4th, and 7th, abovementioned.

Genus CXXIII. Iſchuria; an abſolute ſuppreſſion of urine. The ſpecies are,

1. Iſchuria (*renalis*), coming after a diſeaſe of the kidneys, with pain, or troubleſome ſenſe of weight in the region of the kidneys, and without any ſwelling of the hypogaſtrium, or deſire of making water.

2. Iſchuria (*ureterica*), coming after a diſeaſe of the kidneys, with a ſenſe of pain or uneaſineſs in ſome part of the ureter, and without any tumour of the hypogaſtrium, or deſire of making water.

3. Iſchuria (*veſicalis*,) with a ſwelling of the hypogaſtrium, pain at the neck of the bladder, and a frequent ſtimulus to make water.

4. Iſchuria (*urethralis*,) with a ſwelling of the hypogaſtrium, frequent ſtimulus to make water, and pain in ſome part of the urethra.

All theſe ſpecies are ſubdivided into many varieties, according to their different cauſes.

Genus CXXIV. Dyſuria; a painful, and ſomehow impeded emiſſion of urine. The ſpecies are,

1. Dyſuria (*ardens*), with heat of water, without any manifeſt diſorder of the bladder.

2. Dyſuria (*ſpaſmodica*,) from a ſpaſm communicated from other parts to the bladder.

3. Dyſuria (*compreſſionis*,) from the neighbouring parts preſſing upon the bladder.

4. Dyſuria (*phlogiſtica*,) from an inflammation of the neighbouring parts.

5. Dyſuria (*irritata*,) with ſigns of a ſtone in the bladder.

6. Dyſuria (*mucoſa*,) with a copious excretion of mucus.

Genus CXXV. Dyſpermatiſmus; a ſlow, impeded, and inſufficient emiſſion of ſemen in the venereal act. The ſpecies are,

1. Dyſpermatiſmus (*urethralis*), from diſeaſes of the urethra.

2. Dyſpermatiſmus (*nodoſus*), from knots on the cavernous bodies.

3. Dyſpermatiſmus (*præputialis*), from too narrow an orifice of the prepuce.

4. Dyſpermatiſmus (*mucoſus*), from mucus infarcting the urethra.

5. Dyſpermatiſmus (*hypertonicus*), from too ſtrong an erection of the penis.

6. Dyſpermatiſmus (*epilepticus*), from a ſpaſmodic epilepſy happening during the time of coition.

7. Dyſpermatiſmus (*apractodes*), from an imbecillity of the parts of generation.

8. Dyſpermatiſmus (*refluus*), in which there is no emiſſion of ſemen, becauſe it returns from the urethra into the bladder.

Genus CXXVI. Amenorrhœa. The menſes either flowing more ſparingly than uſual, or not at all, at their uſual time, without pregnancy. The ſpecies are,

1. Amenorrhœa (*emanſionis*), in thoſe arrived at puberty, in whom, after the uſual time, the menſes have not yet made their appearance, and many different morbid affections have taken place.

2. Amenorrhœa (*ſuppreſſionis*) in adults, in whom the menſes which had already begun to flow are ſuppreſſed.

3. Amenorrhœa (*difficilis*), in which the menſes flow ſparingly and with difficulty.

Order VI. Tumores; an increaſed magnitude of any part without phlogoſis.

Genus CXXVII. Aneuriſma; a ſoft tumour, with pulſation, above an artery.

Genus CXXVIII. Varix; a ſoft tumour, without pulſation, above a vein.

Genus CXXIX. Ecchymoma; a diffuſed, and ſcarce eminent, livid tumour.

Genus CXXX. Scirrhus; an hard tumour of ſome part, generally of a gland, without pain, and difficultly brought to ſuppuration.

Genus CXXXI. Cancer. A painful tumour of a ſcirrhous nature, and degenerating into an ill-conditioned ulcer.

Genus CXXXII. Bubo; a ſuppurating tumour of a conglobate gland.

Genus CXXXIII. Sarcoma; a ſoft ſwelling, without pain.

Genus CXXXIV. Verruca; a harder ſcabrous ſwelling.

Genus CXXXV. Clavus; a hard, lamellated thickneſs of the ſkin.

Genus CXXXVI. Lupia. A moveable, ſoft tumour below the ſkin, without pain.

Genus CXXXVII. Ganglion. An harder, moveable ſwelling, adhering to a tendon.

Genus CXXXVIII. Hydatis; a cuticular veſicle filled with aqueous humour.

Genus CXXXIX. Hydarthrus; a moſt painful ſwelling of the joints, chiefly of the knee, at firſt ſcarce elevated, of the ſame colour with the ſkin, diminiſhing the mobility.

Genus CXL. Exoſtoſis; a hard tumour adhering to a bone.

Order VII. Ectopiæ; tumours occaſioned by the removal of ſome part out of its proper ſituation.

Genus CXLI. Hernia; an ectopia of a ſoft part as yet covered with the ſkin and other integuments.

Genus CXLII. Prolapſus; a bare ectopia of ſome ſoft part.

Genus CXLIII. Luxatio; the removal of a bone from its place in the joints.

Order VIII. Dialyſes. A ſolution of continuity, manifeſt to the ſight or touch.

Genus CXLIV. Vulnus; a recent and bloody ſolution of the unity of ſome ſoft part by the motion of ſome hard body.

Genus CXLV. Ulcus. A purulent or ichorous ſolution of a ſoft part.

Genus CXLVI. Herpes; a great number of phlyctenæ or ſmall ulcers, gathering in cluſters, creeping, and obſtinate.

Genus CXLVII. Tinea; ſmall ulcers among the roots of the hair of the head, pouring out a humour which changes to a white friable ſcurf.

Genus CXLVIII. Pſora. Itchy puſtules and little ulcers of an infectious nature, infeſting the hands.

Genus CXLIX. Fractura; bones broken into large fragments.

Genus CL. Caries; an exulceration of a bone.

Part II. PRACTICE of MEDICINE; or the Description and Cure of moſt *Diſeaſes* incident to Human Nature, arranged according to Dr Cullen's Noſology.

SAUVAGES, as has been already obſerved, was the firſt who attempted to arrange diſeaſes according to the plan ſuggeſted by Sydenham; and his Work ſtill continues the only one that merits the title of *Methodical Noſology*. For though Linnæus, Vogel, Cullen, and Sagar, have ſucceſſively endeavoured to improve his method of claſſification, they have contented themſelves with an enumeration and arrangement of the different genera, without entering into their hiſtory and cure: ſo that, though we have ſince had various *Schemes of Arrangement*, we have had, properly ſpeaking, no complete *Syſtem of Noſology*; that is, no complete Courſe of Medicine according to any of theſe arrangements. Preſuming, therefore, that a Practice formed upon the moſt approved Claſſification, in imitation of the work of Sauvages, might be eſteemed an acquiſition by our medical readers, we have endeavoured to execute that taſk in the preſent part of this treatiſe: Wherein the Practice is modelled by the arrangement of Dr Cullen; and the outline is filled up from the beſt authors, ſo as to exhibit the moſt approved methods of treatment, with the lateſt diſcoveries and improvements in the healing art.

Class I. PYREXIÆ, (the Febrile Diſeaſes of other Authors.)

Order I. FEBRES.

Sauvag. Claſs II. *Vog.* Claſs I. *Sagar.* Claſs XII. Morbi Febriles Critici, *Lin.* Claſs II.

Sect. I. INTERMITTENTS.

Intermittentes of ſome authors; *Sauv.* Claſs II. Order III. *Lin.* Claſs II. Order II. *Vog.* Claſs I. Order I. *Sag.* Claſs XII. Order III.

The *remittentes* of others, *Sauv.* Claſs II. Order II. *Sag.* Claſs XII. Order II.

Exacerbantes, *Lin.* Claſs II. Order III.

Continuæ, *Vog.* Claſs I. Order II.

Genus I. TERTIANA; the Tertian Fever.

(*Tertiana*, Sauv. G. 88. Lin. 16. Hoffm. Stahl. Cleghorn. Senac.)

I. The *Genuine* Tertian.

(Tertiana legitima, *Senert. Hoffm. Cleghorn*, Minorc. *Sauv.* Sp. I.)

1. *Deſcription.* This diſeaſe comes on in the morning, or from breaſtfaſt to dinner-time. It begins with a remarkable ſhivering, increaſing frequently to a kind of convulſive ſhaking of the limbs. The extremities are always cold, ſometimes remarkably ſo. The cold for the moſt part is firſt perceived about the lumbar regions, and from thence aſcending along the ſpine turns towards the pit of the ſtomach. Sometimes it begins in the firſt joint of the fingers and tip of the noſe. Sometimes attacks only a particular part of the body, as one of the arms, the ſide of the head, &c. This cold is preceded by a heavy and ſleepy torpor, languor and laſſitude, which we are partly to aſcribe to real weakneſs, and partly to mere lazineſs. To theſe ſymptoms ſucceed yawning and ſtretching; after which the cold comes on as above deſcribed, not unfrequently with a pain of the back, and a troubleſome ſenſation of tenſion in the precordia and hypochondria. To this ſucceed nauſea and vomiting; and the more genuine the diſeaſe, the more certainly does

the vomiting come on, by which a great deal of tough mucous matter, and ſometimes bilious ſtuff or indigeſted food, is evacuated during the firſt paroxyſms. In ſome there is only a violent ſtraining to vomit, without bringing up any thing: ſometimes, inſtead of theſe ſymptoms, a diarrhœa occurs; and this chiefly in weak, phlegmatic, and aged people, or where an indigeſted mucous ſaburra has long remained in the primæ viæ.

When theſe ſymptoms have continued for an hour or two, the cold begins to go off, and is ſucceeded by a laſſitude, languor, and flaccidity of the whole body, but chiefly in the limbs, with an uneaſy ſoreneſs as if the parts had been bruiſed; excepting in thoſe caſes where the nauſea continues for a longer time. After this languor a heat comes on, the increaſe of which is generally ſlow, but ſometimes otherwiſe, with pain of the head, thirſt, and bitterneſs in the mouth. The pulſe is quick and unequal; ſometimes beating 130 ſtrokes in a minute. As ſoon as this heat hath abated, a little moiſture or ſweat is obſerved to break forth; not always indeed in the firſt, but always in the ſucceeding paroxyſms, and the urine lets fall a quantity lateritious ſediment. The whole paroxyſm is ſcarce ever over in leſs than ſix hours, more frequently eight, and in violent caſes extends to 12 hours; but that which exceeds 12 hours is to be reckoned a ſpurious kind, and approaching to the nature of continued fevers. All theſe ſymptoms, however, are repeated every third day, in ſuch a manner that the patient is quite free from fever for at leaſt 24 hours. The paroxyſms return much about the ſame time, though ſometimes a little ſooner or later.

3. *Cauſes of this diſeaſe, and perſons ſubject to it.* The genuine tertian attacks men rather than women, young people rather than old; the latter being more ſubject to anomalous tertians. It likewiſe ſeizes the luſty and active, rather than the lazy and indolent. Thoſe, however, who are very ſenſible and apt to nauſeate their meat, fall eaſily into a tertian fever. The cauſe, according to Dr Cullen, is the miaſma of marſhes, and that only. Other phyſicians have taken in many more cauſes, almoſt every thing indeed which debilitates the body: but the Doctor denies that any of theſe, though they may diſpoſe the body for receiving the diſeaſe, or may augment it, can by any means produce it without the concurrence of the marſh miaſma.

3. *Prognoſis.* The genuine ſimple tertian, unleſs improper medicines are adminiſtered, is generally very eaſily cured; nay, the vulgar reckon it of ſuch a ſalutary nature, that after it they imagine a perſon becomes more ſtrong and healthy than before. Hippocrates hath juſtly obſerved, that theſe fevers terminate of their own accord after ſeven or nine paroxyſms. Juncker tells us, that it frequently terminates before the ſeventh paroxyſm, but rarely before the fourth. He alſo denies that any thing critical is to be obſerved in its going off; but in this he differs from Vogel, who tells us, that the urine, for ſome days after the fever is quite gone off, appears ſlimy, and lets fall much ſediment. The latter alſo informs us, that beſides the common criſis by ſweat and urine, the tertian hath one peculiar to itſelf, namely, dry ſcabby ulcers breaking out upon the lips. Theſe ſometimes appear about the third or fourth paroxyſm; and then we may venture to foretel that the diſeaſe will go off ſpontaneouſly after the ſeventh. But though the diſeaſe is never dangerous, in cold climates at leaſt, when properly treated; yet the improper uſe of hot and ſtimulating medicines may change it into a continued fever, more or leſs dangerous according to the quantity of medicines taken and the conſtitution of the patient; in which caſe the prognoſis muſt be regulated by the particular ſymptoms which occur.

Cure. The treatment of all genuine intermittents, whether *tertians*, quotidians, or quartans, being preciſely the ſame, the general method of cure applicable to them all may be here given, to which it will be eaſy to refer when we come to deſcribe the others.

In treating intermittent fevers, phyſicians have formed indications of cure according to their different theories. The followers of Boerhaave, Stahl, &c. who imagined that the diſeaſe proceeded from a lentor or other diſorder in the blood and juices, always thought it neceſſary to correct and evacuate theſe peccant humours by emetics and purgatives before they attempted to ſtop the diſeaſe by the bark or any other medicine. The bark indeed ſeems to be held in very little eſtimation by them; ſince Vogel affirms, that this medicine, inſtead of deſerving to have the preference of all other febrifuge medicines, ought rather to be ranked among the loweſt of the whole; and for this reaſon he aſcribes the cures hereafter mentioned, by the external application of the bark, entirely to nature.

According to Dr Cullen, the indications of cure in intermitting fevers may be reduced to the following.

1. In the time of intermiſſion, to prevent the return of the paroxyſms.

2. In the time of paroxyſms, to conduct theſe in ſuch a manner as to obtain a final ſolution of the diſeaſe.

3. To take off certain circumſtances which might prevent the fulfilling of the two firſt indications.

The firſt indication may be anſwered in two ways. 1. By increaſing the action of the heart and arteries ſome time before the period of acceſſion, and ſupporting that increaſed action till the period of acceſſion be over, and thus to prevent the recurrence of that atony and ſpaſm of the extreme veſſels which give occaſion to the recurrence of paroxyſms. 2. By ſupporting the tone of the veſſels, and thereby preventing atony and the conſequent ſpaſm, without increaſing the action of the heart and arteries, the recurrence of paroxyſms may be prevented.

The action of the heart and arteries may be increaſed, 1. By various ſtimulant remedies internally given or externally applied, and that without exciting ſweat. 2. By the ſame remedies, or others, managed in ſuch a manner as to excite ſweating, and to ſupport that ſweating till the period of acceſſion be for ſome time paſt. 3. By emetics, ſupporting for the ſame time the tone and action of the extreme veſſels.

The tone of the extreme veſſels may be ſupported without increaſing the action of the heart and arteries, by various tonic medicines; as, 1. Aſtringents alone. 2. Bitters alone. 3. Aſtringents and bitters conjoined. 4. Aſtringents and aromatics conjoined. 5. Certain metallic tonics; and, 6. Opiates. A good deal of exerciſe, and as full a diet as the condition of the patient's appetite and digeſtion may allow of, will be proper during the time of intermiſſion, and may be conſidered as belonging to this head.

Of all the tonic remedies mentioned, the moſt celebrated, and perhaps the moſt certainly effectual, is the Peruvian bark: but it muſt be obſerved, that good effects are only to be expected from this medicine when given in ſubſtance and in large quantity; and for its uſe the following rules or obſervations have been given.

1. The bark may with ſafety be employed at any period of intermitting fevers, providing that at the ſame time there be neither a phlogiſtic diatheſis prevailing in the ſyſtem, nor any conſiderable or fixed congeſtion preſent in the abdominal viſcera.

2. The proper time for exhibiting the bark in intermittent fevers is during the time of intermiſſion, and it is to be abſtained from in the time of paroxyſms.

3. In the caſe of genuine intermittents, while a due quantity of bark is employed, the exhibition of it ought to be brought as near to the time of acceſſion as the condition of the patient's ſtomach will allow.

5. In all caſes of intermittents, it is not ſufficient that the recurrence of paroxyſms be ſtopped for once by the uſe of the bark; a relapſe is commonly to be expected, and ſhould be prevented by the exhibition of the bark repeated at proper intervals.

Our ſecond indication for conducting the paroxyſms of intermittent fevers, ſo as to obtain a final ſolution of the diſeaſe, may be anſwered, 1. By exhibiting emetics during the time of the cold ſtage, or at the beginning of the hot. 2. By opiates given during the hot ſtage.

The circumſtances which may eſpecially prevent the fulfilling of theſe two indications, and therefore give occaſion to the third, are, a phlogiſtic diatheſis prevailing in the ſyſtem, and congeſtions fixed in the abdominal viſcera. The firſt muſt be removed by bloodletting and the antiphlogiſtic regimen; the ſecond, by vomiting and purging.

It is not, however, very common for intermittents to be cured by medicines given during the time of the paroxyſm. The bark is the medicine to which we are chiefly to truſt. Our phyſicians are now generally agreed, that very little preparation of the body is requiſite previous to the adminiſtration of the bark, in intermitting fevers. It is ſufficient to cleanſe the ſtomach and alimentary canal by an emetic or cathartic. Where the diſeaſe is attended with ſickneſs or nauſea, ſix or eight grains of ipecacuanha may be given: but where there are no ſymptoms of this kind, it is better to give a ſtomachic purge, as an ounce or two of tinctura ſacra, or a few grains of pil. Rufi. Theſe are to be adminiſtered in the intermiſſion, immediately after the paroxyſm hath ceaſed, ſo that their operation may be over before its return; and after their operation is completed, the bark may be given with perfect ſafety. If the paroxyſm be moderate, we need not have recourſe to the bark till another fit hath manifeſted the true nature of the diſeaſe: but if it proves ſevere, there is often an abſolute neceſſity for adminiſtering the bark on the firſt intermiſſion of the fever, and even with hardly any preparation of the patient.

The advantage of adminiſtering the bark as early as poſſible, was fully aſcertained by Dr Lind in the years 1765, 66, and 67, during an uncommon prevalence of intermittents. When the diſeaſe was ſtopped by the bark immediately after the firſt or ſecond fit, which was the caſe with 200 of the Doctor's patients as well as himſelf, neither a jaundice nor dropſy enſued; whereas, when the bark could not be adminiſtered, on account of the imperfect remiſſion of the fever, or when the patient had neglected to take it, either a dropſy, jaundice, or conſtant headach, were the certain conſequences; and the violence of the diſeaſe was in proportion to the number of the preceding fits, or to the continuance of the fever. By every paroxyſm the dropſical ſwellings were viſibly increaſed, and the colour of the ſkin rendered of a deeper yellow. When the fever continued a few days without remiſſion, the belly and legs generally ſwelled; a violent head-ach, likewiſe, and vertigo, for the moſt part diſtreſſed the patient; ſo that ſome, even after the fever had left them, were not able to walk acroſs their chamber for a fortnight or three weeks. When the returns of the fever were regular and even, but ſlight, four or five fits of a ſimple tertian were ſometimes followed by the moſt dangerous ſymptoms; eſpecially in the year 1765, when theſe fevers raged with the greateſt violence. If, as frequently happened, a dropſical patient relapſed into the ague, there was an abſolute neceſſity for putting an immediate ſtop to it by the bark; and in upwards of 70 ſuch patients, Dr Lind obſerved the moſt beneficial effects to accrue from this practice. He never preſcribed the bark until the patient was free from all ſymptoms of the fever; but in that caſe, without regard to a cough, or any other chronical indiſpoſition, he ordered it to be given in large doſes, but never preſcribed it during the continuance of the paroxyſm.

The bark hath been often obſerved to fail in removing intermittents, from not continuing the uſe of it for a ſufficient length of time, from adminiſtering it in too ſmall a doſe, or from giving it in an improper form. It was a prevailing opinion, that an ounce, or an ounce and an half, of the bark, taken during one intermiſſion, is ſufficient to prevent the return of another paroxyſm. But this is not always the caſe; for a ſevere fit will often attack a patient who hath taken ſuch a quantity. When this happens, the patient ought to perſevere during the following intermiſſions, with an increaſe of the doſe, till five or ſix ounces at leaſt have been taken. The medicine alſo ought not to be omitted as ſoon as one fit is ſtopped, but ſhould be continued in a ſmaller doſe for at leaſt ten days or a fortnight. Even for ſeveral months after the diſeaſe is entirely removed, it would be adviſeable to take a little bark occaſionally in damp weather, or during an eaſterly wind, to prevent a relapſe. Where the intervals between the fits are ſhort, as in quotidians and double tertians, from one to two drachms of it ought to be taken every two or three hours.

The form in which this medicine is adminiſtered is of ſome conſequence. Mucilages and ſyrups have been recommended to conceal the taſte of it; but, from various experiments, Dr Lind found nothing more effectual for this purpoſe than ſmall-beer or milk, eſpecially the latter. A drachm of bark mixed with two ounces of milk, and quickly drank, may eaſily be taken by a perſon of the moſt delicate taſte, and by waſhing the mouth afterwards with milk there will not remain the leaſt flavour of the bark; but if the mixture is not drank immediately, the bark will impart a bitter taſte to the milk. This medicine is commonly given in electuaries or boluſes; but Dr Lind obſerves, that in theſe forms it proves much leſs efficacious than when adminiſtrated in juleps or draughts, with the plentiful addition of wine or ſpirits. He has remarked, that ſix drachms of powdered bark, given in a julep, conſiſting of one fourth or one third of brandy, is as effectual as an ounce of the powder in the form of an electuary, and proves leſs diſagreeable to the ſtomach. For patients unaccuſtomed to wine or ſpirits, each draught ſhould be warmed with ſpiritus ſalis ammoniaci, or tinct. myrrh. by both of which the efficacy of the bark is increaſed. The Doctor is alſo fully convinced that wine or ſpirits improve the virtues of the bark much more than elixir vitrioli, tinct. roſar. or ſuch other medicines as have been recommended by other phyſicians.

For thoſe who nauſeate the bark from a weakneſs of the ſtomach or other cauſe, he adviſes it to be given in clyſters, in which form it is as efficacious as when taken by the mouth. For this purpoſe the extract is moſt proper with the addition of a ſufficient quantity of the tinctura thebaica in order to its being longer retained. For children labouring under intermitting fevers, Dr Lind orders the ſpine of the back to be anointed, at the approach of the fit, with a liniment compoſed of equal parts of tinctura thebaica and liniment ſapon. which has often prevented it. If this ſhould not produce the deſired effect, he informs us, that two or three tea-ſpoonfuls of ſyrup. e mecon. given in the hot fit, will generally mitigate the ſymptoms. But for the entire removal of the diſeaſe, after purging with magneſia alba, he preſcribes a drachm of the extract. cort. Peruvian. with a few drops of tinct. thebaic. in a clyſter, to be repeated every three hours for a child of about a year old. When the ſtomach is oppreſſed with phlegm, the magneſia frequently occaſions vomiting, which ſhould be promoted with warm water. The conſtant heavineſs of the head occaſioned by thoſe fevers in ſuch tender conſtitutions is beſt relieved by the application of a bliſter to the back.

The bark hath alſo proved effectual for the cure of intermittents in children, even when externally applied, by putting the powder of it into a quilted waiſtcoat. Of its efficacy in this way ſeveral inſtances are related by Dr Samuel Pye in the ſecond volume of Medical Obſervations and Inquiries. In ſhort, ſo effectual was the bark found in removing theſe fevers when properly applied, that of between four and five hundred afflicted with them in the year 1765, Dr Lind loſt only two, neither of whom had taken this medicine.

In all theſe fevers, a vomit was adminiſtered whenever the patient complained of a ſickneſs and reaching to vomit, or was ſeized with a ſpontaneous vomiting; and the bark was never given till this ſickneſs was removed, or a purgative taken to clear more perfectly the whole alimentary canal. In thoſe patients who were troubled with a cough, attended with a pain in the ſide affecting the breathing, when the pain was not relieved by warm fomentations, the balſamum anodynum Batæi, or by a bliſter, the Doctor generally ordered a few ounces of blood to be taken away, and endeavoured to ſtop the fever as ſoon as poſſible by the adminiſtration of the bark; having found that every return of the fever increaſed all ſuch pains.—When the headach was very violent, and harraſſed the patient during the intermiſſions, the ſucceſs of the bark was rendered more complete by the application of a bliſter to the back.—A giddineſs of the head, which is the ſymptom moſt commony remaining after even a ſlight intermitting fever, was generally relieved by the ſal C. C. and the bark in wine. The former of theſe was adminiſtered in the following manner.

℞ Aq. Alex. Simp. ℥vii.
Sal. C. C. ʒſs.
Syr. è Cort. Aurant. ℥i. M. f. julep. Cap. cochlear. ij. ſubinde.

If from the continuance of the fever the patient was diſtreſſed with flatulence, a diſtention of the abdomen, and a ſwelling of the legs, a ſpoonful of tinctura ſacra, with the addition of 30 drops of the ſpirit lavend. compoſ. was ordered to be taken every night.—A continuance of the bark, a change of air, and the cold bath, were often found requiſite to prevent a relapſe.

Such is the method of cure recommended by this experienced author, who has alſo diſcovered the efficacy and ſucceſs of opium in intermitting fevers. He informs us, that he hath preſcribed an opiate to upwards of 300 patients labouring under this diſeaſe; and he obſerved, that, if taken during the intermiſſion, it had not the leaſt effect either in preventing or mitigating the ſucceeding paroxyſm: when given in the cold fit, it once or twice ſeemed to remove it; but when given half an hour after the commencement of the hot fit, it generally gave immediate relief.—When given in the hot fit, the effects of opium are as follow. 1. It ſhortens and abates the fit; and this with more certainty than an ounce of the bark is found to remove the diſeaſe. It generally gives a ſenſible relief to the head, takes off the burning heat of the fever, and occaſions a profuſe ſweat. This ſweat is attended with an agreeable ſoftneſs of the ſkin, inſtead of the burning ſenſation which affects patients ſweating in the hot fit, and is always much more copious than in thoſe who have not taken opium. 3. It often produces a ſoft and refreſhing ſleep to a patient tortured in the agonies of the fever, from which he awakes bathed in ſweat, and in a great meaſure free from all complaints.

The Doctor has always obſerved, that the effects of opium are more uniform and conſtant in intermitting fevers than in any other diſeaſe, and are then more quick and ſenſible than thoſe of any other medicine. An opiate thus given ſoon after the commencement of the hot fit, by abating the violence and leſſening the duration of the fever, preſerves the conſtitution ſo entirely uninjured, that, ſince he uſed opium in agues, a dropſy or jaundice has ſeldom attacked any of his patients in thoſe diſeaſes. When opium did not immediately abate the ſymptoms of the fever, it never increaſed their violence. On the contrary, moſt patients reaped ſome benefit from an opiate given in the hot fit, and many of them bore a larger doſe at that time than they could do at any other. The Doctor aſſures us, that even a delirium in the hot fit is not increaſed by opium, though opium will not remove it. Hence he thinks it probable, that many ſymptoms attending theſe fevers are ſpaſmodic; but more eſpecially the head-ach. However, if the patient is delirious in the fit, the adminiſtration of the opiate ought to be delayed until he recovers his ſenſes, when it will be found greatly to relieve the weakneſs and faintneſs which commonly ſucceed the delirium. Dr Lind is of opinion, that opium in this diſeaſe is the beſt preparative for the bark; as it not only produces a complete intermiſſion, in which caſe alone that remedy can be ſafely adminiſtered; but occaſions ſuch a ſalutary and copious evacuation by ſweat, as generally to render a much leſs quantity of bark requiſite. He commonly preſcribes the opiate in about two ounces of tinctura ſacra, when the patient is coſtive, who is to take the bark immediately after the fit. By theſe means the paroxyſm is ſhortened, and the inteſtines are cleanſed, previous to the adminiſtration of the bark; as the opiate doth not prevent, but only ſomewhat retard, the operation of the purgative. When a vomit is given immediately before the paroxyſm, the adminiſtration of the opiate ſhould be poſtponed till the hot fit is begun.

37 II. The *Irregular* or *Spurious* TERTIAN.

Sp. I. var. 1. B.

Tertiana notha ſive ſpuria, *Sauv.* ſp. 2. *Sennert. Cleghorn. Hoffman.*

The characteriſtic marks of this fever are, that its paroxyſms laſt longer than 12 hours, and conſequently it inclines more to the quotidian or continued fever than the former. Its paroxyſms have no ſtated hour of attacking. The cure, however, is preciſely the ſame with that above deſcribed, obſerving the proper cautions already mentioned with regard to the uſe of the bark.

38 III. The *Double* TERTIAN. Sp. I. var. 2. C.

Tertiana duplex, *Sauv.* ſp. 13. *Vog.* G. 12. *Sennert. Cleghorn.*
Duplicana, *Lin.* 18.

The double tertian comes on every day; but differs from the quotidian in ſo far, that its paroxyſms do not anſwer to each other ſingly, but alternately. The firſt day, for inſtance, the fit will come on in the forenoon, the ſecond in the afternoon, the third in the forenoon, &c.

Of theſe fevers we ſhall give the following deſcription from Cleghorn's treatiſe on the diſeaſes of Minorca: "They are called *double tertians* when there are two fits and two intervals within the time of each period. But commonly there is ſome difference between the two fits, either in reſpect of the hour they come at, the time of their duration, or the nature and violence of their concomitant ſymptoms. Some double tertians begin in this manner.—On the evening of Monday, for example, a ſlight fit comes on, and goes off early next morning; but on Tueſday, towards the middle of the day, a more ſevere paroxyſm begins, and continues till night. Then there is an interval to Wedneſday evening, when a ſlight fit commences a new period of the fever, which proceeds in the ſame manner as the firſt; ſo that (according to the way phyſicians calculate the days of diſeaſes, by beginning to reckon from the firſt hour of their invaſion,) both paroxyſms happen on the odd days, while the greateſt part of the even days is calm and undiſturbed. But in moſt double tertians the patient has a fit every day of the diſeaſe; the ſevere one commonly appearing at noon upon the odd days, the ſlight one towards evening on the even days; though ſometimes the worſt of the two fits happen on the even days.

"There is a tertian fever † ſometimes to be met with, during each period of which there are three different fits, and as many intervals. For example, towards Monday noon the patient is ſeized with a paroxyſm, which declines about five or ſix o'clock the ſame evening: a few hours after, another fit begins, and continues until morning: from which time there is an interval to Tueſday evening, when a third fit comes on, and laſts moſt part of the night. On Wedneſday there are again two paroxyſms, as on Monday and on Thurſday, like that of Tueſday; and thus the fever goes on with a double fit on each of the odd days, and a ſingle fit on the even days.

"In double tertians, that interval is the moſt conſiderable which follows the ſevere fit; for the ſlight fit oftener ends in a remiſſion than intermiſſion, and frequently lingers till the other approaches: Hence it is, that the night preceding the vehement fit is much more reſtleſs than that which comes after it, as has been obſerved by Hippocrates. In double tertians, the vehement fit often comes on a little earlier in each period, while the ſlight fit returns at the ſame hour, or perhaps later and later every other day: ſo that the motions of one have no influence on thoſe of the other; from whence it appears, that each of theſe fits hath its own proper independent cauſes."

IV. *Duplicated* TERTIAN. Sp. I. var. 2. D. 239

Tertiana duplicata, *Sauv.* ſp. 14. *Jones, River.*

This hath two fits on the ſame day, with an intermediate day on which there are none. This alſo doth not differ in any remarkable particular from thoſe already deſcribed.

V. The *Triple* TERTIAN. Sp. I. var. 2. E. 240

Tertiana triplex, *Sauv.* ſp. 15. *Cleghorn.*
Semitertiana, *Hoffman.*
Semitertiana primi ordinis, *Galen. Spig.*

This differs from the former in having a ſingle and double fit alternately: thus, for inſtance, if there are two fits the firſt day, there is only one the ſecond, two the third, one the fourth, &c. Its cure the ſame as before.

VI. The *Semi*-TERTIAN. Sp. I. var. 2. F. 241

Hemitritæus, *Celſ.*
Semitertiana, *Cleghorn.*
Semitertiana ſecundi ordinis, *Galen. Spig.*
Amphimerina hemitritæus, *Sauv.* ſp. 8.
Amphimerina pſeudo hemitritæus, *Sauv.* ſp. 9.

The ſemitertian is deſcribed by Dr Cullen as having only an evident *remiſſion* between its paroxyſms; more remarkable between the odd and even day, but leſs ſo between the even and odd one. For this reaſon, he adds, that poſſibly ſome ſemitertians ought rather to be claſſed among the remittents; and owns that it is diffi-

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† See n° 240.

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difficult to ſettle the boundaries between them. But Cleghorn, whom he quotes, deſcribes it in the following manner. "A fit begins on Monday noon, for example, and goes off the ſame night. On Tueſday afternoon a ſecond fit comes on, and gradually increaſes till Wedneſday night, when it terminates. On Thurſday morning there is ſuch another interval as happened on Tueſday morning: But on Thurſday afternoon another long fit like the preceding commences; and returning regularly every other day, leaves only a ſhort interval of ten or twelve hours during the eight-and-forty."

Concerning the cure of theſe fevers Dr Cullen obſerves, that though no entire apyrexia occurs, the bark may be given during the remiſſions; and it ſhould be given even though the remiſſions be inconſiderable; if, from the known nature of the epidemic, intermiſſions or conſiderable remiſſions are not to be expected, and that great danger is apprehended from repeated exacerbations.

242 VII. The *Sleepy* Tertian. Sp. I. var. 3. G.

Tertiana carotica, *Sauv.* ſp. 10. *Werlholf.*
Tertiana hemiplegica, *Sauv.* ſp. 20. *Wertholf.*
Quotidiana ſoporoſa, *Sauv.* ſp. 8. *Car. Piſ.*
Febris caput impetens, *Sydenham*, ep. ad R. Brady.

This, according to Vogel, is a moſt dangerous ſpecies, and very commonly fatal; for which reaſon he ranks it among thoſe intermittents which he calls *malignant*. Sometimes he tells us the alarming ſymptom of a ſleepineſs comes on, not at the beginning of the diſeaſe, but will unexpectedly occur during the third, fourth, fifth, or ſixth paroxyſm. It commonly begins with the cold fit, and continues during the whole time of the paroxyſm, and, becoming ſtronger at every ſucceeding one, at laſt terminates in a mortal apoplexy. Sometimes fevers of this kind rage epidemically. Vogel relates, that he ſaw a ſimple tertian changed into one of theſe dangerous fevers. The patient was a woman of a delicate conſtitution, and the ſymptom appeared in conſequence of her being put in a violent paſſion: however, it occurred but once, and ſhe recovered. Hoffman * mentions a carus in a double tertian occurring ſeven times without proving mortal; tho' Vogel ſays, that the powers of nature are very ſeldom ſufficient to conquer the diſeaſe.

In 1678, Dr Sydenham tells us that intermittents raged epidemically at London, where none had appeared before from 1664. Of them "it is to be noted (ſays he), that though quartans were moſt frequent formerly, yet now tertians or quotidians were moſt common, unleſs the latter be entitled double tertians; and likewiſe, that though theſe tertians ſometimes began with chilneſs and ſhivering, which were ſucceeded firſt by heat, and ſoon after by ſweat, and ended at length in a perfect intermiſſion, returning again after a fixed time, yet they did not keep this order after the third or fourth fit, eſpecially if the patient was confined to his bed and uſed hot cardiacs, which increaſe the diſeaſe. But afterwards this fever became ſo unuſually violent, that only a remiſſion happened in the place of an intermiſſion; and approaching every day nearer the ſpecies of continued fevers, it ſeized the head, and proved fatal to abundance of perſons."

From this deſcription of Sydenham's we may have an idea of the nature of the diſeaſe. As to its cure, our author ſtrongly recommends the bark; telling us, that, even in the *moſt continued* kind of intermittents, "the nearer the intermittent approaches to a continued fever, either ſpontaneouſly, or from uſing too hot a regimen, ſo much the more neceſſary is it to exhibit a larger quantity of the bark; and that he took advantage of a remiſſion, though ever ſo ſmall.

VIII. The *Spaſmodic* or *Convulſive* Tertian. Sp. I. var. 3. H. 243

Tertiana aſthmatica, *Sauv.* ſp. 6. *Bonet.*
Tertiana hyſterica, *Sauv.* ſp. 8. *Wedel.* A. N. C. Dec. I. A. II. obſ. 193.
Hyſteria febricoſa, *Sauv.* G. 135. ſp. 8. A. N. C. Dec. I. Ann. II.
Tertiana epileptica, *Sauv.* ſp. 16. *Calder. Lautter.*
Quotidiana epileptica, *Sauv.* Sp. 3. Edinb. Eſſays, vol. 5. art. 49.
Ecclampſia febricoſa, *Sauv.* G. 133. ſp. 17.
Epilepſia febricoſa, *Sauv.* G. 134. ſp. 9.
Tertiana tetanodes *Medici* Beobacht I. Band.
Tetanus febricoſus, *Sauv.* G. 122. ſp. 10. *Stork*, Ann. Med. II.

Tertians of this kind occur with very different ſymptoms from thoſe of the true ones, and ſometimes even with thoſe which are very extraordinary. In ſome they are attended with ſymptoms of aſthma, in others with thoſe of hyſterics, in others with convulſions.—Where the ſymptoms of aſthma occur, the diſeaſe muſt be treated with diuretics and antiſpaſmodics joined with the bark.—In the hyſteric aſthma the fit comes on with cold, yawning, cardialgia, terror and dejection of mind. The diſeaſe is to be removed by mild aperients and antihyſterics joined with the bark.

Of the convulſive tertian we have a moſt remarkable inſtance in the Edinburgh Medical Eſſays, Vol. V. The patient was a farmer's ſon about 26 years of age, of a ſtrong plethoric habit of body. He had laboured under an ague half-a-year, and had taken a great deal of bark. While he was telling his caſe to the ſurgeon (Mr Baine of Pembroke) he was ſuddenly taken with a violent ſtamping of his feet; and the convulſions gradually aſcended from the ſoles of the feet, to his legs, thighs, belly, back, and ſhoulders. His head was then moſt violently convulſed, with a total deprivation of ſpeech; but he had a moſt diſmal vociferation, that might have been heard at a conſiderable diſtance, his abdomen and thorax working and heaving violently and unuſually in the mean time. This fit having laſted half an hour, a profuſe ſweat broke out over all his body, which relieved him; and he then became capable of anſwering ſuch queſtions as were put. Theſe extraordinary fits, he ſaid, had been occaſioned by a fright, and his neighbours had concluded that he was bewitched. They returned ſometimes twice a-day, and always at the times the ague uſed to return. During the paroxyſm his pulſe was very high and quick, his face much inflamed, and his eyes ready to ſtart out of his head. After the fit was over, he complained of a moſt torturing pain of the bowels. His tongue was generally moiſt, and he had a ſuppreſſion of urine.—This formidable diſeaſe, however, was totally ſubdued by the uſe

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* Med. Ration. Syſtem. T. I. P. IV.

of the bark, mercurials, antiſpaſmodics, opiates, and ſaline draughts.

244 IX. The *Eruptive* TERTIAN. Sp. I. var. 3. I.
Tertiana petechialis, *Sauv.* ſp. 3. *Donat. Lautter.*
Tertiana ſcorbutica, *Wedel.* A. N. C. Dec. I. A. II. obſ. 193.
Tertiana urticata, *Sauv.* ſp. 22. *Planchon.* Journ. de Med. 1765. *Cleghorn.*
Tertiana miliaris, *Sauv.* ſp. 21. *Walthier.*

This ſpecies of tertian is accompanied with red or livid blotches on the ſkin, or an eruption like that occaſioned by the ſtinging of nettles. In the latter caſe Dr Cleghorn ſays the diſeaſe is very dangerous; and as the former indicates an incipient diſſolution and putrefaction of the blood, it muſt alſo be reckoned of very dangerous tendency.

245 X. The *Inflammatory* TERTIAN. Sp. I. var. 3. K.
Tertiana pleuritica, *Sauv.* ſp. 4. *Valeſ. Lautt.*
Pleuritis periodica, *Sauv.* G. 103. ſp. 14.
Tertiana arthritica, *Sauv.* ſp. 5. *Morton, Lautt.*

Sauvages informs us, that he hath ſeen a true and genuine pleuriſy having all the pathognomic ſigns of the diſeaſe, but aſſuming the form of an intermittent; that is, the patient is one day affected with the pleuriſy, and the next ſeemingly in perfect health. He alſo tells us, that in the month of May 1760 a tertian raged epidemically, which after the third fit imitated a pleuriſy, the pain of the ſide and difficulty of breathing coming regularly on, and the fever from an intermittent becoming remittent; the blood had alſo the ſame appearance with that of pleuritic perſons, and the diſtemper yielded to bleeding and gentle cathartics.—Morton alſo informs us, that he has obſerved ſimilar diſorders an hundred times over, which were always certainly and ſafely cured by the Peruvian bark.

246 XI. The TERTIAN *complicated* with other *Diſorders.* Sp. I. var. 4.
Tertiana ſcorbutica, *Sauv.* ſp. 9. *Etmuller. Timæus.*
Tertiana ſyphilitica, *Sauv.* ſp. 17. *Deidier.*
Tertiana verminoſa, *Sauv.* ſp. 18. *Stiffer.* in act. Helmſtad. *Lanciſ.* de noxis palud. *Pringle. Ramazzini. Van den Boſch.*

The ſcorbutic tertian, according to Sauvages, is exceedingly anomalous, its periods being ſometimes much anticipated, and ſometimes much poſtponed. It is exceedingly obſtinate, and will return even ſeven times, if the body is not cleared of its ſcorbutic taint. The patient is affected with lancinating pains of a wandering nature. The urine lets fall a duſky red ſediment, or a thick branny matter is copiouſly ſcattered up and down in it, ſeemingly tinged with blood. The uſual ſymptoms of ſcurvy, viz. livid ſpots, and rotten fetid gums, alſo frequently occur. For this the Peruvian bark is very uſeful, both as a febrifuge and antiſcorbutic.

The tertian accompanied with worms is taken notice of by Sir John Pringle in his treatiſe on the diſeaſes of the army. The worms, he tells us, were of the round kind; and though we are by no means to reckon them the cauſe of the fever, they never failed to make it worſe, occaſioning obſtinate gripings or ſickneſs at ſtomach. In theſe caſes ſtitches were frequent; but, being flatulent, were not often relieved by bleeding. The worms were diſcharged by vomiting as well as by ſtool. For diſcharging theſe worms, he commonly gave half a drachm of rhubarb with twelve grains of calomel; without obſerving any inconvenience from ſuch a large doſe of mercury. Anthelmintics, which act ſlowly, had little chance of doing good; for, though worms will ſometimes lie long in the bowels, without giving much uneaſineſs to a perſon otherwiſe well, yet in a fever, eſpecially one of a putrid kind, (to which his intermittents always ſeemed to incline), the worms being annoyed by the increaſe of heat, and the corruption of the humours in the *primæ viæ*, begin to move about, and ſtruggle to get out. Lanciſius, who makes this remark, adds, that upon opening the bodies of ſome who had died at Rome of fevers of this kind, wounds were found in the inteſtines, made by the biting of the worms; nay, that ſome of them had even pierced through the coats of the guts, and lay in the cavity of the abdomen. Pringle never had any inſtance of this; but knew many caſes in which the worms eſcaped by the patient's mouth, though there had been no previous retching to bring them up. One ſoldier was thrown into violent convulſions, but was cured by the abovementioned powder.

XII. The TERTIAN *ariſing* from *various Cauſes.* Sp. I. var. 5. 247
Tertiana accidentalis, *Sauv.* ſp. 12. *Sydenham.*
Tertiana a ſcabie, *Sauv.* ſp. 12. *Juncker*, tab. 80. *Hoffman*, II. p. 12.

The exiſtence of fevers of this kind, as we have already obſerved, is denied by Dr Cullen; the accidental fever of Sauvages was ſaid to ariſe from any ſlight error in the non-naturals, and conſequently was very eaſily cured. That which aroſe from the repulſion of the itch, was cured as ſoon as the eruption returned.

XIII. The TERTIAN with only *an intermiſſion* between the fits. Sp. II. 248
Tritæophya, *Sauv.* Gen. 85. *Sag.* p. 695.
Tritæus, *Lin.* 21.
Hemitritæa, *Lin.* 23.
Tertianæ remittentes et continuæ Auctorum.
Tertianæ ſubintrantes, proportionatæ, ſubcontinuæ, *Torti.*
Tertiana ſubcontinua, *Sauv.* ſp. 19.
Quotidiana deceptiva, *Sauv.* ſp. 2.
Amphimerina ſemiquintana, *Sauv.* ſp. 24.
Tritæophya deceptiva, *Sauv.* ſp. 10.
Cauſos *Hippocratis.*
Tritæophya cauſus, *Sauv.* ſp. 2.
Febris ardens *Boerhaavii*, aph. 738?
Tertiana pernicioſa, quæ ſimulata tertiani circuitus effigie lethalis, et mille accidentibus periculoſiſſimis implicata, exiſtit. *Lud. Mercatus.*
Tertiana peſtilens, *P. Sal. Diverſus.*
Tertiana maligna peſtilens, *Riverii.*
Morbus Hungaricus, *Lang. Lemb. Sennert. Jordan.*
Languor Pannonicus, *Cober.*
Amphimerina Hungarica, *Sauv.* ſp. 10.
Hemitritæus peſtilens, *Schenck.* ex *Corn. Gamma.*
Febres peſtilentes *Ægyptiorum*, *Alpin.*
Febris tertiana epidemia, *Bartholin.*

Febres epidemicæ, autumni 1657 et 1658, *Willis*.

Febris ſyneches epidemica, ab anno 1658 ad 1664, et poſtea ab anno 1673 ad 1691, *Morton*.

Febres autumnales incipientes, *Sydenham*.

Affectus epidemius Leidenſis, *Fr. Sylvii*.

Morbus epidemicus Leidenſis, 1669, *Fanois*.

Tertianæ pernicioſæ et peſtilentes, et febres caſtrenſes epidemiæ, *Lanciſi*.

Febres intermittentes anomalæ et mali moris, *Hoffman*.

Febris cholerica minus acuta, *Hoffman*.

Febris epidemica Leidenſis, anno 1719, *Koker* apud *Haller*, Diſp. tom. V.

Amphimerina paludoſa, *Sauv.* ſp. 19.

Febris paludum illuſt. *Pringle*.

Bononienſis conſtitutio hiemalis 1729 *Beccari* in A. N. C. Vol. III.

Aphimerina bilioſa, *Sauv.* ſp. 22.

Febris caſtrenſis, *Pringle*.

Febris putrida epidemica, *Huxham de aëre ad ann.* 1729.

Febris bilioſa Lauſanenſis, *Tiſſot*.

Tritæophya Wratiſlavienſis, *Sauv.* ſp. 3. Hahn. Epidemia verna Wratiſlav. in App. ad. A. N. C. Vol. X.

Tritæophya Americana, *Sauv.* ſp. 12. ?

Febris anomala Batava, *Grainger*.

Morbus Naronianus, *Pujati*.

Febris continua remittens, *Hillary*'s diſeaſes of Barbadoes.

Febris remittens Indiæ orientalis, *Lind.* diſſ. inaug. 1768.

Febris critica et febr. bilioſa æſtatis, *Rouppe*.

Febris remittens regionum calidarum, *Lind* on the diſeaſes of hot climates,

TORTI's *Tertianæ Comitatæ*.

A. Tertiana cholerica ſive dyſenterica, *Tort.* Therap. Special. lib. iii. cap. 1. *Lautter*, Hiſt. Med. caſ. 6. 16. 17. 20. *Morton*, App. ad Exerc. II.

B. Tertiana ſubcruenta ſive atrabilaris, *Tort.* ibid. Never ſeen by *Cleghorn*.

C. Tertiana cardiaca, *Tort.* ibid. *Lautter*, Hiſt. Med. caſ. 15. 15. 23.

Amphimerina cardiaca, *Sauv.* ſp. 5.

Tritæophya aſſodes, *Sauv.* ſp. 6.

Febris continua aſſodes, *Vog.* 27.

D. Tertiana diaphoretica, *Tort.* ibid.

Tritæophya typhodes, *Sauv.* ſp. 4.

Tritæophya elodes, *Sauv.* ſp. 5.

Febris continua elodes, *Vog.* 21.

E. Tertiana ſyncopalis, *Tort.* ibid. *Lautter*, caſ. 11. 12. 13. 15. 16.

Tritæophya ſyncopalis, *Sauv.* ſp. 1.

Amphimerina ſyncopalis, *Sauv.* ſp. 4.

Amphimerina humoroſa, *Sauv.* ſp. 6.

Febris continua ſyncopalis, *Vog.* 29.

F. Tertiana algida, *Tort.* ibid. *Lautter*, caſ. 13.

Amphimerina epiala, *Sauv.* ſp. 3.

Amphimerina phricodes, *Sauv.* ſp. 7.

Tritæophya leipyria, *Sauv.* ſp. 9.

Tertiana leipyria, *Saug.* ſp. 23. *Valcarenghi* Med. Ration. p. 18.

Febris continua epiala et leipyria, *Vog.* 19. et 24.

G. Tertiana lethargica, *Tort.* ibid.

Tritæophya carotica, *Sauv.* ſp. 7. *Lautter.* 1. 7. 14.

Tertiana apoplectica, *Morton*. Exerc. I. cap. ix. hiſt. 25.

Tertiana ſoporoſa, *Werlhof.* de febr. p. 6.

Febris epidemica Urbevetana, *Lanciſ.* de noxis pal. effluv. I. II. c. 3.

The remittent fevers are much more dangerous than the true intermittents, as being generally attended with much greater debility of the nervous ſyſtem and tendency to putreſcency in the fluids than the latter. Sauvages divides his tritæophya, a remittent tertian, into the following ſpecies.

1. *Tritæophya ſyncopalis*, or that attended with fainting. It begins like a tertian, with cold ſucceeded by heat and profuſe ſweating; but attended with much more dangerous ſymptoms, ſuch as cardialgia, enormous vomiting, great weakneſs, ſmall contracted pulſe, coldneſs of the extremities, and, unleſs timely aſſiſtance be given, kills during the ſecond or third paroxyſm. 249

2. The *cauſus*, or burning fever of Hippocrates, returns every third day without any new ſenſation of cold; and is attended with great thirſt, heat, but without diarrhœa or ſweat, and continues only for one week or two at the utmoſt. It attacks chiefly young people of a robuſt and bilious habit of body, who have been accuſtomed to much exerciſe, and expoſed to the ſun during the heats of ſummer, and have alſo uſed a phlogiſtic regimen. The tongue is dry, ſometimes black; the urine of a red or flame colour; together with pain of the head, anxiety, and ſometimes other ſymptoms ſtill more dangerous. 250

3. *Tritæophya Vratiſlavienſis*, was a peſtilential diſeaſe occaſioned by famine, during which the people fed on putrid aliments: the air was infected by the vaſt numbers of bodies of thoſe ſlain in battle, and the inhabitants were alſo dejected by reaſon of being deprived of their harveſt, and other calamities; to all which was added the continuance of a calm in the atmoſphere for a long time. It began with an acute fever, leipyria or coldneſs of the external parts and ſenſation of burning heat inwardly; general weakneſs; pain of the head and præcordia; ſerous or bilious diarrhœa; a delirium, in ſome furious, and accompanied with a dread of being expoſed to the air; on the ſecond day the thirſt was violent, attended with a bilious vomiting as well as diarrhœa, tough viſcid ſpitting, fainting, burning heat in the bowels, the tongue dry and ſeeming as if burnt with a hot iron, a ſuppreſſion of the voice, anxiety, ſtupor, after which quickly followed convulſions and death. In ſome fevers a leipyria came on with an exceeding great cold of the extremities, preſently followed by an intolerable heat of the viſcera, with ſymptomatic ſweats, violent diarrhœa, followed by a very itchy miliary eruption. On the fourth day came on copious ſweats, ſpaſms of the lower jaw, nauſea, involuntary paſſing of urine, ſlight delirium, a flux of ichorous matter from the noſtrils, an exceeding tough ſpitting, an epilepſy, and death. Profeſſor Hahn himſelf, who gives the hiſtory of this diſeaſe, was attacked by it, and ſuffered in the following manner. On the firſt day was a violent feveriſh paroxyſm without rigor, a ſharp pain in the occiput, and immediately an inflammatory pain over the whole head; the feet were extremely cold, and the extremities rigid with ſpaſms. The pain continued to increaſe daily to ſuch a degree, that the contact of the air itſelf became at laſt intolerable; a de- 251

dejection of mind and incredible weakneſs followed; he paſſed reſtleſs nights with continual ſweating, heavy and pained eyes, and an univerſal ſenſation of rheumatiſm over the whole body. On the third day the pains were aſſwaged, but he had a very bad night. On the fourth day all the ſymptoms were worſe, the feet quite chilled, the hands very red and agitated with convulſive motions; he was terrified with apprehenſions of death, and had a vomiting every now and then: this day ſponges dipped in cold water were applied over the whole body, and he uſed cold water for his drink. On the eighth day the pulſe was convulſive; and the pains were ſo violent, that they made him cry out almoſt continually. On the ninth day he was delirious, and threw up ſome grumous blood. On the 11th his pulſe was more quiet, and he had a ſweat; a decoction of the bark was given: his voice was broken, his ſpeech interrupted, and his teeth chattered upon one another. On the 12th his jaw was convulſed, he had a riſus ſardonicus, and deafneſs; after which, the paroxyſms returned leſs frequently, and only towards night. On the 14th he had a chilling cold over the whole body, a cold ſweat; frequent lotions were applied, and all the ſymptoms became milder. On the 18th he had a quick delirium, but fainted as ſoon as taken out of bed; a ſenſation of hunger, followed by copious ſweats; profound ſleep; an averſion from noiſe; every thing appeared new and extraordinary. On the 36th a cholera; on the 48th a ſcaling off of the ſkin, and falling off of the nails.

252 4. *Tritæophya typhodes*. The principal ſymptom of this fever was a continual ſweat with which the patients were almoſt always wet; with paroxyſms returning every third day. Sauvages tells us, that he had twice an opportunity of obſerving this fever; one was in the teacher of an academy, about 40 years of age, and of a melancholic temperament. He ſweated every other night ſo plentifully, that he was obliged to change his linen nine times; and even on the intermediate days was never perfectly free of fever, and had his ſkin moiſtened with ſweat. The other was of a woman who went about in man's clothes, and was diſcovered only after her death. The diſeaſe began with a ſlight ſenſation of cold, after which ſhe ſweated for eight hours. It was attended with the higheſt debility, anxiety, and at the ſame time an inſatiable hunger.

253 5. *Tritæophya elodes*, was an inflammatory epidemic, but not contagious, terminating about the 14th or 21ſt day. The diſeaſe came on in the night-time, with diſturbed reſt, univerſal weakneſs, watchings, great heat and ſweat, redneſs of the face and almoſt of the whole body, ſparkling eyes, the tongue dry and white; a hard, tenſe, and turgid pulſe: about the third day a kind of frenzy frequently came on with the feveriſh paroxyſm, the forerunner of an univerſal miliary eruption; or, what was worſe, with purple ſpots ſo cloſe together, that they looked like an eryſipelas of the whole body. Sometimes bliſters of the ſize of ſmall pearls, filled with acrid ſerum, appeared on the neck, armpits, and trunk of the body, which were of all others the moſt dangerous. There was a variety of the diſeaſe, which our author calls the *humoralis*, and in which the pulſe was ſoft and feeble, with greater weakneſs over the whole body, and the diſpoſition to ſleep more frequent than in the other; the eyes languid; the tongue very white, but not dry; and worms were diſcharged.

6. *Tritæophya aſſodes*. This ſpecies, our author informs us, aroſe from a foulneſs of the primæ viæ, and the effluvia of waters in which hemp had been ſteeped. It began with rigor, followed by great heats, reſtleſſneſs, toſſing of the limbs, terrible faintings, immoderate thirſt, dryneſs of tongue, delirium, and at length exceſſive watchings; theſe laſt, however, were leſs dangerous than vertigoes or comatoſe diſpoſitions, which brought on convulſions or apoplexies. 254

7. *Tritæophya carotica*. This had exacerbations every other evening; and its diſtinguiſhing ſymptom was an exceſſive inclination to ſleep, preceded by a ſevere headach, and followed by delirium, and ſometimes convulſions; the tongue was black, and the patient inſenſible of thirſt after the delirium came on. In thoſe caſes where the diſeaſe proved fatal, a ſubſultus tendinum and other grievous ſymptoms came on. 255

9. *Tritæophya leipyria* is only a variety of the tritæophya cauſus, already deſcribed, 256

10. *Tritæophya deceptiva*. This ſpecies at firſt aſſumes the appearance of a continued fever; but afterwards degenerates into a remittent, or even an intermittent. It is deſcribed by Sydenham, but attended with no remarkable ſymptoms. 257

11. The laſt of Sauvages's ſpecies of Tritæophya belonging to the remitting tertian is the *Americana;* and even this ſeems doubtful to Dr Cullen. This, according to Sauvages, is the ardent fever with which the Europeans are uſually ſeized on their firſt coming to America, and generally carries off one half of them. Of this there are two varieties, the *very acute* and the *acute*. The very acute ends before the ſeventh day. It comes on a few days after the perſon's arrival, with loſs of appetite, with dyſpnœa and ſighing from weakneſs, head-ach, laſſitude, pain of the loins: a pyrexia ſucceeds, with great thirſt, ſweat, and heat; the ſickneſs increaſes, nauſea comes on, with vomiting of porraceous bile; the tongue rough, the extremities often cold; watching, furious delirium; and the patient frequently dies on the third day. Copious ſweats, and a plentiful hæmorrhage from the noſe on the fifth day, but not ſooner, are ſerviceable; but a bilious diarrhœa is the beſt criſis of all. 258

The acute kind terminates moſt frequently on the ninth, but very rarely goes beyond the fifteenth. Death frequently comes on between the fourth and ſeventh days. It begins with head-ach, pain in the loins, and ſometimes ſhivering; great laſſitude, dyſpnœa, thirſt; burning fever, increaſing every third day; inflation of the abdomen, pain at the pit of the ſtomach, nauſea, and bilious vomiting. Such is the ſtate of the diſeaſe within twenty-four hours. The eyes are red, and full of tears; the urine pellucid; there is a low delirium, and continual anxiety; the tongue is dry and red, and ſometimes, though rarely, black, which is a ſtill worſe ſign; the pulſe, formerly ſtrong and full, ſinks about the fourth day, and becomes tenſe and ſpaſmodic: if a carus then comes on, the patient dies the fifth or ſixth day; but if the pulſe keeps up, and no carus comes on, a criſis is to be expected by ſweat, a copious hæmorrhage from the noſe, or, which is ſtill more ſafe, by a bilious diarrhœa, which is never ſalutary if it comes on before the fifth day.

To the remitting tertian alſo belong the following ſpecies mentioned by Sauvages, viz.

259 1. *Tertiana ſubcontinua.* This begins like a genuine tertian, and at firſt hath diſtinct paroxyſms; but theſe grow gradually more and more obſcure, the diſeaſe acquiring daily more of the appearance of continued fever, by which it is to be diſtinguiſhed from the other varieties of this ſpecies. It is not unfrequently joined with thoſe ſymptoms which attend the pernicious fever already mentioned; as cardialgia, cholera, ſyncope, &c. but in a much leſs degree. The diſeaſe commonly begins with little or no ſenſe of cold, but rather a ſenſation of heat: when the tertian is doubled, it has firſt a ſlighter and then a more ſevere fit; and thus goes on with an exacerbation on the even days: and though it ſhould change from a double into a ſingle tertian, we are ſtill to ſuſpect it, if a weak fit is the forerunner of a very ſtrong one. This change of the tertian into a continued fever is alſo to be prognoſticated if a heat remarkable to the touch is perceived on the day of intermiſſion, together with ſome diſturbance of the pulſe, thirſt, and drineſs of the tongue; all of which ſhew an univerſal tendency to inflammation: the ſame is foretold by the urine being in ſmall quantity, and very red, or of a ſaffron colour; alſo an ulcerous or aphthous inflammation of the throat, with difficulty of ſwallowing, or any very ſevere ſymptom coming on in the beginning of the diſeaſe, excepting only a delirium, which is eaſily removed.

260 2. *Quotidiana deceptiva.* This is a diſorder of an inflammatory kind, with a ſtrong tendency to putreſcency, and ſometimes aſſumes the form of a quotidian. In it the patient frequently complains of cold when he really is hot and the remiſſion is very indiſtinct, and the diſeaſe is known by the great languor of the patient and the foulneſs of his tongue.

261 3. *Amphimerina cardiaca* is an acute malignant fever, with daily exacerbations, attended with fainting and vomiting of green bile. Afterwards, the weakneſs increaſing, the patient's extremities grow cold, and a profuſe cold ſweat comes on, which is frequently ſucceeded by death on the fourth day. Another ſpecies reſembling this he calls the *ſyncopalis;* but the cardiaca differs from it in being attended with cardialgia.

262 4. *Amphimerina paludoſa.* This is the fever deſcribed by the Britiſh phyſicians under many different names, and appearing under various forms, according to the different conſtitutions of the patients. Its appearance in the Eaſt Indies, according to Dr Lind of Edinburgh, generally comes on ſuddenly, and begins with a ſenſe of debility and a very great lowneſs of ſpirits. Theſe ſymptoms are attended with a greater or leſs degree of chillineſs, a dizzineſs, a nauſea, very acute pains in the head and loins, and a trembling of the hands; the countenance is pale, the ſkin commonly very dry and corrugated, the eyes dull and heavy, the pulſe quick and ſmall, the breath generally difficult, and interrupted with hickups.

As the paroxyſm increaſes the chillineſs now and then gives way to irregular heats, which ſoon become violent and permanent; the nauſea likewiſe increaſes; and in ſome there comes on a vomiting, in which they throw up a great deal of bile. Sometimes bile is likewiſe voided by ſtool. The ſkin grows red; the eyes ſmall, and ſometimes not a little inflamed. The pulſe becomes fuller and the breath more difficult, attended with great reſtleſſneſs and a troubleſome thirſt; notwithſtanding which (ſo great is the nauſea) the patient cannot endure any kind of liquids. The tongue becomes foul, and the pain of the head and loins more violent; a delirium then follows; a ſlight moiſture appears on the face, and from thence ſpreads to the other parts; whilſt the violence of the other ſymptoms abates, and ſhews the beginning of a remiſſion, which is completed by plentiful ſweats.

On the fever's remitting, the pulſe returns almoſt to its natural ſtate; the pains of the head and loins ſtill continue, though ſomewhat leſs violent, as likewiſe the nauſea and want of appetite. When the diſeaſe gains ſtrength, the remiſſion is ſcarcely obvious, and is immediately followed by another paroxyſm; which begins, not indeed with ſo great a ſhivering, but is attended with a greater pain of the head, the greateſt anxiety, a heartburn, nauſea, vomiting, and bilious ſtools. The matter moſt commonly evacuated by vomit and ſtool was whitiſh like chalk and water, or curdled milk which is vomited by ſucking children, when the curd is much broke down. A heat, immoderate thirſt, and delirium, now come on. The tongue becomes more foul; the teeth and inſide of the lips are covered with a black cruſt; the breath grows hot and fetid: another remiſſion enſues, attended with a ſweat; but this remiſſion is both ſhorter and leſs obvious than the firſt.

This ſecond remiſſion is ſucceeded by a paroxyſm, in which the ſymptoms are far more violent than in the former; that which the patient diſcharges by vomiting and purging is more fetid; the mouth, teeth, and inſide of the lips, are not only covered with a black cruſt, but the tongue becomes ſo dry and ſtiff, that the patient's voice can ſcarce be heard. Violent delirium, with reſtleſſneſs and anxiety, come on chiefly during the paroxyſm; nor do theſe ſymptoms abate till the fever remits, and the patient ſweats.

When the fever becomes ſo violent, during the third fit, as to end in death, which is generally the caſe, ſome of the ſick have a coma; in others the delirium becomes more violent. The diſcharges now become more fetid, and have a cadaverous ſmell; the ſtools are involuntary; the pulſe is ſo quick, ſmall, and irregular, that it is ſcarce to be counted, or even felt; a cold ſweat is diffuſed over the whole body, eſpecially the head and neck; the face becomes Hippocratic and convulſed; the patient picks the bed-clothes; a ſubſultus tendinum comes on; the ſick lie conſtantly on their backs, and inſenſibly ſlide down to the foot of the bed; their extremities grow cold; they are then ſeized with convulſions, with which the ſcene cloſes.

In this fever, the urine, which at the beginning is pale, becomes of a deeper colour by degrees, but without depoſiting any ſediment. There ſeldom or never appear any petechiæ, and the prickly heat which was before on the ſkin vaniſhes on the firſt appearance of the fever. But though theſe were the general ſymptoms of this diſorder, they varied in different ſubjects, and at different ſeaſons of the ſame year. The pulſe, for example, in ſome, was quick in the beginning of the diſorder; in others, it varied with the other ſymptoms. The ſkin was generally dry in the beginning of the fit; but in ſome it was moiſt, and covered with ſweat from the very firſt beginning of the diſeaſe. In the month of September; when the diſorder raged moſt, the remiſſions were very imperfect and obſcure; but, on the return of winter and the healthy ſeaſon, they became more regular, and the diſeaſe aſſumed the appearance of an intermitting fever, to ſuch a degree as at length not to be diſtinguiſhed from it. In ſome the remiſſions could ſcarce be perceived, and the fever continued for two weeks without any material change for the better or the worſe. At this time numbers were ſeized with it. When the diſorder continued for any time without a change, it generally ended in death: while the weather grew better, it ſometimes, in the ſpace of a few days, from a common fever became an intermitting one, and the patient recovered, unleſs his liver, which was ſomtimes the caſe, happened to be affected. The cure of an imflammation of the liver proved uncertain, and tedious; as it was generally followed by a colliquative diarrhœa, which greatly endangered the patient's life.—Every ſucceeding paroxyſm was obſerved to be more dangerous than the preceding; the third generally proved fatal; ſome died during the firſt. When this happened, the fever, in the language of the country, was called a *puca*, that is, a ſtrong fever.

This diſeaſe, according to Dr Lind of Haſlar hoſpital, is the autumnal fever of all hot countries, the epidemic diſeaſe between the tropics, and the diſeaſe moſt fatal to Europeans in all hot and unhealthy climates. All authors agree that intermittents in general, but particularly this dangerous kind of them, are produced by heat and moiſture. Dr Cullen, however, is of opinion, that in Scotland the heat is never ſufficiently powerful for this purpoſe, but that intermittents are firſt imported from ſome other country, after which they ſpread. Dr Lind of Edinburgh remarks that the European ſeamen are very ſubject to the fever above-mentioned when they happen to arrive at Bengal in autumn. They are prediſpoſed to it from the nature of their food, their confinement on board, the very great heats to which they are expoſed during the voyage, and their lying for hours together expoſed to the night colds.

Moſt of the meat uſed by the crews of theſe ſhips is ſalted, and often in a putrid ſtate, without any freſh vegetables, they having only biſcuits, and ſome other farinaceous matters. The quantity of the vinous or ſpirituous liquors allowed them is by far too ſmall to ſubdue the putreſcent diſpoſition of their animal-food. Their fluids conſequently become, from day to day, more and more putreſcent, and of courſe the more apt to breed and contract this diſorder. This diſpoſition is likewiſe induced by their being ſtowed very cloſe together, and that for a conſiderable length of time, and in a foul air, eſpecially when the weather happens to be too ſtormy to permit the hatches and port-holes to be kept open.

Though the heats they endure in the voyage to India are leſs conſiderable than thoſe of the country itſelf, yet they are too much for an European conſtitution to bear. The general heat at ſea within the tropics is about 84° of Fahreinheit's thermometer, which is ſufficient to relax them, and promote a corruption of their humours, eſpecially when it coincides with the above cauſes. It likewiſe creates a languor and indolence, which alone are ſufficient to increaſe that putreſcence. Theſe cauſes are apt to be conſiderably aggravated by the mens being often expoſed, when on duty, for hours together, to rain, damp, and cold air; a circumſtance which frequently happens them when working their ſhips up the river Ganges in the night-time. Hence the perſpiration is checked, and the excrementitious fluid which uſed to be diſcharged by the ſkin being retained in the body, contributes vaſtly towards the prediſpoſition to this diſeaſe.

But the moſt powerful of all the remote cauſes is juſtly thought to be the effluvia of marſhes replete with putrid animal-ſubſtances. We have not, however, been able to determine from what kind of putrid animal-ſubſtances theſe effluvia derive their virus. For that every kind of putrefaction has not ſuch an effect appears from this, that neither practical anatomiſts, nor thoſe who by their trades are expoſed to the putrid effluvia of animals, for inſtance ſuch tanners and butchers as keep their ſhops and ſtalls very dirty, are more ſubject than others to putrid diſeaſes. Nor are the ſhip-ſtewards and their ſervants, whoſe buſineſs it is to deliver out their proviſions to the ſhips crews, and who ſpend the moſt of their time amongſt the putrid and rancid effluvia of the places in which thoſe proviſions are kept, more ſubject to putrid fevers than their ſhip-mates. But whatever be in this, we are well aſſured that ſome particular putrid fermentations produce noxious vapours, which, united with thoſe of marſhes, render them more pernicious. Hence evidently proceeds the extreme unhealthfulneſs of a place called *Culpi*, on the eaſtern bank of the Ganges. The ſhores hereabouts are full of mud, and the banks covered with trees. Oppoſite to the place where the ſhips lie there is a creek, and about a mile from its entrance ſtands the town of Culpi: the ſhips lie about a mile from the ſhore. None of the ſailors on board the ſhips ſtationed at this place enjoyed their health. The burying-ground alſo contributed not a little to ſpread the inſpection. The ground being marſhy, the putrid water flowed from the old graves into the new ones, which infected the grave-diggers and thoſe that attended the funerals; and from this cauſe many were ſuddenly ſeized while they were performing the laſt duty to their companions. This place has ever been remarkable for the unhealthfulneſs of its air. It was once cuſtomary to ſend ſome of the Company's ſervants here to receive the cargoes of the ſhips, and ſend them to Calcutta; but ſo many of them died on this duty, that the Company was at length obliged to diſpenſe with it.

Hence it plainly appears, how apt putrid animal and vegetable ſubſtances are to render the effluvia of fenny places more pernicious than they would otherwiſe be. The reaſon why great inundations of the Nile and Ganges are followed by a healthy ſeaſon is, that by this means the putrid animal and vegetable ſubſtances diſperſed over the contiguous countries are carried off into the ſea.—The noxious vapours ariſing from fens ſpread but a little way. Dr Lind has often known ſhips crews at a very little diſtance from the ſhore quite free from this diſorder. But altho' theſe marſh miaſmata firſt bring on the diſeaſe, yet contagion particularly ſpreads it, and renders it more epidemic. Thus the Drake Eaſt Indiaman continued free from the diſorder for two weeks together, when ſhe had no communication with the other ſhips; whereas, as ſoon as the diſorder was brought on board, many were ſeized with it within a few days in ſuch a manner as to leave no room to entertain the leaſt doubt concerning its peſtilential nature.

Dr Lind of Haſlar-hoſpital has given a very curious and learned account of the appearance of this fever throughout the various parts of the globe. It was very common in England in the years 1765 and 1766, one obvious cauſe of which was the prevalence of the eaſtern wind. This wind in England is often ſaid to bring with it a fog from the ſea; but the truth of the matter is, that in many places of this iſland the eaſt-wind frequently raiſes a copious vapour from water, mud, and all marſhy or damp places. To this exhaling quality of the eaſtern wind Dr Lind hath often been an eye-witneſs. When the wind changes to the eaſt, the mud ſometimes ſends up a vapour as thick as ſmoke; and the doctor hath obſerved two fiſh-ponds in his neighbourhood, one of freſh and the other of ſalt water, which on the approach of an eaſterly wind ſometimes alſo emit a denſe vapour as from a pot of boiling water. In order to view this phenomenon diſtinctly, the perſon ſhould ſtand at about 100 yards diſtance from the mud or ponds. If the ſun ſhines when the wind changes to the eaſt, he will obſerve a conſtant ſteam of vapours ariſing out of the ponds, from about five to ten yards in height, while the air about him remains ſerene. As the vapour or fog ariſing from other bodies glides along the ſurface of the earth, and is brought by the eaſterly wind to the ponds, he will ſtill be able, for ſome time, to diſtinguiſh the vapours aſcending perpendicularly out of the ponds from thoſe which are carried in an horizontal direction by the wind; eſpecially if the ſun continues to ſhine, though faintly.

This evaporating quality of the eaſt-wind ſeems to manifeſt itſelf alſo by its effects both on the thermometer and the human body; for a thermometer hung over a damp piece of ground during the fogs or exhalations ariſing from it, will often indicate a degree of cold below the freezing point. The chillneſs of the body, ſo ſenſibly perceived when in this ſituation, ſeems to proceed from the ſame cauſe, and to produce nearly the ſame ſenſations, which the damp ariſing from the wet floor in a chamber communicates to thoſe who happen to be in it.

Winds are not conſtant in their effects, as we have ſometimes warm weather with a north-wind, and ſometimes very little heat with one blowing from the ſouth; ſo the fogs attending an eaſt-wind are not conſtant, neither is the evaporation abovementioned at all times to be perceived. It is poſſible, however, that in all this there may be a deception; and that, inſtead of ſuppoſing the quantity of vapours exhaled to be increaſed by an eaſterly wind, the coldneſs of that wind may be only ſuppoſed to condenſe and render viſible the vapours in the air at that time. But even this ſuppoſition is liable to great objections, as our coldeſt north-winds ſeldom or never produce ſuch an effect, but on the contrary are attended with dry and ſerene weather.

Be this as it will, however, an eaſt-wind is uſually accompanied with a cold, damp, and unwholeſome vapour, which is obſerved to affect the health both of animals and vegetables, and in many places to produce obſtinate intermitting fevers, as alſo to occaſion frequent relapſes. In particular ſpots of the low damp iſland of Portſea, the ague frequently prevails during the autumnal ſeaſon, and in ſome years is much more frequent and violent than in others. It is alſo obſervable, that this diſeaſe always attacks ſtrangers, or thoſe who have formerly lived on a drier ſoil, and in a more elevated ſituation, with greater ſeverity than thoſe who are natives of the iſland.

The year 1765 was remarkable, not only for the long continuance of the eaſterly winds, but for an exceſſive degree of heat, which produced a more violent and general rage of thoſe diſeaſes than had been known for many years before. In the month of Auguſt, the quickſilver in Fahrenheit's thermometer often roſe to 82° in the middle of the day. This conſiderable addition of heat, together with the want of refreſhing rains, greatly ſpread the fever, increaſed its violence, and even changed its form in many places. At Portſmouth, and throughout almoſt the whole iſland of Portſea, an alarming continual or remitting fever raged, which extended itſelf as far as Chicheſter. At the ſame time, the town of Goſport, though diſtant only one mile from Portſmouth, enjoyed an almoſt total exemption from ſickneſs of every kind; whereas in the neighbouring villages and farm-houſes, a mild regular tertian ague diſtreſſed whole families. The violence of the fever, with its appearances in a continued remitting or intermitting form, marked in ſome meaſure the nature of the ſoil. In Portſmouth the ſymptoms were bad, worſe at Kingſton, and ſtill more dangerous and violent at a place called *Half-way Houſes*; a ſtreet ſo called, about half a mile from Portſmouth, where ſcarcely one in a family eſcaped this fever, which generally made its firſt attack with a delirium. In the large ſuburb of Portſmouth called the *Common*, it ſeemed to rage with more violence than in the town, ſome parts excepted; but even whole ſtreets of this ſuburb, together with the houſes in the dock-yard, eſcaped its attack.

The marines, who were three times a-week exerciſed early in the morning on South Sea beach, ſuffered much from the effect of the ſtagnant water in an adjoining moraſs. Half a dozen of them were frequently taken ill in their ranks when under arms; ſome being ſeized with ſuch a giddineſs of their head, that they could ſcarcely ſtand; while others fell down ſpeechleſs, and upon recovering their ſenſes complained of a violent head-ach. When ſuch patients were received into the hoſpital, it was obſerved that ſome few had a regular ague, but that far the greater number laboured under a remitting fever, in which ſometimes indeed there was no perceptible remiſſion for ſeveral days. A conſtant pain and giddineſs of the head were the moſt inſeparable and diſtreſſing ſymptoms of this diſeaſe. Some were delirious, and a few vomited up a quantity of bile; but in all the countenance was yellow. A long continuance of the fever produced a dropſy or jaundice, or both. Even a ſlight attack reduced the moſt robuſt conſtitution to a ſtate of extreme debility; and this weakneſs, together with the giddineſs, continued for a long time after the fever. A ſcabby eruption now and then made its appearance on the lips and the corners of the mouth: but dry itchy ſpots over the whole body, reſembling much the common itch, and ſeeming to partake of the nature of that diſeaſe, were more frequently obſerved in the patients at Portſmouth, where there was not the leaſt reaſon to ſuſpect any infection.

Such is the appearance of the remitting fever occaſioned by marſh miaſmata in England. In the Netherlands its ſymptoms are not much different. Dr Wind informs us, that at Middleburg, the capital of Weſt Zealand, a ſickneſs generally reigns towards the latter end of Auguſt, or the beginning September, which is always moſt violent after hot ſummers. It commences after the rains which fall in the end of July; the ſooner it begins the longer it continues, and it is only checked by the coldneſs of the weather. Towards the end of Auguſt and the beginning of September it is a continual burning fever, attended with a vomiting of bile, which is called the *gall-ſickneſs*. This fever, after continuing three or four days, intermits, and aſſumes the form of a double tertian; leaving the patient in a fortnight, or perhaps ſooner. Strangers that have been accuſtomed to breathe a dry pure air do not recover ſo quickly. Foreigners in indigent circumſtances, ſuch as the Scots and German ſoldiers, who are garriſoned in the adjacent places, are apt after thoſe fevers to have a ſwelling in their legs and a dropſy; of which many die.

Theſe diſeaſes, the Doctor obſerves, are the ſame with the double tertians common within the tropics. Such as are ſeized with the gall-ſickneſs have at firſt ſome fluſhes of heat over the body, a loſs of appetite, a white foul tongue, a yellow tinge in the eyes, and a pale colour in the lips. Such as live well, drink wine, and have warm clothes and good lodgings, do not ſuffer ſo much during the ſickly ſeaſon as the poor people; however, theſe diſeaſes are not infectious, and ſeldom prove mortal to the natives.

Sir John Pringle obſerves, that the prevailing epidemic of autumn in all marſhy countries, is a fever of an intermitting nature, commonly of a tertian form, but of a bad kind; which, in the dampeſt places and worſt ſeaſons, appears as a double tertian, a remitting, or even an ardent fever. But, however theſe fevers may vary in their appearance according to the conſtitution of the patient and other circumſtances, they are all of a ſimilar nature. For though, in the beginning of the epidemic, when the heat or rather the putrefaction in the air is the greateſt, they aſſume a continued or a remitting form, yet by the end of autumn they uſually terminate in regular intermittents.

In Zealand, where the air is more corrupted than in other parts of the Netherlands, this diſtemper, as we have already obſerved, is called the *gall-ſickneſs;* and indeed both the redundance and depravation of the gall is ſometimes ſo great, that it has been generally aſcribed to the corruption and overflowing of that humour. But though it cannot with juſtice be ſaid to originate from corrupted gall or bile, it is certain that the diſeaſe may be continued, and the ſymptoms aggravated, by an increaſed ſecretion and putrefaction of the bile occaſioned by the fever. In proportion to the coolneſs of the ſeaſon, to the height and dryneſs of the ground, this diſtemper is milder, remits or intermits more freely, and removes further from the nature of a continued fever. The higher ranks of people in general are leaſt liable to the diſeaſes of the marſhes; for ſuch countries require dry houſes, apartments raiſed above the ground, moderate exerciſe, without labour in the ſun or evening damps, a juſt quantity of fermented liquors, plenty of vegetables, and freſh meats. Without ſuch helps, not only ſtrangers, but the natives themſelves are ſickly, eſpecially after hot and cloſe ſummers. The hardieſt conſtitutions are very little excepted more than others; and hence the Britiſh in the Netherlands have always been ſubject to fevers.

By this diſtemper the Britiſh troops were haraſſed throughout the whole of the war from 1743 to 1747. It appeared in the month of Auguſt 1743; the paroxyſms came on in the evening, with great heat, thirſt, a violent headach, and often a delirium. Theſe ſymptoms laſted moſt of the night, but abated in the morning, with an imperfect ſweat, ſometimes with an hæmorrhage of the noſe or a looſeneſs. The ſtomach from the beginning was diſordered with a nauſea and ſenſe of oppreſſion, frequently with a bilious and offenſive vomiting. If evacuations were either neglected, or too ſparingly uſed, the patient fell into a continued fever, and ſometimes grew yellow as in a jaundice. When the ſeaſon was farther advanced, this fever was attended with a cough, rheumatic pains, and ſizy blood. The officers being better accommodated than the common men, and the cavalry who had cloaks to keep them warm, were not ſo ſubject to it: and others who belonged to the army, but lay in quarters, were leaſt of all affected; and the leſs in proportion to their being little expoſed to heats, night-damps, and the other fatigues of the ſervice.

In this manner did the remitting fever infeſt the army for the remaining years of the war; and that exactly in proportion to their diſtance from the marſhy places, of which we have ſeveral notable inſtances in Pringle's obſervations. In Hungary the ſame diſeaſe appears with ſtill more violence, and is readily complicated with fevers of a truly peſtilential nature, by which means it becomes extremely dangerous. This country is acknowledged to be the moſt ſickly climate in Europe, and indeed as bad as any in the world. Here it was where the cruſaders, in only marching through the country to invade Aſia, often loſt half their number by ſickneſs; and where the Auſtrians not long ſince buried, in a few years, above 40,000 of their beſt troops, who fell a ſacrifice to the malignant diſpoſition of the Hungarian air. The reaſon of this uncommon malignity is, that Hungary abounds with rivers, which, by often overflowing, leave that low flat country overſpread with lakes and ponds of ſtagnating water, and with large unwholeſome marſhes. So great is the impurity of theſe ſtagnant waters, that by them the rivers, even the Danube, whoſe courſe is ſlow, become in ſome places corrupted and offenſive. The air is moiſt, and in ſummer quite ſultry. In the nights of harveſt, Kramer tells us, it was ſo very damp, that the Auſtrian ſoldiers could not ſecure themſelves from the moiſture even by a triple tent-covering. Here epidemical diſtempers begin conſtantly to rage during the hotteſt months of the year; which are July, Auguſt, and September: and theſe complaints, according to the obſervations of the phyſician above-mentioned, are the ſame with thoſe which are epidemic upon the coaſt of Guinea, and in the ſickly climates of the Eaſt and Weſt Indies, of which malignant fevers of the remitting and intermitting kind are the moſt common and dangerous.

The heat of the ſun in Hungary, according to the ſame author, is more intenſe than in any other country of Europe; and in proportion to the heat is the peſtilential quality of the marſhy exhalations. It is conſtantly obſerved, that the nearer any city or fort is to a moraſs, or a large river with foul and oozy banks, the more unhealthy are the inhabitants. At ſuch ſeaſons and places, the air ſwarms with numberleſs inſects and animalcules, a ſure ſign of its malignant diſpoſition; and the hotter the ſummer, the more frequent and mortal are the diſeaſes. In ſhort, this country, on account of its unhealthineſs, has been termed *the grave of the Germans*; and in Italy, the Campania of Rome is almoſt equally unhealthy. Lanciſius, phyſician to Pope Clement XI. furniſhes us with a very ſtriking inſtance of the malignant quality of the air of Campania. Thirty gentlemen and ladies of the firſt rank in Rome having made an excurſion, upon a party of pleaſure, towards the mouth of the Tyber, the wind ſuddenly ſhifting, blew from the ſouth over the putrid marſhes, when 29 were immediately ſeized with a tertian fever, only one eſcaping.

The iſland of Sardinia is annually viſited with an epidemical ſickneſs, which rages from June to September, and is called by the natives the *intemperies*. In ſome years there is a want of rain for four or five months; and then it is that this ſickneſs exerts its utmoſt violence, being always more fatal in ſome places than in others, and in particular to ſtrangers. Of this the Britiſh had a ſevere proof in 1758.—Admiral Broderick, in the Prince ſhip of war, anchored in the bay of Oriſtane, where 27 of his men, ſent aſhore on duty, were ſeized with the epidemical diſtemper of this iſland; twelve of them in particular, who had ſlept on ſhore, were brought on board delirious. All of them in general laboured under a low fever, attended with great oppreſſion on the breaſt and at the pit of the ſtomach, a conſtant retching, and ſometimes a vomiting of bile; upon which a delirium often enſued. Theſe fevers changed into double tertians, and terminated in obſtinate quartan agues. It is worthy of remark, that in this ſhip, which lay only two miles from the land, none were taken ill but ſuch as had been on ſhore, of whom ſeven died. The prior of a convent, making a viſit to the Engliſh officers, informed them, that the intemperies of the iſland was a remitting or intermitting fever, and that he himſelf had ſuffered ſeveral attacks of it. Sardinia was formerly ſo remarkable for its unwholeſome air, that the Romans uſed to baniſh their criminals thither; and it is at preſent but thinly peopled, owing to the mortality occaſioned by this annual ſickneſs. For although it is about 140 miles long, and in ſeveral places 75 miles broad, yet it is computed that the whole number of its inhabitants does not exceed 250,000: an inconſiderable number, when compared with the inhabitants of the leſſer, but comparatively more healthful, iſland of Corſica; though even there the French loſt a number of their troops by intermitting and remitting fevers. In the iſland of Minorca too, Dr Cleghorn informs us, that fevers of this kind prevail exceedingly; that their types are various, their ſymptoms violent, the intermiſſions fallacious, and that they frequently and ſuddenly prove fatal. It is more than probable, he adds, from the accounts of ſeveral phyſicians and travellers, that epidemical tertians are not wholly confined to the coaſts and iſlands of the Mediterranean, but that they are equally frequent and deſtructive in many other parts of the globe; and perhaps may be deemed the anniverſary autumnal diſtempers of moſt hot countries in the world. And though in the mild climate of Britain, a tertian may always eaſily be cured when once it is diſcovered; yet, in warm climates, ſuch is the rapid progreſs of the diſtemper, that it is neceſſary to know it in the very beginning, which is very difficult for thoſe who have never ſeen any but the tertians uſually met with in Britain.

From this gentleman's account of Minorca, however, it doth not appear why that iſland ſhould be ſo much infeſted with fevers of this kind, ſeeing it is far from being a marſhy country; nay, on the contrary, is very dry. The ſouth-wind, he obſerves, is very unhealthy; and it is the prevalence of this wind which brings on the fever: but ſtill the difficulty is not removed, becauſe the ſea-air is ſo far from bringing on ſuch dangerous diſeaſes, that it is one of the greateſt preſervatives againſt them when it can be had. As to the moiſture which muſt neceſſarily accompany an inſular ſituation, that cannot reaſonably be admitted as a cauſe of this or any other diſeaſe. In the Medical Obſervations we find a paper on a ſubject very ſimilar to the preſent, namely, the miſchiefs produced by lying in damp ſheets, or being expoſed to moiſt vapour. Our author tells us, that he hardly knows a diſtemper the origin of which hath not by ſome been aſcribed to lying in a damp bed, or ſitting in a wet room; and yet he does not know any one which will certainly be produced by theſe cauſes, and people frequently expoſe themſelves to ſuch cauſes without ſuffering any ill effects. "It muſt be owned indeed, (ſays he), that the vapours ariſing from the bilge-water of ſhips tend to produce the ſcurvy. The ſwampy plains alſo near the mouths of great rivers which are often overflowed, and low grounds which cannot readily be drained, and thoſe tracts of land where the thickneſs and extent of the woods keep the ground moiſt and half putrid for want of ventilation, are deſtructive to the neighbouring inhabitants, by occaſioning obſtinate intermittents in the colder climates, and peſtilential fevers in the hotter regions. But all this miſchief ariſes not merely from moiſture, but from an unventilated and putrid moiſture; for the inoffenſiveneſs of mere wetneſs, untainted with putridity, may be reaſonably inferred from the following conſiderations. The air is often fully ſaturated with moiſture, and could not be more filled by the vapours ariſing from a chamber covered with water; and yet neither is any epidemical diſtemper produced by it, nor are thoſe remarkably aggravated with which the ſick happen at that time to be afflicted. The air from rivers and from the ſea is probably more repleniſhed with vapours than inland countries cleared of their woods: yet the moſt celebrated of the ancient phyſicians recommended the bank of a running river for the ſituation of a houſe, on account of its peculiar healthfulneſs; and many invalids are ſent by the modern physicians to the ſea-ſide, only for the benefit of the ſea-air.

"Where the ſailors are cleanly, and not too much crowded, they are often as healthy during long voyages at ſea, as they would have been upon any part of the land. Venice is not obſerved to be leſs healthy than London or Paris.

"Thoſe who are much diſpoſed to ſweat, lie many hours in bed-clothes impregnated probably with a leſs wholeſome moiſture than would have been left in the ſheets half-dried after waſhing; and I have not yet had reaſon to think that any remarkable injury was done to the health by the continuance of ſuch ſweats almoſt every night for weeks, and for months, except what aroſe from the too great copiouſneſs of this evacuation.

"Children, and ſuch as are troubled with the ſtone, and thoſe who, from other infirmities or age, conſtantly wet their beds with their urine, do not appear to ſuffer in their health on this account.

"It is a common practice, in ſome diſorders, to go to bed with the legs or arms wrapped in linen cloths thoroughly ſoaked in Malvern water, ſo that the ſheets will be in many places as wet as they can be; and I have known theſe patients and their bedfellows receive no harm from a continuance of this practice for many months. Nor can it be ſaid that the Malvern water is more innocent than any other water might be, on account of any ingredients with which it is impregnated; for the Malvern water is purer than that of any other ſprings in England which I ever examined or heard of.

"The greateſt valetudinarians do not ſcruple to ſprinkle lavender-water upon their ſheets; and yet, when the ſpirit is flown off, there is left what is as truly water, as if it had been taken from the river.

"Is it obſerved, that laundreſſes are peculiarly unhealthy above other women, though they live half their time in the midſt of wet linen, in an air fully ſaturated with vapours? Many other employments might be mentioned, the perſons occupied in which are conſtantly expoſed to wet floors or pavements, or to be ſurrounded with watery vapours, or to have their clothes often wet for many hours together.

"Is it the coldneſs of wet linen which is feared? But ſhirts and ſheets, colder than any unfrozen water can be, are ſafely worn and lain in by many perſons, who, during a hard froſt, neither warm their ſhirts nor their ſheets.—Or does the danger lie in the dampneſs? But then how comes it to paſs, that a warm or cold bath, and long-continued fomentations, can be uſed, without the deſtruction of thoſe who uſe them?—Or is it from both together? Yet we have long heard of the thickneſs and continuance of the cold fogs in the ſeas north-weſt of England, but have never yet been told of any certain ill effect which they have upon thoſe that live in theſe countries."

With regard to the cauſes of fevers, however, Dr Lind is of opinion, that noxious vapours ariſing from the earth are for the moſt part to be blamed. Even in countries ſeemingly dry, and where violent rains are not frequent, he thinks that the air may load itſelf with putrid exhalations from the ground; and that, except in the burning deſarts of Arabia or Africa, people are nowhere exempt from diſeaſes occaſioned by putrid moiſture. In moſt of the hot countries, however, the pernicious effects of the putrid vapours are by no means equivocal. In Guinea, they ſeem to be more extraordinary than any where elſe in the world; neither indeed can it be ſuppoſed that a hot and moiſt atmoſphere can be without putreſcency. It may in general be remarked, that in ſultry climates, or during hot weather, in all places ſubject to great rains, where the country is not cleared and cultivated, but is overrun with thickets, ſhrubs, or woods, eſpecially if there are marſhes or ſtagnating waters in the neighbourhood, ſickneſs may be dreaded, and the remitting fever of which we now treat. The fens, even in different countries of England, are known to be very prejudicial to the health of thoſe who live near them, and ſtill more ſo to ſtrangers; but the woody and marſhy lands in hot countries are much more pernicious to the health of Europeans. In all thoſe unhealthy places, particularly during fogs or rains, a raw vapour, diſagreeable to the ſmell, ariſes from the earth, and eſpecially in the huts or houſes. But of all the vapours which infeſt the torrid zone, the moſt malignant and fatal are the *harmattans*: They are ſaid to ariſe from the conflux of ſeveral rivers in the king of *Dormeo's* dominions at Benin, (the moſt unwholſome part of Guinea), where travellers are obliged to be carried on mens backs for ſeveral days journey, through ſwampy grounds, and over marſhes, amidſt ſtinking ooze, and thickets of mangrove trees which are annually overflown. Theſe vapours come up the coaſt, to a ſurpriſing diſtance, with the ſouth-eaſt and north-eaſt winds: and it has been obſerved, that, in their progreſs, they have often changed both the courſe of the winds and of the ſea-currents. The times of their appearance at Cape Coaſt are the months of December, January, or February. The north-eaſt and ſouth-eaſt winds are always unhealthy, but particularly ſo during the harmattan ſeaſon. Some years this vapour is ſcarcely perceptible; but in others it is thick, noxious, and deſtructive to the blacks as well as whites. The mortality is in proportion to the denſity and duration of the fog. It has a raw putrid ſmell; and is ſometimes ſo thick, that a perſon or houſe cannot be diſcerned though it, at the diſtance of 15 or 20 yards: and it continues ſo for 10 or 14 days; during which it opens the ſeams of ſhips, ſplits or opens the crevices of wood as if ſhrunk or dried with a great fire, and deſtroys both man and beaſt.—In the year 1754 or 1755, the mortality occaſioned in Guinea by this ſtinking fog was ſo great, that in ſeveral negro towns the living were ſcarce ſufficient to bury the dead. Twenty women brought over from Holland by a new governor to the Caſtle *del Mina*, periſhed, together with moſt of the men in the garriſon. The gates of Cape Coaſt Caſtle were ſhut up for want of centinels to do duty; the blacks dying at this time as well as the white people. It is lucky that it is only in ſome years that *harmattans* are ſo very thick and noxious, otherwiſe that part of the country would be depopulated. It is obſerved that all fogs are extremely unhealthy in thoſe parts, particularly before and after the rainy ſeaſon; but the above account of the *harmattans* appeared ſo very extraordinary and incredible to ſome of Dr Lind's readers, that he thought proper to publiſh a further corroboration of the facts above-mentioned. "A gentleman, (ſays he), who had long reſided at Cape Coaſt caſtle, informed me, that during the time of this fog, being in the upper chambers of the fort, the boards of the floor ſhrunk ſo much, that he could diſcern the candles burning in the apartments below him (there are no plaſter ceilings uſed in theſe hot countries), and that he could then even diſtinguiſh what people were doing in the apartments below; the ſeams of the floor having opened above half an inch, while the fog laſted, which afterwards, upon its being diſpelled, became cloſe and tight as before."

In this country the rains and dews ſeem to be poſſeſſed of qualities almoſt equally pernicious with the fogs. Thus much is certain, that in Guinea, many of the principal negroes, and eſpecially of the mulattoe Portugueſe, take the utmoſt precaution to avoid being wet with thoſe rains, eſpecially ſuch as fall firſt. At the ſetting in of the rainy ſeaſon, they generally ſhut themſelves up in a cloſe well-thatched hut, where they keep a conſtant fire, ſmoke tobacco, and drink brandy, as preſervatives againſt the noxious quality of the air at that time. When wet by accident with the rain, they immediately plunge themſelves into ſalt-water if near it. Thoſe natives generally bathe once a-day, but never in the freſh-water rivers when they are overflown with the rains: at ſuch times they prefer for that purpoſe the water of ſprings. The firſt rains which fall in Guinea are commonly ſuppoſed to be the moſt unhealthy. They have been known, in 48 hours, to render the leather of the ſhoes quite mouldy and rotten; they ſtain clothes more than any other rain; and ſoon after their commencement, even places formerly dry and parched ſwarm with frogs. At this time ſkins, part of the traffic of Senegal, quickly generate large worms; and it is remarked, that the fowls, which greedily prey on other inſects, refuſe to feed on theſe. It has been farther obſerved, that woollen cloths wet in thoſe rains, and afterwards hung up to dry in the ſun, have ſometimes become full of maggots in a few hours.—It is alſo probable, that as in ſome of thoſe countries the earth, for ſix or eight months of the year, receives no moiſture from the heavens but what falls in dews, which every night renew the vegetation, the ſurface of the ground in many places becomes hard and incruſtated with a dry ſcurf, which pens up the vapours below: until by the continuance of the rains for ſome time, this cruſt is ſoftened, and the long pent up vapours ſet free. That theſe dews do not penetrate deep into the earth is evident from the conſtant dryneſs and hardneſs of ſuch ſpots of ground in thoſe countries as are not covered with graſs and other vegetables. Thus the large rivers in the dry ſeaſon being confined within narrow bounds, leave a great part of their channel uncovered, which having its moiſture totally exhaled becomes a ſolid hard cruſt; but no ſooner the rains fall, than by degrees this long parched up cruſt of earth and clay gradually ſoftens, and the ground, which before had not the leaſt ſmell, begins to emit a ſtench, which in four or five weeks becomes exceedingly noiſome, at which time the ſickneſs is generally moſt violent.

This ſickneſs, however, is not different from the remitting fever which hath been deſcribed under ſo many various forms and names. An inflammatory fever is ſeldom obſerved, during the ſeaſon of ſickneſs, in this part of the world; and we ſhall conclude our deſcription of the *amphimerina paludoſa* with ſome extracts from the ſurgeon's journal of a ſhip that ſailed up the rivers of Guinea.

"On the 5th of April we ſailed up the river of Gambia, and found all the Engliſh in the fort in perfect health. The ſurgeon of the factory informed me, that a relaxation of the ſtomach, and conſequently a weakned digeſtion, ſeemed to bring on moſt of the diſeaſes ſo fatal to Europeans in the ſickly ſeaſon. They were generally of a bilious nature, attended with a low fever, ſometimes of a malignant, at other times of a remitting kind.—On the 12th of April, after ſailing 30 miles up the river St Domingo, we came to Catchou, a town belonging to the Portugueſe, in Lat. 20° N.—In this town were only four white people, the governor and three friars. The number of whites in the trading ſhips were 51. One morning, towards the latter end of April, a little rain fell. On the 13th of May there was a ſecond ſhower, accompanied with a tornado. One the 18th of May it rained the whole day; and the rain continued, with but ſhort intervals, until the beginning of October.

"In the month of June, almoſt two thirds of the white people were taken ill. Their ſickneſs could not be well characteriſed by any denomination commonly applied to fevers: it however approached neareſt to what is called a *nervous fever*, as the pulſe was always low, and the brain and nerves ſeemed principally affected. It had alſo a tendency to frequent remiſſions. It began ſometimes with a vomiting, but oftener with a delirium. Its attack was commonly in the night; and the patients, being then delirious, were apt to run into the open air. I obſerved them frequently recover their ſenſes for a ſhort time, by means of the heavy rain which fell upon their naked bodies. But the delirium ſoon returned: they afterwards became comatoſe, their pulſe ſunk, and a train of nervous ſymptoms followed; their ſkin often became yellow; bilious vomitings and ſtools were frequent ſymptoms. The fever reduced the patient's ſtrength ſo much, that it was generally ſix weeks or two months before he was able to walk abroad. A conſuming flux, a jaundice, a dropſy, or obſtructions in the bowels, were the conſequences of it. Of 51 white men, being the companies of four ſhips which were at Catchou, one third died of the fever, and one third more of the flux, and other diſeaſes conſequent upon it; and of theſe not one was taken ill till the rains began.

"I believe, on the whole face of the earth, there is ſcarce to be found a more unhealthy country than this during the rainy ſeaſon: and the idea I then conceived of our white people was by making a compariſon of their breathing ſuch a noxious air, with a number of river-fiſh put into ſtagnating water; where, as the water corrupts, the fiſh grow leſs lively, they droop, pine away, and many die.

"Thus ſome perſons became dull, inactive, or ſlightly delirious, at intervals; and, without being ſo much as confined to their beds, they expired in that delirious and comatoſe ſtate in leſs than 48 hours, after being in apparent good health. The white people in general became yellow; their ſtomach could not receive much food without loathing and retchings. Indeed it is no wonder that this ſickneſs proved ſo fatal, that recoveries from it were ſo tedious, and that they were attended with fluxes, dropſies, the jaundice, ague-cakes, and other dangerous chronical diſtempers. It ſeemed more wonderful to me that any white people ever recover, while they continue to breathe ſo peſtiferous an air as that at Catchou during the rainy ſeaſon. We were, as I have already obſerved, thirty miles from the ſea, in a country altogether uncultivated, overflowed with water, ſurrounded with thick impenetrable woods, and over-run with ſlime. The air was vitiated, noiſome, and thick; inſomuch that the lighted torches or candles burnt dim, and ſeemed ready to be extinguiſhed: even the human voice loſt its natural tone. The ſmell of the ground and of the houſes was raw and offenſive; but the vapour ariſing from putrid water in the ditches was much worſe. All this, however, ſeemed tolerable, when compared with the infinite numbers of inſects ſwarming every where, both on the ground and in the air; which, as as they ſeemed to be produced and cheriſhed by the putrefaction of the atmoſphere, ſo they contributed greatly to increaſe its impurity. The wild bees from the woods, together with millions of ants, over-ran and deſtroyed the furniture of the houſes; at the ſame time, ſwarms of cockroaches often darkened the air, and extinguiſhed even candles in their flight; but the greateſt plague was the muſquettos and ſand-flies, whoſe inceſſant buzz and painful ſtings were more inſupportable than any ſymptom of the fever. Beſides all theſe, an incredible number of frogs on the banks of the river made ſuch a conſtant and diſagreeable croaking, that nothing but being accuſtomed to ſuch an hideous noiſe could permit the enjoyment of natural ſleep. In the beginning of October, as the rains abated, the weather became very hot; the woods were covered with abundance of dead frogs, and other vermin, left by the receſs of the river; all the mangroves and ſhrubs were likewiſe overſpread with ſtinking ſlime."

After ſo particular a deſcription of the remitting fever in many different parts of the world, we preſume it will be needleſs to take notice of any little varieties which may occur in the warm parts of America, as both the nature and cure of the diſtemper are radically the ſame: neither ſhall we lengthen out this article with further deſcriptions of remitting fevers from the works of foreign authors, as, from what we have already ſaid, their nature cannot well be miſtaken.

Cure. The great difficulty in the cure of remitting fevers ariſes from their not being ſimple diſeaſes, but a complication of ſeveral others. Fevers, properly ſpeaking, have but three or four different appearances which they can aſſume without a complication. One is, when they are attended with a phlogiſtic diatheſis; another is, when they aſſume the form of genuine intermittents; a third is, when they produce a great debility of the nervous ſyſtem; and the fourth is, when, along with this debility, there is alſo a rapid tendency to putrefaction. If, therefore, all theſe ſpecies happen to make an attack at once, the moſt dangerous fever we can imagine will be produced; and however contrary it may be to our theories to admit the poſſibility of ſuch an attack, the truth of the fact is too often confirmed by fatal experience. In the beginning of remittent fevers, for inſtance, the ſymptoms indicate a high degree of inflammation: but if the practitioner attempts to remove this inflammation by bloodletting or other evacuations, the pulſe ſinks irrecoverably, and the perſon dies with ſuch ſymptoms as ſhew that the nervous ſyſtem hath been from the beginning greatly affected; at the ſame time that the high ſtimulants and cordials, or the bark, which would have conquered the nervous part of the diſeaſe, increaſe the inflammatory part of it to ſuch a degree, that, by a too early exhibition of them the patient alſo dies, but after another manner.

In the remitting fever of the Eaſt Indies, Dr Lind of Edinburgh formed the following indications of cure. 1. To allay the violence of the fever. 2. To evacuate the putrid humours, and take great care to prevent the body from inclining to putrefaction. 3. To keep up the ſtrength of the patient as much as poſſible during the diſorder. 4. To loſe no time in preventing the return of the paroxyſm.

To allay the violence of the fever, every thing that can contribute to increaſe it ought to be carefully avoided or removed; ſuch as great heat, too ſtrong a light falling on the eyes, noiſe, and motion. If during the paroxyſm the head and loins are affected with violent pains, the pulſe is full and hard, and the heat intenſe, bleeding may be uſed, but with the greateſt caution: for, however uſeful this operation may be in cold climates, the ſucceſs of it in warm ones is ſo far from being certain, that the lives of the patients have been often very much endangered, nay even deſtroyed, by it. Dr Badenoch, and the ſurgeon of the Ponſborne, endeavoured each of them to relieve two patients by blood-letting; and the conſequence was, that each of them loſt one patient. Dr Lind bled two patients; one of whom was Mr Richardſon, the firſt mate of the ſhip, who complained of a moſt violent pain in his head, with a full hard pulſe. About four or five ounces of blood were taken from him, by which he was greatly relieved: nor was the cure retarded by it; nay, the fever afterwards became leſs irregular. At the time the other patient was bled, the diſeaſe was exceedingly frequent and violent. He was ſo earneſt for bleeding, that he fired all the reſt with the ſame deſire, ſwearing, that, by refuſing them this only remedy, every one of them would be ſent to their graves. To quiet them therefore, and get rid of their importunities, the Doctor complied with their requeſt, and took about five or ſix ounces from him who had been the firſt to require it. The conſequence was, that he immediately loſt his ſtrength; and in leſs than an hour, during which time he made his will, was carried off by the next fit. It is proper, however, to obſerve, and indeed the Doctor himſelf makes the obſervation, with regard to this patient, that he was bled at an improper time, namely, between the fits; whereas, had he been bled in the hot fit, it is poſſible he might have been relieved: and here he quotes the authority of Cleghorn and Pringle.

As Dr Cleghorn practiſed in a very hot country, his obſervations muſt in the preſent caſe have greater weight than that of Pringle, who practiſed in a colder one. The former acquaints us, that if he was called in early enough, he always uſed to take away ſome blood, unleſs there was a ſtrong contra-indication, from people of all ages; namely, from robuſt adults, ten or twelve ounces; from others a ſmaller quantity, in proportion to their ſtrength and years. And further, if a violent head-ach, obſtinate delirium, and great heat or pains of the bowels, were urgent, the bleeding was repeated within a day or two. By this ſeaſonable evacuation, he found the vehemence of all the paroxyſms ſomewhat diminiſhed; the apyrexies became more complete; the operation of emetics and cathartics rendered ſafer and more ſucceſsful; and the terrible ſymptoms which happened about the height of the diſtemper, ſuch as raving *ſopor*, difficulty of breathing, inflammations of the abdominal viſcera, &c. were either prevented or mitigated. But if the fever had continued for ſome time before he was called, and the maſs of blood appeared to be too much melted down or inclined to a putrid diſſolution, he either abſtained from bleeding entirely, or took away a very ſmall quantity, though ſome importunate ſymptoms might ſeem to require a larger evacuation. As to the time of performing the operation, he acquaints us, that it is ſafe enough, except when the cold fit laſts or is ſoon expected, or while the ſkin is covered with critical ſweats; and that he uſually opened a vein in the beginning of the hot fit; by which means the ſick were relieved, the immoderate heat of the body, which is often productive of fatal effects, was diminiſhed, and the critical ſweats brought on ſooner and in greater abundance.

But though Dr Lind found veneſection to be of ſuch pernicious tendency in his patients, cooling acidulated liquors were of the utmoſt ſervice, as they corrected the putrid humours, leſſened the heat and thirſt, and of courſe prevented the fever from arriving at ſo great an height as it would otherwiſe have done. Thoſe cooling liquids are the beſt which are made up with ſome farinaceous ſubſtance, as they moſt eaſily unite with our fluids. Foſſile acids too, and cryſtals of tartar, eſpecially the latter, are of conſiderable uſe, not only in this but in other fevers. The neutral ſalts, prepared with the juice of lemons, were likewiſe given with ſucceſs during the heat of the fever. They leſſen the nauſea, the fits become more regular, and the remiſſions more full; and they are particularly grateful when given in a ſtate of efferveſcence. The good effects of theſe draughts we are in a great meaſure to aſcribe to the antiſeptic quality of the fixed air extricated from them during the efferveſcence; of which we ſhall ſpeak more fully when treating of the typhous fevers.

During the remiſſion, it is proper to evacuate the putrid humours by ſmall doſes of ipecacuanha, or rather tartar emetic. The tartar emetic indeed appears to be endowed with ſome kind of febrifuge virtue, which Dr Cullen thinks is owing to its relaxing the febrile ſpaſm taking place in the capillary veſſels, as ſhall be fully explained when we come to treat of continued fevers. But ſhould there appear any ſymptoms of a topical inflammation in ſome of the abdominal viſcera, a thing which never happens unleſs the diſorder has been of ſome ſtanding, vomiting is to be avoided, and we are to depend upon purgatives alone for the evacuation of the putrid bile, which are always uſeful in the cure of this diſorder. But all acrid and ſtrong purgatives are to be carefully avoided, and only the mild antiſeptic ones made uſe of, ſuch as cryſtals of tartar, or tamarinds made up with manna or with Glauber's ſalt.

Under the article Gall, we have obſerved, from Dr Percival, the effect which vegetable acids have in ſweetening putrid bile; whence it ſeems probable, that a liberal uſe of theſe acids would be much more ſerviceable than a repetition of any kind of purgatives. Though in theſe diſeaſes there is a great quantity of putreſcent bile collected in the body, yet it ſeems much more probable that this is the *effect* rather than the *cauſe* of the diſorder; and therefore, though we carry off the quantity collected ever ſo often, more of the ſame kind will ſtill be produced by the putreſcent diſpoſition of the other juices, at the ſame time that the ſtrength of the patient muſt neceſſarily be diminiſhed by repeated evacuations, when it ought rather to be kept up by all poſſible means. We ought well to obſerve, however, that the mineral acids have not that property of ſweetening putrid bile which the vegetable ones have; and therefore the ſame relief will not be given by them which might reaſonably be expected from vinegar or lemon-juice.

In order to keep up the ſtrength of the patient, good food is abſolutely neceſſary. Dr Lind allowed the ſick ſmall meſſes of panada made with boiled rice and barley mixed with currants or raiſins and prunes, ſeaſoned with ſugar and a little wine, eſpecially claret. During the paroxyſms, they had gruel made of flour and rice, with ſugar and the juice of acid fruit; and when the fit went off, a little wine was added to this mixture.

The ſhirts and bedding muſt be very often changed and well aired; their ſtools, and all filth and naſtineſs, are to be immediately removed; the places where they are lodged ſhould be well aired and frequently ſprinkled with vinegar; and, in the laſt place, the ſick muſt be exceedingly well nurſed. Bliſters, according to Dr Lind, ſhould never be uſed till the fever has been of long continuance, or the ſpirits and pulſe of the patient have begun to flag. But here our author has implicitly followed Dr Huxham, whoſe theory concerning the uſe of bliſters is now found to be erroneous. According to that celebrated author, bliſters are capable of doing conſiderable hurt in all caſes where there is a tendency to inflammation, by increaſing the motion of the fluids and the oſcillatory power of the veſſels, both of which are already too great. They are alſo improper, according to him, where there is a conſiderable tendency of the fluids to putrefaction; becauſe he ſuppoſes the ſalts of theſe flies to operate in the ſame manner with volatile alkalies, that is, by diſſolving and putrefying the blood ſtill farther. But Sir John Pringle hath ſhown, that, in inflammatory fevers as well as thoſe of the putrid kind, both bliſters and volatile ſalts may be of ſervice; the latter, particularly, he hath experimentally proved to be ſo far from promoting putrefaction, that they are exceedingly ſtrong antiſeptics.

In the Eaſt Indies, Dr Lind found it altogether neceſſary to exhibit the bark in large quantities, and as early as poſſible. By this method he not only ſecured the patient from the imminent danger of death to which he was expoſed at every fit, but likewiſe conquered thoſe obſtructions which were apt to enſue in the abdominal viſcera, and which are to be attributed to the continuance of the diſorder, and not to the bark employed to cure it. He always gave the bark during the ſecond remiſſion, as all his care was during the firſt to cleanſe the primæ viæ. He obſerves, however, that it is to no purpoſe to give the bark till the neceſſary purgations are over; but aſſures us, that it never fails, unleſs, from the coming on of a vomiting or diarrhœa, it cannot be taken in ſufficient quantities before the return of a paroxyſm. To prevent the medicine from vomiting or purging, he mixed a few drops of liquid laudanum with every doſe of it. Half a drachm was given every half hour in ſome convenient vehicle, beginning as ſoon as the fever had conſiderably abated, and the pulſe was returned nearly to its natural ſtate; both which generally happened before the ſweats were over. An ounce of the bark was ſometimes found too little to check the fever, but an ounce and a half never failed. It muſt be continued daily in ſmall doſes till the patient has recovered his ſtrength, and then a greater quantity given, eſpecially at the ſeaſon when the rivers overflow the country.

Dr Pringle found the autumnal remittents in the Netherlands complicated with a great many inflammatory ſymptoms; for which reaſon it was generally found neceſſary to open a vein in the beginning. The vernal and later autumnal remitting fevers are accompanied with pleuritic and rheumatic pains from the coldneſs of the weather, and on that account require more bleeding. A phyſician unacquainted with the nature of the diſeaſe, and attending chiefly to the paroxyſms and remiſſions, would be apt to omit this evacuation entirely, and give the bark too ſoon, which would bring on a continued inflammatory fever. In theſe countries a vein may be ſafely opened either during the remiſſion or in the height of a paroxyſm, and our author alſo found good effects reſulting from bleeding in the hot fits of the marſh-fever, even after it had almoſt come to regular intermiſſions. After bleeding, a purgative was uſually exhibited, of which he gives us the following formula.

℞. Infuſi ſenæ commun. ℥iij.
Elect. Lenitiv. ℥ſs.
Nitr. pur. ʒi.
Tinct. ſen. ʒvi. M.

Of this only one half was taken at once; and if it did not operate twice in four hours, the remainder was then taken. This potion agreed with the ſtomach, purged plentifully, and therefore was a very uſeful compoſition. Next morning, when there was almoſt always ſome remiſſion, he gave one grain of emetic tartar rubbed with twelve grains of crabs-eyes, and repeated the doſe in two hours, if the firſt had little or no effect; or at any rate in four hours. This medicine was intended not only to vomit, but alſo to operate by ſtool, and excite a ſweat. If theſe evacuations were procured, the fever generally became eaſier, and was even ſometimes cured. This he prefers to the ipecacuanha, and therefore in the latter years of his practice diſuſed that root entirely. The ſame medicine was repeated next day or the day following; or if not, a laxative clyſter was thrown in: and this method was continued till the fever either went off altogether, or intermitted in ſuch a manner as to be cured by the bark.

A ſimilar method was followed by Dr Huck in the remitting fevers of the Weſt Indies and North America. In the beginning he let blood; and in the firſt remiſſion gave four or five grains of ipecacuanha, with from half a grain to two grains of emetic tartar. This powder he repeated in two hours, taking care that the patient ſhould not drink before the ſecond doſe; for then the medicine more readily paſſed into the bowels after it had operated by vomiting. If after two hours more the operation either way was ſmall, he gave a third doſe, which commonly had a good effect in opening the firſt paſſages; and then the fever either went quite off, or intermitted in ſuch a manner as to yield to the bark. On the continent, he found little difficulty after the intermiſſion; but in the Weſt Indies, unleſs he gave the bark upon the very firſt intermiſſion, tho' imperfect, the fever was apt to aſſume a continued and dangerous form.

In the remitting fevers of hot countries, however, it muſt be obſerved, that the lancet muſt in all caſes be much more ſparingly uſed than in ſimilar diſeaſes of the colder regions; and we muſt alſo be ſparing of veneſection in thoſe countries where the marſh effluvia are very ſtrong and prevail much. For this reaſon Dr Lind of Haſlar greatly condemns the practice of indiſcriminate bleeding when people firſt arrive in hot climates. The firſt diſeaſes indeed which occur in a voyage to the ſouthward are for the moſt part of an inflammatory nature, and owing to a ſudden tranſition from cold to hot weather. This occaſions a fulneſs and diſtenſion of the veſſels; whence all Europeans, on their firſt arrival under the tropic, bear evacuations much better than afterwards. The practice of indiſcriminate bleeding, however, a number of the ſhip's company when they firſt come into a warm latitude, is by no means found to anſwer the purpoſe of a preventative. In ſuch caſes, indeed, as plainly indicate a plethoric diſpoſition brought on by the heat, blood-letting is certainly uſeful. The ſigns of this are a pain and giddineſs in the head; a heavineſs and dullneſs of the eyes, which ſometimes appear ſlightly inflamed; there is alſo commonly a ſenſe of weight and fulneſs in the breaſt, the pulſe at the ſame time being quick and oppreſſed.

But the caſe is quite different after a longer continuance of ſultry weather, and when the conſtitution is in ſome meaſure habituated to the hot climate. For it is then obſerved, that the ſymptoms of inflammations in the bowels, even the moſt dangerous, are not near ſo ſevere in ſuch climates as in cold countries; nor can the patients bear ſuch large evacuations. The phyſician, however, muſt take care not to be miſled by the apparent mildneſs of the ſymptoms: for he will find, notwithſtanding ſuch deceitful appearances, that the inflammation makes a more rapid progreſs in hot countries than in cold, ſuppurations and mortifications being much more ſuddenly formed; and that in general all acute diſtempers come ſooner to a criſis in the ſouthern than in colder regions. Hence it is an important rule of practice in thoſe climates, to ſeize the moſt early opportunity, in the commencement of all threatening inflammations, to make frequent, though not copious evacuations by blood-letting. For by delay the inflammation ſwiftly paſſes from its firſt to its laſt or fatal ſtage; at leaſt an imperfect criſis in ſuch inflammatory fevers enſues, which fixes an obſtruction in the viſcera extremely difficult to remove.

It is indeed a general maxim with ſome phyſicians in the Weſt Indies, that in moſt acute diſtempers bleeding in that country is prejudicial. This is founded upon a ſuppoſition that the craſſamentum of the blood is thinned, and the ſolids greatly weakened, by the heat of the climate. It is therefore objected, that bleeding in ſuch an habit of body weakens the powers of nature, and withdraws the ſtrength which is requiſite to ſupport the patient until the criſis of the fever.

This reaſoning is partly juſt; but, like all general maxims, will admit of exceptions. Firſt, with regard to ſailors, it is to be remembered, that they are more expoſed to quick viciſſitudes of heat, cold, damps, and to various changes of the air and weather, than moſt of the other inhabitants of the Torrid Zone. Add to to this, that their intemperance, and the exceſſes they are apt to fall into whenever it is in their power to commit them, render them more liable to inflammations than any other ſet of people. Hence their diſeaſes require more plentiful evacuations than the land-inhabitants of thoſe parts of the world, and generally they bear them better. But with regard to the natives of the country, or thoſe who have remained long in it, it muſt be proper to bleed them very ſparingly, making a ſmall allowance for the different ſeaſons of the year, the temperature of the air, and the ſituation of the places where they reſide. Thus, in ſome parts, even on the iſland of Jamaica, at particular ſeaſons, the weather is cool; wherefore, in theſe places, and at ſuch ſeaſons, the inhabitants having their fibres more rigid, and a firmer craſis of their blood, bear veneſection much better.

In cold countries the ſtate of the air greatly aſſiſts in reſtoring the impaired ſpring of the fibres; whereas every thing almoſt in warm weather, ſuch as heat, moiſture, &c. concur to relax and weaken the habit of body. Thus, we may daily ſee perſons in Britain, after having ſuffered a moſt ſevere fit of ſickneſs, recover their ſtrength and ſpirits in a few days, and in a very ſhort time their natural conſtitution. But the caſe is very different in the ſultry regions of the Torrid Zone, or indeed in any part of the world where the heat of the ſeaſon cauſes the mercury to ſtand for any length of time at the 77th degree and upwards of Fahrenheit's thermometer. During ſuch an exceſs of heat, debility after fevers is apt to remain with European conſtitutions for ſeveral months. In Jamaica, the convaleſcents are ſent to the cool ſummits of the mountains; but a retreat to a more northern climate is often abſolutely neceſſary to recover their wonted tone and vigour of body. It is a well-eſtabliſhed obſervation, that the negroes, and aborigines of the Torrid Zone cannot bear plentiful evacuations by the lancet. They commonly mix the moſt ſtimulating poignant ſpices with their ordinary light food, and this is found by experience ſuitable to their conſtitutions.

As proper preventatives for the dangerous fevers of which we are treating, Dr Lind on all occaſions recommends the avoiding of ſtagnant water, or putrid marſhes; the uſe of proper food, cleanlineſs, and ſobriety. Of the propriety of removing from the neighbourhood of thoſe places whoſe peſtilential effluvia produce the diſorders, we cannot poſſibly entertain a doubt; and of the efficacy of proper food in preventing putrid diſorders he gives a remarkable inſtance in the Sheerneſs man of war, bound to the Eaſt Indies. As they went out, the men being apprehenſive of ſickneſs in ſo long a voyage, petitioned the captain not to oblige them to take up their ſalt proviſions, but rather to permit them to live upon the other ſpecies of their allowance. It was therefore ordered, that they ſhould be ſerved with ſalt-meat only once a-week; and the conſequence was, that, after a paſſage of five months and one day, the ſhip arrived at the Cape of Good Hope without having a ſingle perſon ſick on board. As the uſe of Sutton's pipes had been then newly introduced into the king's ſhips, the captain was willing to aſcribe part of ſuch an uncommon healthfulneſs to their beneficial effects; but it was ſoon diſcovered, that, by the neglect of the carpenter, the cock of the pipes had been all this while kept ſhut. This ſhip remained in India ſome months, where none of the men, except the boats crews, had the benefit of going on ſhore; notwithſtanding which, the crew continued to enjoy the moſt perfect ſtate of health; they were, however, well ſupplied with freſh meat. On leaving India, knowing they were to ſtop at the Cape of Good Hope, and truſting to a quick paſſage, and the abundance of refreſhments to be had there, they eat their full allowance of ſalt-meats, during a paſſage of only ten weeks; and it is to be remarked the air-pipes were now open. The effect of this was, that, when they were arrived at the Cape, 20 of them were afflicted in a moſt miſerable manner with ſcorbutic and other diſorders. Theſe, however, were ſpeedily recovered by the refreſhments they met with on ſhore. Being now thoroughly ſenſible of the beneficial effects of eating, in theſe ſouthern climates, as little ſalt meat as poſſible when at ſea, they unanimouſly agreed, in their voyage home from the Cape, to refrain from their too plentiful allowance of ſalt fleſh. And thus the Sheerneſs arrived at Spithead, with her full compliment of 160 men in perfect health and with unbroken conſtitutions; having in this voyage of 14 months and 15 days buried but one man, who died in a mercurial ſalivation.

Thus we ſee, that a free and pure air is not a ſufficient preſervative againſt a putreſcent ſtate of the fluids, without proper food; and, on the other hand, our author gives a very remarkable inſtance of the inefficacy of the moſt ſalutary food to prevent putrid diſeaſes, in a very noxious ſtate of the atmoſphere. In the year 1717, at the ſiege of Belgrade in Hungary, the fever of the country, and the flux, occaſioned a moſt extraordinary mortality among the troops. The dread of theſe diſeaſes cauſed every one, as may naturally be ſuppoſed, to have recourſe to different precautions for ſelf-preſervation. Prince Eugene, the commander in chief, had water and the proviſions for his table ſent him twice a-week from Vienna. The pure ſtream of the river Kahlenberg was regularly brought to him: he avoided all exceſſes, and lived regularly, or rather abſtemiouſly; refreſhed himſelf often by eating a cool melon; and mixed his uſual wine, which was Burgundy, with water. Yet notwithſtanding his utmoſt care, he was ſeized with a dyſentery; which would have quickly put an end to his life, had not the ſpeedy concluſion of that campaign permitted him to make quick retreat.

At this unhealthy ſeaſon, when hardly one imperial officer, much leſs their ſeveral domeſtics, eſcaped thoſe malignant diſeaſes, the renowned Count Bonneval and his numerous retinue continued in perfect health, to the ſurpriſe, or, to uſe the words of Dr Kramer, to the *envy* of all who beheld him. The only precaution he uſed was to take, two or three times a-day, a ſmall quantity of brandy in which the bark was infuſed; and he obliged all his attendants and domeſtics to follow his example. It is no leſs remarkable that the count, placing his certain preſervation in the uſe of this ſingle medicine, lived for many years afterwards in the moſt unhealthy ſpots of Hungary, without any attack, or apprehenſion of diſeaſe; and continued to enjoy a perfect ſtate of health during the hotteſt and moſt ſickly ſeaſons. And thus, with an unbroken and ſound conſtitution, which is ſeldom the caſe of thoſe who reſide long in ſuch climates, he lived to a great age. There is an inſtance produced by the ſame author of a whole regiment in Italy having been preſerved by the uſe of the bark from the attack of theſe malignant diſeaſes, viz. the flux and *bilious* fever, as it is frequently called, when the reſt of the Auſtrian army, not purſuing that method, became greatly annoyed with them.

The intemperance and irregular living of thoſe Europeans who viſit the hot climates is frequently accuſed as the cauſe of their deſtruction; but, our author thinks, without ſufficient reaſon: for though intemperance will make the body more liable to receive ſuch diſeaſes, it will not bring them on. It muſt by no means, however, be imagined, that in theſe climates Europeans may with impunity be guilty of exceſſes in eating or drinking; for the leaſt error in that way will often prove fatal by debilitating the body, whoſe utmoſt ſtrength in time of full health was perhaps ſcarce ſufficient to reſiſt the peſtilential miaſmata of the atmoſphere.

It appears, therefore, from the concurrent teſtimony of the moſt eminent phyſicians, that the moſt proper medicine to be uſed, either as a preventative or cure for remitting and intermitting diſorders is the Peruvian bark, adminiſtered with proper precautions, and after the *primæ viæ* have been evacuated of the putrid bilious matter collected in them. In thoſe ſpecies of *tritæophya*, &c. belonging to this claſs, enumerated by Sauvages, the ſame remedies only were uſeful; but in that peſtilential diſtemper which he calls *tritæophya Vratiſlavienſis*, he tells us, that waſhing the body with water ſometimes hot ſometimes cold, watery clyſters, and plenty of aqueous drink, were likewiſe of uſe. This method of treating malignant fevers is but lately come into practice, and ſhall be more fully conſidered under the cure of continued fevers.

Genus II. QUARTANA; the Quartan Fever.

Quartana auctorum, *Sauv.* Gen. 89. *Lin.* 17. *Vog.* 3. *Sag.* 711. *Hoffm.* II. p. 23. *Junck.* tab. 81.

63 XIV. The *Genuine* Quartan. Sp. I. var. 1. A.
Quartana legitima, *Sauv.* ſp. 1. *Sydenham* de morb. acut. cap. v.

Deſcription. The genuine quartan, according to Juncker, keeps its form more exactly than other intermittents; ſcarcely coming on at any other time than four or five in the afternoon. The cold is leſs violent than in the tertian; but is very perceptible, though it doth not proceed to ſuch a height as to make the limbs ſhake; and continues for about two hours. It is preceded and accompanied by a languor both of body and mind. There is ſeldom any vomiting unleſs when the ſtomach is manifeſtly overloaded with aliment; neither is there any diarrhœa, but the belly in general is rather bound, not only on the days on which the paroxyſm takes place, but alſo on the intermediate ones. The heat which ſlowly ſucceeds the cold, is leſs troubleſome to the patient by its violence than by the uneaſy dryneſs of the ſkin, which is ſcarce ever moiſtened with ſweat. This heat rarely continues longer than four or ſix hours, unleſs perhaps at the firſt or ſecond paroxyſm. It is accompanied alſo with a giddineſs and dull pain of the head. On the termination of the paroxyſm, the patient returns to a middling ſtate of health, and continues in the ſame for the reſt of the intermediate days; only there remains ſomewhat of a loathing, and a deep-ſeated pain as if the perſon was all over bruiſed or broken, which kind of ſenſation the phyſicians are wont to call *oſteocopus*. The fit returns every fourth day, and that preciſely at the ſame hours, being rarely poſtponed.

Cauſes of, and perſons ſubject to, this diſorder. The ſame general cauſes concur in producing this as in other intermittents, namely marſh miaſmata, and whatever can diſpoſe the body to be eaſily affected by them. Studious people, and thoſe of a melancholic turn, are ſaid to be particularly ſubject to quartans; but what are the immediate cauſes which produce a return of the fits every fourth day, inſtead of every day, or every third day, muſt no doubt lie for ever concealed, as depending upon the ſecret and inexplicable mechaniſm of the human body.

Prognoſis. A ſimple quartan, where there is no reaſon to dread any induration of the viſcera, may very certainly admit of a cure; and the prognoſis can never be unfavourable, unleſs in caſes of extreme weakneſs, or where the diſtemper hath been unſkilfully treated.

Cure. This does not in the leaſt differ from that which hath been fully laid down for the ſimple tertian, and which it is therefore needleſs to repeat here.

XV. The *Duplicated* Quartan. Sp. I. var. 1. B. 264
Quartana duplicata, *Sauv.* ſp. 4. *Bonet.*

This is entirely ſimilar to the duplicated tertian already mentioned; proper allowance being made for the difference between the type of a tertian and quartan.

XVI. The *Triplicated* Quartan. Sp. I. var. 1. C. 265
Quartana triplicata, *Sauv.* ſp. 16.

This hath three paroxyſms every fourth day, while the intermediate days are entirely free from fever.

XVII. The *Double* Quartan. Sp. I. var. 1. D. 266
Quartana duplex, *Sauv.* ſp. 3. *Vog.* ſp. 13.

In the double quartan, the fits come on every day except the third; but ſo that the firſt paroxyſm anſwers to the third, the ſecond to the fourth, and ſo on.

XVIII. The *Triple* Quartan. Sp. I. var. 1. E. 267
Quartana triplex, *Sauv.* ſp. 5. *Vog.* ſp. 14. *Bartholin.* H. anat. c. 1. 95.

This comes on every day, but the quartan type is ſtill preſerved by the times of acceſſion; that is, the time of the fourth paroxyſm's coming on anſwers to that of the firſt, the fifth to the ſecond, the ſixth to the

the third, &c.

268 XIX. The Quartan, accompanied with *Symptoms* of other diſeaſes. Sp. I. var. 2.

Quartana cataleptica, *Sauv.* ſp. 7. *Bonet.* polyalth. vol. 1. p. 805.
Quartana comatoſa, *Sauv.* ſp. 15. *Werlhoff.* de febr. *C. Piſonis* Obſerv. de morbis a colluvie ſeroſ. obſ. 166, 167, 168, 169, 171, 172, 173, 174.
Quartana epileptica, *Sauv.* ſp. 8. *Scholzii* Conſ. 379, 380.
Quartana hyſterica, *Sauv.* ſp. 10. *Morton*, Pyret. exerc. 1. cap. ix. H. 10, 11.
Quartana nephralgica, *Sauv.* ſp. 9.
Quartana metaſtatica, *Sauv.* ſp. 17.
Quartana amens, *Sauv.* ſp. 12. *Sydenham* de morb. acut. cap. v.
Quartana ſplenetica, *Sauv.* ſp. 2. *Etmuller*, Coll. conſult. caſ. 25.

269 XX. The Quartan *complicated* with other *Diſeaſes*. Sp. I. var. 3.

Quartana ſyphilitica, *Sauv.* ſp. 6. *Plateri*, obſerv. L. III. p. 676. Edin. Eſſ. art. xlvii. obſ. 8.
Quartana arthritica, *Sauv.* ſp. 11. *Muſgr. de Arthr.* ſympt. cap. ix. H. 4. et. 5.
Arthritis febriſequa, *Sauv.* ſp. 10.
Arthritis febricoſa, *Sauv.* ſp. 10. *Werlhoff.* de febr. *Cockburn* de morbis navigantium, obſ. 19.
Quartana ſcorbutica, *Sauv.* ſp. 14. *Barthol.* de med. Dan. diſſ. iv. *Tim.* L. VIII. caſ. 18.

270 XXI. The *Remitting* Quartan. Sp. II.

Tetartophya, *Sauv.* gen. 85. *Sag.* 699. *Lin.* 21.
Quartana remittens auctorum.
Var. 1. Tetartophya ſimplex, *Sauv.* ſp. 1.
2. Amphimerina ſemiquartana, *Sauv.* ſp. 23.
3. Tetartophya ſemitertiana, *Sauv.* ſp. 5.
4. Tetartophya maligna, *Sauv.* ſp. 6. *Lautter.* Hiſt. med. caſ. 21. *M. Donat.* L. III. cap. 14. ex *M. Gatenaria Horſt.* L. I. obſ. 15.
5. Tetartophya carotica, *Sauv.* ſp. 4. *Werlhoſf.* de febr. *Bianchi* Hiſt. hep. pars III. conſt. ann. 1718. p. 751.
6. Tetartophya ſplenalgica, *Sauv.* ſp. 2.
7. Tetartophya, hepatalgica, *Sauv.* 3. *Car. Piſ.* in prefat. p. 33.
8. Amphimerina ſpaſmodica, *Sauv.* ſp. 16.

To the tertian or quartan fevers alſo belong the *Erraticæ* of authors. As all thoſe abovementioned differ only in the ſlight circumſtance of the type from the intermitting and remitting tertians already deſcribed at length, it is unneceſſary here to take up time in deſcribing every minute circumſtance related by phyſicians concerning them, eſpecially as it could contribute nothing towards the laying down a better method of cure than what hath been already ſuggeſted.

Genus III. QUOTIDIANA; the Quotidian Fever.

Quotidiana auctorum, *Sauv.* gen. 86. *Lin.* 15. *Vog.* I. *Hoffm.* II. 33. *Junck.* tab. 79.

271 XXII. The *Genuine* Quotidian. Sp. I. var. 1. A.

Quotidiana ſimplex, *Sauv.* ſp. 1.
Quotidiana legitima, *Sennert.* de febr. cap. 18.

Deſcription. This kind of fever generally comes on about ſix or ſeven o'clock in the morning, beginning with a conſiderable degree of cold and ſhivering, which laſts for about an hour; and is often accompanied with vomiting, or ſpontaneous diarrhœa, or both. It is ſucceeded by a pretty ſtrong heat, accompanied with thirſt, reſtleſsneſs, and pain of the head. When the heat abates a little, a ſpontaneous ſweat commonly follows, and the whole paroxyſm rarely exceeds ſix hours. It returns, however, every day almoſt always at the ſame hour, unleſs it is evidently diſturbed.

Cauſes of, and perſons ſubject to, the diſeaſe. The ſame general cauſes are to be aſſigned for the quotidian as for other intermittents. This kind occurs but rarely: and is ſaid to attack people of a phlegmatic temperament rather than any other; alſo old people rather than young, and women rather than men.

The prognoſis and method of cure are not different from thoſe of tertians and quartans.

XXIII. The *Partial* Quotidian. Sp. I. var. 1. B. 272

Quotidiana partialis, *Sauv.* ſp. 16. *Cnoffel*, E. N. C. D. I. A. III. obſ. 205. Edin. Med. Eſſ. vol. i. art. 31. vol. ii. art. 16.
Quotidiana cephalalgica, *Sauv.* ſp. 6. *Mort.* pyretol. exerc. i. hiſt. 27. *Van Swieten in Boerh.* p. 534.
Cephalalgia intermittens, *Sauv.* ſp. 7.
Cephalæa febricoſa, *Sauv.* ſp. 4.
Quotidiana ophthalmica, *Morton*, ibid. hiſt. 17. *Van Swieten*, ibid.
Ophthalmia febricoſa, *Sauv.* ſp. 23.

Theſe diſtempers attack only ſome particular part of the body, as the head, the eye, arm, &c. producing periodical affections of thoſe parts returning once in 24 hours; and are to be cured by the bark, as other intermittents. They are known to belong to this claſs, by the evident intermiſſion of the pain or other affection of the part. The *quotidiana hyſterica*, *Sauv.* ſp. 3. *quotidiana catarrhalis*, *Sauv.* ſp. 9. and *quotidiana ſtrangurioſa*, *Sauv.* ſp. 11. ſeem to be ſymptomatic diſorders.

XXIV. The *Remitting* Quotidian. Sp. II. 273

Amphimerina, *Sauv.* gen. 84. *Lin.* 20.
Quotidiana continua, *Vog.* 15.
Quotidianæ remittentes et continuæ auctorum.
Amphimerina latica, *Sauv.* ſp. 1.
Febris continua lymphatica, *Etmuller*, Coll. conſ. caſ. 32. *River.* Obſ. cent. 1. obſ. 57.
Amphimerina ſingultuoſa, *Sauv.* ſp. 14.
Febris continua Lyngodes, *Vog.* 26.

Concerning theſe alſo nothing remains neceſſary to be mentioned in this place, having already ſo fully diſcuſſed the remitting fevers in all the different parts of the world. Many other varieties of theſe fevers mentioned by different authors are to be accounted merely ſymptomatic.

Sect. II. CONTINUED FEVERS.

Continuæ, *Sauv.* claſs ii. ord. 1. *Vog.* claſs I. ord. 2. *Sag.* 666. *Boerh.* 727.
Continentes, *Lin.* claſs ii. ord. 1. *Stahl.* Caſ. mag. 35. Caſ. min. 87. *Junck.* 58. *Sennert.* de febr. L. ii. cap. 2. et 10.

XXV. SYNOCHA. Genus IV. 27

Synocha, *Sauv.* gen. 80. *Lin.* 12. *Junck.* 58.
Synocha, ſive febris acuta ſanguinea, *Hoffm.* II. 105.
Synochus, *Vog.* 16.

Continua non putris, *Boerh.* 729.
Ephemera, *Sauv.* g. 79. *Boerh.* 728. *Junck.* 57.
Diaria, *Lin.* 11.
Febris inflammatoria auctorum.

Deſcription. The moſt ſimple kind of ſynocha is the ephemera or diary fever. It begins without any ſenſation of cold or ſhivering, unleſs there is ſome internal inflammation, or the ſmall pox or meaſles happen to be preſent. A continual heat without any intermiſſion conſtitutes the eſſence of this diſeaſe. The heat, however, is more tolerable than in the ſynocha properly ſo called. In ſome the pains of the head are pungent and throbbing, anſwering to the pulſations of the arteries; but in others they are dull and heavy. The face is red and bloated; and there is a remarkable laſſitude of the limbs, with a great, full, and frequent pulſe. The urine is red, and depoſits a ſediment almoſt of the colour of orange-peel; and in the very firſt day of the diſeaſe, ſigns of concoction, (according to the Hippocratic phraſe), appear in it. The fever commonly goes off with a gentle ſweat, but more rarely with an hæmorrhage of the noſe. Its ſhorteſt period is 24 hours; but if it goes beyond the fourth day, it is then a *ſynocha* properly ſo called.

The ſimple ſynochus, according to Vogel, begins with cold and ſhivering, ſucceeded by vehement heat, redneſs, and drineſs of the ſkin. The face, eſpecially, is very red, and the thirſt intenſe. The head is either pained or heavy. The patient either doth not ſleep at all, or is diſturbed with dreams. A moiſt ſweat then breaks out all over the ſkin. The pulſe is full, quick, and frequent; the judgment is ſometimes a little diſturbed: young people are apt to be terrified with imaginations; and they for the moſt part incline to ſleep: the reſpiration is difficult, and the belly coſtive; at the ſame time that a tenſive kind of laſſitude is perceived over the whole body. A complete criſis takes place either on the fourth, or at the fartheſt on the eleventh day. The characteriſtic marks of the ſimple ſynochus, therefore, are, A redneſs of the face, moiſture of the ſkin, and great and frequent pulſe.

Cauſes of, and perſons ſubject to, this diſeaſe. The cauſes of inflammatory fevers aſſigned by Dr Cullen have been already largely diſcuſſed in the firſt part of this treatiſe; and as we have already remarked of intermittents, ſo muſt we alſo now remark of continued fevers, that it is impoſſible to diſcover thoſe minute cauſes which occaſion the difference of type betwixt one inflammatory fever and another, though moſt authors pretend to enumerate theſe with great certainty. Thus Juncker tells us, that the cauſe of the ſimple ephemera is plethora, together with any immoderate agitation and commotion of the fluids while in that ſtate. Vogel reckons among the cauſes of his *febris diaria*, paſſions of the mind, pain, want, expoſure to the ſun, &c.; a repulſion or abſorption of certain humours; wounds, fractures, luxations, &c.: ſo that in general we may reckon every thing tending to increaſe the action of the arterial ſyſtem to be in certain circumſtances a cauſe of inflammatory fever. Hence we find thoſe are moſt ſubject to the ſynocha whoſe conſtitution is either naturally robuſt, or who are expoſed to thoſe cauſes which tend to produce an increaſed action of the arterial ſyſtem; ſuch as hard labour, high living, &c.

Prognoſis. The moſt ſimple kind of ſynocha, that is, the ephemera or diary fever, is commonly cured without the aſſiſtance of medicine; and therefore the prognoſis is for the moſt part favourable: yet, if it is improperly treated by heating medicines, it may eaſily be converted into the other kind; or, if there is a putrid diſpoſition of the fluids, into a fever of a very dangerous nature. The ſame thing is to be underſtood even of the moſt violent kind; for ſimple inflammatory fevers are not dangerous unleſs complicated with an affection of ſome particular part, as the pleura, ſtomach, &c.

Cure. Here Dr Cullen objects to the hypotheſis of thoſe who are for leaving the cure of continued fevers to the operations of nature; becauſe theſe operations are neither certain in themſelves, nor are they ſo well underſtood as to enable us to regulate them properly; and it is likewiſe poſſible to ſuperſede them by art. The plan therefore on which he proceeds is, to form his indications of cure upon the means of obviating the tendency to death in fevers; and theſe he reduces to three. 1. To moderate the violence of re-action. 2. To remove or obviate the cauſes of debility; and, 3. To obviate or correct the tendency of the fluids to putrefaction.

The *firſt* indication may be anſwered, 1. By all thoſe means which diminiſh the action of the heart and arteries. 2. By thoſe which take off the ſpaſm of the extreme veſſels, which, according to his theory, is the chief cauſe of violent re-action.

I. The action of the heart and arteries may be diminiſhed, 1. By avoiding or moderating thoſe irritations which, in one degree or other, are almoſt conſtantly applied to the body. 2. By the uſe of certain ſedative powers. 3. By diminiſhing the tenſion and tone of the arterial ſyſtem.

[1.] The irritations above-mentioned are the impreſſions made upon our ſenſes, the exerciſe of the body and mind, and the taking in of aliments. The avoiding of theſe as much as poſſible, or the moderating their force, makes what is properly called the *antiphlogiſtic regimen*, proper to be employed in *almoſt every* continued fever. This regimen is to be directed in the following manner.

1. Impreſſions on the external ſenſes, as ſtimulant to the ſyſtem, and a chief ſupport of its activity, ſhould be avoided as much as poſſible; eſpecially ſuch as are of a ſtronger kind, and which give pain and uneaſineſs. No impreſſion is to be more carefully guarded againſt than that of external heat; and at the ſame time every other means of increaſing the heat of the body is to be ſhunned. Both theſe precautions are to be avoided as ſoon as a hot ſtage is fully formed, and to be attended to during its continuance, except in certain caſes, where a determination to ſweating is neceſſary, or where the ſtimulant effects of heat may be compenſated by circumſtances which determine it to produce a relaxation and revulſion.

2. All motion of the body is to be avoided as much as poſſible, and that poſture only choſen which employs the feweſt muſcles, and keeps none of them long in a ſtate of contraction. Speaking, as it accelerates reſpiration, is particularly to be avoided. It muſt alſo be obſerved, that every motion of the body is more ſtimulant in proportion as the patient is weaker.

3. The exerciſe of the mind is alſo to be avoided as being a ſtimulus to the body; but here an exception

is to be made in the caſe of a delirium coming on, when the preſenting of accuſtomed objects may divert the irregular train of ideas then ariſing in the mind.

4. The preſence of recent aliment in the ſtomach proves always a ſtimulus to the ſyſtem, and ought therefore to be as moderate as poſſible. A total abſtinence for ſome time may be of ſervice; but as this cannot be long continued with ſafety, we muſt avoid the ſtimulus of aliment by chooſing that kind which gives the leaſt. Alimentary matters are alſo to be accounted more ſtimulant in proportion to their alkaleſcent qualities; and this leads us to avoid all animal, and uſe only vegetable food. For the ſame reaſon, aromatic and ſpirituous liquors are to be avoided; and in anſwering the preſent indication, we muſt abſtain from all fermented liquors except thoſe of the loweſt quality. Other ſtimuli are, the ſenſation of thirſt, crudities or corrupted humours in the ſtomach, a preternatural retention of the fæces in the inteſtines, and a general acrimony of all the humours, which is in moſt fevers to be ſuſpected. Theſe are to be removed by ſuch methods as the urgency of the ſymptoms require, by diluting liquors, vomiting, the uſe of acids, laxative clyſters, and large quantities of antiſeptic drinks.

[2.] The ſecond method of moderating the violence of re-action is by the employment of certain ſedative powers with a view to diminiſh the activity of the whole body, and particularly that of the ſanguiferous ſyſtem. The firſt of theſe to be mentioned is the application of cold. Heat is the chief ſupport of the activity of the animal-ſyſtem; and the ſyſtem is therefore provided with a power of generating heat in itſelf: but at the ſame time we obſerve, that this would go to exceſs, were it not conſtantly moderated by a cooler temperature in the ſurrounding atmoſphere. When, therefore, the generating power of heat in the ſyſtem is increaſed, as is commonly the caſe in fevers, it is neceſſary not only to avoid all further means of increaſing it, but alſo to apply air of a cooler temperature; or at leaſt to apply it more entirely and freely than in a ſtate of health. This is ſhown, from ſome late obſervations, to be a very powerful means of moderating the violence of re-action; but what is the mode of its operation, to what circumſtances of fever it particularly applies, or what limitations it requires, are not yet well aſcertained.

Another ſedative power very frequently employed in fevers, is that of certain medicines known in the materia medica by the name of *refrigerants*. The chief of theſe are acids of all kinds when ſufficiently diluted, and which are, in ſeveral reſpects, remedies adapted to continued fevers. Thoſe eſpecially in uſe are the vitriolic and vegetable; and on many accounts the latter are to be preferred. Another ſet of refrigerants are the neutral ſalts formed of the vitriolic, nitrous, or vegetable acids, with alkalies either fixed or volatile. All theſe neutrals, while they are diſſolved in water, generate cold; but as that cold ceaſes ſoon after the diſſolution is finiſhed, and as the ſalts are generally exhibited in a diſſolved ſtate, their refrigerant power in the animal-body does not at all depend upon their power of generating cold with water. Nitre is the refrigerant chiefly employed; but all the others, compounded as above-mentioned, partake more or leſs of the ſame quality. Beſides theſe neutrals, ſome metallic ſalts have alſo been employed in fevers, particularly the ſugar of lead: but the refrigerant powers of this ſalt are by no means well aſcertained, and its deleterious qualities are too well known to admit of its being freely uſed.

[3.] The third general method of diminiſhing the re-action of the ſyſtem, is by leſſening the tenſion, tone, and activity of the ſanguiferous ſyſtem. As the activity of the ſyſtem in a great meaſure depends upon the tone, and this again upon the the tenſion, of the veſſels, given to them by the quantity of fluids they contain, it is evident, that the diminution of the quantity of theſe muſt diminiſh the activity of the ſanguiferous ſyſtem. The moſt efficacious means of diminiſhing the quantity of fluids is by the evacuations of blood-letting and purging. The former is evidently one of the moſt powerful means of diminiſhing the activity of the whole body, and eſpecially of the ſanguiferous ſyſtem; and it muſt therefore be the moſt effectual means of moderating the re-action in fevers. When the violence of re-action, and its conſtant attendant a phlogiſtic diatheſis, are ſufficiently evident; when theſe conſtitute the principal part of the diſeaſe, and may be expected to continue through the whole of it, as in the caſes of ſynocha; then blood-letting is the principal remedy, and may be employed as far as the ſymptoms of the diſeaſe may ſeem to require, and the conſtitution of the patient will bear. It muſt, however, be attended to, that a greater evacuation than is neceſſary may occaſion a ſlower recovery, and render the perſon more liable to a relapſe, or bring on other diſeaſes. It is alſo to be obſerved, that this evacuation is the more effectual as the blood is more ſuddenly drawn off, and as the body is at the ſame time more free from all irritation; and, therefore, when it is in a poſture in which the feweſt muſcles are in action.

With regard to purging, when we conſider the quantity of fluids conſtantly preſent in the cavity of the inteſtines, and the quantity which may be drawn off from the innumerable excretories that open into this cavity, it will be obvious, that a very great evacuation may be made by purging: and if this be done by a ſtimulus that is not at the ſame time communicated to the reſt of the body, it may, by emptying both the cavity of the inteſtines and the arteries which furniſh the excretions poured into it, induce a conſiderable relaxation in the whole ſyſtem; and is therefore ſuited to moderate the violence of re-action in fevers. But it is to be obſerved, that as the fluid drawn from the excretories opening into the inteſtines is not all drawn immediately from the arteries, and as what is even more immediately drawn from theſe is drawn off ſlowly; ſo the evacuation will not, in proportion to its quantity, occaſion ſuch a ſudden depletion of the red veſſels as blood-letting does; and therefore cannot act ſo powerfully in taking off the phlogiſtic diatheſis of the ſyſtem.

At the ſame time, the evacuation may induce a conſiderable degree of debility; and therefore, in thoſe caſes in which a dangerous ſtate of debility is likely to occur, purging is to be employed with a great deal of caution; and this caution is more difficult to be obſerved than in the caſe of blood-letting: and it is further to be noticed, that as purging takes off in ſome meaſure the determination of the blood to the veſſels on the ſurface of the body, it ſeems to be an evacuation not well adapted to the cure of fevers.

II. The other method of moderating the violence of re-action in fevers is by the exhibition of thoſe remedies ſuited to take off the ſpaſm of the extreme veſſels, ſuppoſed to be the irritation which chiefly ſupports the re-action. The means to be employed for this purpoſe are either internal or external.

Firſt, The internal means are, 1. Thoſe which determine the force of the circulation to the extreme veſſels on the ſurface of the body, and, by reſtoring the tone and activity of theſe veſſels, overcome the ſpaſm on their extremities. 2. Thoſe medicines which have the power of taking off ſpaſm in any part of the ſyſtem, and which are known under the title of ANTISPASMODICS.

(1.) Thoſe remedies which are fit to determine to the ſurface of the body are, 1. Diluents. 2. Neutral ſalts. 3. Sudorifics. 4. Emetics.

1. Water enters, in a large proportion, into the compoſition of all the animal-fluids, and a large quantity of it is always diffuſed through the whole of the common maſs. In a ſound ſtate, the fluidity of the whole maſs depends upon the quantity of water preſent in it. Water therefore is the proper diluent of our maſs of blood, and other fluids are diluent only in proportion to the quantity of water they contain.

In a healthy ſtate alſo, the fullneſs of the extreme veſſels and the quantity of excretion are in proportion to the quantity of water preſent in the body. But in fever, though the excretions are in ſome meaſure interrupted, they continue in ſuch quantity as to exhale the more fluid parts of the blood; and, while a portion of them is at the ſame time neceſſarily retained in the larger veſſels, the ſmaller and the extreme veſſels, both from the deficiency of fluid and their own contracted ſtate, are leſs filled, and therefore allowed to remain in that condition. To remedy this contracted ſtate, nothing is more neceſſary than a large ſupply of water or watery fluids taken in by drinking or otherwiſe; for as any ſuperfluous quantity of water is forced off by the ſeveral excretories, ſuch a force applied may be a means of dilating the extreme veſſels, and of overcoming the ſpaſm affecting their extremities. Accordingly, the throwing in of a large quantity of watery fluids has been, at all times, a remedy much employed in fevers; and in no inſtance more remarkably than by the Spaniſh and Italian phyſicians, in the uſe of what they call the *diæta aquea*. This practice conſiſts in taking away every other kind of aliment and drink, and in giving, in divided portions, every day for ſeveral days together, ſix or eight pounds of plain water, generally cold, but ſometimes warm. All this, however, is to be done only after the diſeaſe has continued for ſome time, and at leaſt for a week.

2. A ſecond means of determining to the ſurface of the body, is by the uſe of neutral ſalts. Theſe neutrals, in a certain doſe, taken into the ſtomach, produce ſoon after a ſenſe of heat upon the ſurface of the body; and, if the body be covered cloſe and kept warm, a ſweat is readily brought out. The ſame medicines taken during the cold ſtage of a fever, very often put an end to it, and bring on the hot one; and they are alſo remarkable for ſtopping the vomiting which ſo frequently attends the cold ſtage of fevers. All this ſhows, that neutral ſalts have a power of determining the blood to the ſurface of the body, and may therefore be of uſe in taking off the ſpaſm which ſubſiſts there in fevers. The neutral moſt commonly employed in fevers, is that formed of an alkali with the native acid of vegetables. But all the other neutrals have more or leſs of the ſame virtue; and perhaps ſome of them, particularly the ammoniacal ſalts, poſſeſs it in a ſtronger degree. As cold water taken into the ſtomach often ſhews the ſame diaphoretic effects with the neutral ſalts, it is probable that the effect of the latter depends upon their refrigerant powers above-mentioned.

3. A third method of determining to the ſurface of the body, and taking off the ſpaſm ſubſiſting there, is by the uſe of ſudorifics and of ſweating. The propriety of this remedy hath been much diſputed; and many ſpecious arguments may be adduced both for and againſt the practice. In its favour may be urged, 1. That in healthy perſons, in every caſe of increaſed action of the heart and arteries, a ſweating takes place, and is, ſeemingly, the means of preventing the bad effects of ſuch increaſed action. 2. That, in fevers, their moſt uſual ſolution and termination is by ſpontaneous ſweating. 3. That, even when excited by art, it has been found uſeful at certain periods, and in certain ſpecies of fever.—On the other hand, it may be urged againſt the practice of ſweating, 1. That in fevers, as a ſpontaneous ſweating does not immediately come on, there are ſome circumſtances different from thoſe in the ſtate of health, and which may render it doubtful whether the ſweating can be ſafely excited by art. 2. That in many caſes the practice hath been attended with bad conſequences. The means commonly employed have a tendency to produce an inflammatory diatheſis; which, if not taken off by the ſweat ſucceeding, muſt be increaſed with much danger. Thus ſweating employed to prevent the acceſſions of intermitting fevers has often changed them into a continued form, which is always dangerous. 3. The utility of the practice is doubtful, as ſweating, when it happens, does not always give a final determination, as muſt be manifeſt in the caſe of intermittents, and in many continued fevers which are ſometimes in the beginning attended with ſweatings which do not prove final; and, on the contrary, whether they be ſpontaneous or excited by art, ſeem often to aggravate the diſeaſe.

From theſe conſiderations, it is doubtful if the practice of ſweating can be admitted very generally; but, at the ſame time, it is alſo very doubtful if the failure of the practice, or the miſchiefs ſaid to ariſe from it, have not been owing to the improper conduct of the practitioner. With reſpect to the laſt, it is almoſt agreed among phyſicians, 1. That ſweating has been generally hurtful when excited by ſtimulant, heating, and inflammatory medicines. 2. That it has been hurtful when excited by much external heat, and continued with a great increaſe of the heat of the body. 3. That it is always hurtful when it does not relieve; and rather increaſes the frequency and hardneſs of the pulſe, the anxiety and difficulty of breathing, the headach, and delirium. 4. That it is always hurtful if it is urged when the ſweat is not fluid, and when it is partial and on the ſuperior parts of the body only.

In theſe caſes, it is probable, that either an inflammatory diatheſis is produced, which increaſes the ſpaſm on the extreme veſſels; or that, from other cauſes, the ſpaſm is too much fixed to yield eaſily to the increaſed action of the heart and arteries; and upon either ſuppoſition it muſt be obvious, that urging the ſweat may produce determinations to ſome of the internal parts, with very great danger.

Notwithſtanding theſe doubts, however, it ſtill remains true, 1. That ſweating has certainly been often uſeful in preventing the acceſſions of fevers when they have been certainly foreſeen, and a proper conduct employed. 2. That even after fevers have in ſome meaſure come on, ſweating has interrupted their progreſs when properly employed, either at the very beginning of the diſeaſe, or during its approach and gradual formation. 3. That even after pyrexiæ have continued for ſome time, ſweating has been ſucceſsfully employed in curing them, as particularly in the caſe of a rheumatiſm. 4. That certain fevers produced by a very powerful ſedative contagion, have been generally treated moſt ſucceſsfully by ſweating.

Theſe inſtances are in favour of ſweating, but give no general rule; and it muſt be left to farther experience to determine how far any general rule can be eſtabliſhed in this matter. In the mean time, if the practice of ſweating is to be attempted, the following rules may be laid down for the conduct of it. 1. That a ſweat ſhould be exhibited without the uſe of ſtimulant inflammatory medicines. 2. That it ſhould be excited with as little external heat, and with as little increaſe of the heat of the body, as poſſible. 3. That, when excited, it ſhould be continued for a due length of time; not leſs than 12 hours, and ſometimes for 24 or 48 hours; always, however, ſuppoſing that it proceeds without the dangerous circumſtances already mentioned. 4. That for ſome part of the time, and as long as the perſon can eaſily bear, it ſhould be carried on without admitting of ſleep. 5. That it ſhould be rendered univerſal over the whole body; and therefore particularly that care be taken to bring the ſweating to the lower extremities. 6. That the practice ſhould be rendered ſafer by moderate purging excited at the ſame time. 7. That it ſhould not be ſuddenly checked by cold any how applied to the body.

When attention is to be given to theſe rules, the ſweating may be excited, 1. By warm bathing, or a fomentation of the lower extremities. 2. By frequent draughts of tepid liquors, chiefly water, rendered more grateful by the addition of a light aromatic, or more powerful by that of a ſmall quantity of wine. 3. By giving ſome doſes of neutral ſalts. 4. Moſt effectually, and perhaps moſt ſafely, by a large doſe of an opiate, joined with a portion of neutral ſalts, and of an emetic.

The fourth mean of determining to the ſurface of the body, and thereby taking off the ſpaſm affecting the extreme veſſels, is by the uſe of emetics. Theſe, particularly of the antimonial kind, have been employed in the cure of fevers ever ſince the introduction of chemical medicines; and though of late their uſe has become very general, their efficacy is ſtill diſputed, and their manner of operating is not commonly explained.

Vomiting is in many reſpects uſeful in fevers; as it evacuates the contents of the ſtomach, as it emulges the biliary and pancreatic ducts, and evacuates the contents of the duodenum, and perhaps alſo of a larger portion of the inteſtines; as it agitates the whole of the abdominal viſcera, it expedes the circulation in them, and promotes their ſeveral ſecretions; and laſtly, as it agitates alſo the viſcera of the thorax, it has like effects there.

It is not to this cauſe, however, that we are to impute the effect vomiting has in determining to the ſurface of the body. This muſt be attributed to the particular operation of emetics upon the muſcular fibres of the ſtomach, whereby they excite the action of the extreme arteries on the ſurface of the body, and thereby effectually determine the blood to theſe veſſels, remove the atony, and take off the ſpaſm affecting them. For this purpoſe they are exhibited in two different ways; that is, either in ſuch doſes as may excite full and repeated vomitings, or in ſuch doſes as may excite ſickneſs and nauſea only, with little or no vomiting at all.

Full vomiting is well ſuited to determine to the ſurface of the body, and thereby to obviate the atony and ſpaſm which lay the foundation of fever. Thus, vomiting excited a little before the expected acceſſion of the paroxyſm of an intermittent, has been found to prevent the paroxyſm altogether. It has been obſerved alſo, that when contagion has been applied to a perſon, and firſt diſcovers its operation, a vomit given will prevent the fever which otherwiſe was to have been expected.

Theſe are the advantages to be obtained by exciting vomiting at the firſt approach of fevers, or of the paroxyſm of fevers; and they may alſo be applied after fevers are formed, to take off, perhaps entirely, the atony and ſpaſm, or at leaſt to moderate theſe, ſo that the fever may proceed more gently and ſafely. It is ſeldom, however, that vomiting is found to produce a final ſolution of fevers; and after they are once formed, it is commonly neceſſary to repeat the vomiting ſeveral times; but this is attended with inconveniency, and ſometimes with diſadvantage. The operation of full vomiting is tranſitory, and the exerciſe of vomiting is a debilitating power; and therefore, when the vomiting does not remove the atony and ſpaſm very entirely, it may give occaſion to their recurrence with greater force. For theſe reaſons, after fevers are fully formed, phyſicians have thought proper to employ emetics in nauſeating doſes only. Theſe are capable of exciting the action of the extreme veſſels, and their operation is more permanent. At the ſame time they often ſhow their power by exciting ſome degree of ſweat, and their operation is rendered more ſafe by their commonly producing ſome evacuation by ſtool.

The emetics chiefly in uſe at preſent are, ipecacuanha and antimony. The former may be employed for determining to the ſurface of the body: but, even in very ſmall doſes, it ſo readily excites vomiting, that it is with difficulty employed for the purpoſe of nauſeating only; and in whatever manner employed, there is reaſon to ſuſpect that its effects are leſs permanent, and leſs powerfully communicated from the ſtomach to the reſt of the ſyſtem, than thoſe of antimony. This laſt is therefore generally preferred; and its preparations, ſeemingly various, may all be reduced to two heads; one comprehending thoſe in which the reguline part is in a condition to be acted upon by acids, and therefore on meeting with acids in the ſtomach it becomes active; and another, comprehending thoſe preparations in which the reguline part is already joined with an acid, rendering it active. Of each kind there are great numbers, but not differing eſſentially from one another; the two moſt worthy of notice are, the *calx nitrata antimonii* and *emetic tartar* of the Edinburgh diſpenſatory. Both theſe are very efficacious medicines; but the latter ſeems preferable, becauſe its doſe is capable of being better aſcertained; though the former, on account of its ſlower operation may have ſome advantages, and in certain caſes be more efficacious as a purgative and ſudorific.

The time moſt proper for exhibiting theſe medicines is a little before the acceſſion, when that can be certainly known. In continued fevers the exacerbations are not always very obſervable; but there is reaſon to believe, that one commonly happens about noon or ſoon after it; and that theſe, therefore, are the moſt proper times for exhibiting emetics.

With reſpect to the manner of adminiſtration, that of the *calx nitrata* is ſimple, as the whole of what is thought a proper doſe may be given at once; and no more can be properly given till the next acceſſion. The adminiſtration of the emetic tartar is different. It is to be given in ſmall doſes, not ſufficient to excite vomiting; and theſe doſes are to be repeated, after ſhort intervals, for ſeveral times, till ſickneſs, nauſea, and ſome, though not much, vomiting come on. The difference of adminiſtration muſt depend upon the doſe, and the length of the interval at which it is given. If it is intended that the medicine ſhould certainly operate by ſtool, the doſes are made ſmall, and the intervals long. On the contrary, when vomiting is proper, or when much purging ought to be avoided, and therefore ſome vomiting muſt be admitted, the doſes are made larger, and the intervals ſhorter. With reſpect to both kinds of preparations, the repetition is to be made at the times of acceſſion, but not very often: for if the firſt exhibitions, duly managed, have little effect, it is ſeldom that the after exhibitions have much; and it ſometimes happens that the repeated vomiting, and eſpecially repeated purging, does harm by weakening the patient.

(2.) The other ſet of internal medicines which are ſuppoſed uſeful in taking off the ſpaſm of the extreme veſſels, are thoſe named *antiſpaſmodic*. But whatever may be the virtues of ſome of them in this way, ſuch is their power of ſtimulating at the ſame time, that very few of them can with ſafety be adminiſtered in fevers of an inflammatory nature. Almoſt the only one which can with ſafety be exhibited in theſe caſes is camphire; and the operations of this are by no means well aſcertained. Dr Huxham mentions it as a corrector of the acrimony of cantharides; and aſſures us, that it very effectually promotes a diaphoreſis. But from the remarks of other practitioners, we have no juſt reaſon to ſuppoſe that it acts perceptibly in a doſe of five or ſix grains, though in 15 or 20 it produces a particular kind of intoxication.

Secondly, The external means ſuited to take off the ſpaſm of the extreme veſſels, are bliſtering and warm bathing.

1. What are the effects of bliſtering ſo frequently employed in fevers, is not yet agreed upon among phyſicians. Dr Cullen is of opinion, that the ſmall quantity of cantharides abſorbed from a bliſtering plaſter, is not ſufficient to change the conſiſtence of the maſs of blood; and therefore, that ſuch a quantity can neither do good by reſolving phlogiſtic lentor if it exiſts, nor do harm by increaſing the diſſolution of the blood ariſing from a putrid tendency in it. The effects of cantharides upon the fluids, therefore, may be entirely neglected. The inflammation produced by the application of cantharides to the ſkin, affords a certain proof of their ſtimulant power: but in many perſons the effect of that ſtimulus is not conſiderable; in many it is not communicated to the whole ſyſtem; and even when it does take place in the whole ſyſtem, it ſeems to be taken off very entirely by the effuſion and evacuation of ſerum from the bliſtered part. It may be concluded, therefore, that neither much good is to be expected, nor much harm to be apprehended, from the ſtimulant power of bliſtering; and the certainty of this concluſion is eſtabliſhed by the great benefit ariſing from the proper practice of bliſtering in inflammatory diſeaſes. Much has been imputed to the evacuation made by bliſtering; but it is never ſo conſiderable as to affect the whole ſyſtem; and therefore can neither by a ſudden depletion relax the ſanguiferous ſyſtem, nor by any revulſion affect the general diſtribution of the fluids. The evacuation, however, is ſo conſiderable as to affect the neighbouring veſſels; and the manifeſt utility of bliſtering near the part affected in inflammatory diſeaſes leads us to think, that bliſtering, by deriving to the ſkin, and producing an effuſion there, relaxes the ſpaſm of the deeper ſeated veſſels. It is in this manner, moſt probably, that the tumour of a joint, from an effuſion into the cellular texture under the ſkin, takes off the rheumatic pain formerly affecting that joint. Analogous to this, probably, is the good effect of bliſtering in continued fevers; and ariſes from the relaxation of the ſpaſm of the extreme veſſels by a communication of the bliſtered part with the reſt of the ſkin. A bliſter may be employed at any period in continued fevers; but it will be of moſt advantage in the advanced ſtate of ſuch fevers, when, the reaction being weaker, all ambiguity from the ſtimulating power of bliſtering is removed, and when it may beſt concur with other circumſtances tending to a final ſolution of the ſpaſm.

From this view of the matter it will appear, that the part of the body to which bliſters ought to be applied is indifferent, except upon the ſuſpicion of topical affection, when the bliſtering is to be made as near as poſſible to the part affected. Whether ſinapiſms and other *rubefacientia* act in a manner analogous to what we have ſuppoſed of bliſtering, may be doubtful; but their effects in rheumatiſm and other inflammatory diſeaſes render it probable.

2. The other external means of taking off the ſpaſm of the extreme veſſels is warm bathing. This was frequently, and in different circumſtances, employed by the ancients; but has, till very lately, been neglected by modern phyſicians. As the heat of the bath ſtimulates the extreme veſſels, and, with the concurrence of moiſture, alſo relaxes them, it ſeems to be a ſafe ſtimulus, and well ſuited to take off the ſpaſm affecting theſe veſſels. It may be applied to the whole body by immerſion: but this is in many reſpects inconvenient; and whether ſome of the inconveniencies of immerſion might not be avoided by a vapour-bath, we have not yet learned by experience; but we know from much experience, that moſt of the purpoſes of warm bathing can be obtained by a fomentation

fomentation

mentation of the legs and feet, if properly adminiſtered, and continued for a due length of time, not leſs than an hour. The marks of the good effects of ſuch a fomentation are, the patient's bearing it eaſily, its relieving delirium, and inducing ſleep.

Thus doth the learned profeſſor lay down the cure of inflammatory fevers in ſo full a manner, that nothing further ſeems neceſſary to be added on the ſubject. His other *two* indications, namely, removing the debility, and correcting the putreſcent diſpoſition of the fluids, ſhall be taken notice of under the following genus.

Genus V. TYPHUS; the *Typhus* Fever.

Typhus, *Sauv.* Gen. 82. *Sag.* 677.

275 XXVI. The *Slow Nervous* Fever. Sp. I. var. 1.

Febris maligna hectica convulſiva, ſive lues νευρωδης, *Willis*, de morb. convulſiv. cap. 8.
Febris peſtilens, *Fracaſtor.* de morb. contag. L. II. cap. 4.
Febris peſtilens ſine charactere veneni, *Foreſt*, L. VI. obſ. 26.
Febris hectica peſtilens, *Foreſt*, L. VI. obſ. 32.
Febris nova ann. 1685, *Sydenham*, Sched. monitor.
Febris putrida nervoſa, *Wintringh.* Com. Noſolog. ad ann. 1720, 1721.
Febris lenta nervoſa, *Huxham* on fevers, chap. 8.
Febris contagioſa, *Lind* on fevers and infection, *paſſim.*
Typhus nervoſus, *Sauv.* ſp. 2.
Typhus comatoſus, *Sauv.* ſp. 3.
Tritæophya typhodes Mangeti, *Sauv.* ſp. 11. *Raym. Fort.* de febribus.

Deſcription. Of all the deſcriptions we have of the nervous fever, that of Dr Huxham is the beſt. According to him, the patient at firſt grows ſomewhat liſtleſs, and feels ſlight chills and ſhudders, with uncertain fluſhes of heat, and a kind of wearineſs all over, like what is felt after great fatigue. This is always attended with a ſort of heavineſs and dejection of ſpirit, and more or leſs of a load, pain, or giddineſs of the head; a nauſea and diſreliſh of every thing ſoon follows, without any conſiderable thirſt, but frequently with urging to vomit, though little but inſipid phlegm is brought up. Though a kind of lucid interval of ſeveral hours ſometimes intervenes, yet the ſymptoms return with aggravation, eſpecially towards night; the head grows more giddy or heavy; the heats greater; the pulſe quicker, but weak; with an oppreſſive kind of breathing. A great torpor, or obtuſe pain and coldneſs, affects the hinder-part of the head frequently, and oftentimes a heavy pain is felt on the top all along the *coronary ſuture;* this, and that of the back-part of the head, generally attend nervous fevers, and are commonly ſucceeded by ſome degree of a delirium. In this condition the patient often continues for five or ſix days, with a heavy, pale, ſunk countenance; ſeemingly not very ſick, and yet far from being well; reſtleſs, anxious, and commonly quite void of ſleep, though ſometimes very drowſy and heavy; but although he appears to thoſe about him actually to ſleep, he is utterly inſenſible of it, and denies that he doth ſo. The pulſe during all this time is quick, weak, and unequal; ſometimes fluttering, and ſometimes for a few moments ſlow; nay, even intermitting, and then, with a ſudden fluſh in the face, immediately very quick, and perhaps ſoon after ſurpriſingly calm and equal; and thus alternately. The heats and chills are as uncertain and unequal; ſometimes a ſudden colour and glow ariſe in the cheeks, while the tip of the noſe and ears is cold, and the forehead at the ſame time in a cold dewy ſweat. Nay, it is very common, that a high colour and heat appear in the face, when the extremities are quite cold. The urine is commonly pale, and often limpid; frequently of a whey colour, or like vapid ſmall-beer, in which there is either no manner of ſediment, or a kind of looſe matter like bran irregularly ſcattered up and down in it. The tongue at the beginning is ſeldom or never dry or diſcoloured, but ſometimes covered with a thin whitiſh mucus: at length, indeed, it often appears very dry, red, and chapped, or of the colour of pomegranate-rind; but this moſtly at the *ſtate* or cloſe of the diſeaſe: yet, however dry the tongue and lips ſeem, the patient ſcarce ever complains of thirſt, though ſometimes of a heat in the tongue. About the ſeventh or eighth day, the giddineſs, pain, or heavineſs of the head become much greater, with a conſtant noiſe in it, or *tinnitus aurium;* which is very diſturbing to the ſick, and frequently brings on a delirium. The load on the præcordia, anxiety and faintneſs, grow much more urgent; and they often fall into an actual deliquium, eſpecially if they attempt to ſit up; coldiſh ſweats ſuddenly come out on the forehead, and on the backs of the hands, (though at the ſame time there is too much heat in the cheeks and palms,) and as ſuddenly go off. If the urine now grows more pale and limpid, a delirium is certainly to be expected, with univerſal tremors and *ſubſultus tendinum;* the delirium is ſeldom violent, but as it were a confuſion of thought and action, muttering continually to themſelves, and faultering in their ſpeech. Sometimes they awake only in a hurry and confuſion, and preſently recollect themſelves, but forthwith fall into a muttering dozy ſtate again. The tongue grows often very dry at the *ſtate*, eſpecially in its middle-part, with a yellowiſh liſt on each ſide, and trembles greatly when the ſick attempts to put it out. Frequently profuſe ſweats pour forth all at once about the ninth, tenth, or twelfth day, commonly coldiſh and clammy on the extremities; oftentimes very thin ſtools are diſcharged; and then nature ſinks apace; the extremities grow cold, the nails pale or livid; the pulſe may be ſaid to tremble and flutter, rather than to beat, the vibrations being ſo exceeding weak and quick that they can ſcarce be diſtinguiſhed; though ſometimes they creep on ſurpriſingly ſlow, and very frequently intermit. The ſick become quite inſenſible and ſtupid, ſcarce affected with the loudeſt noiſe or the ſtrongeſt light; though, at the beginning, ſtrangely ſuſceptible of the impreſſions of either. The delirium now ends in a profound coma, and that ſoon in eternal ſleep. The ſtools, urine, and tears, run off involuntarily, and denounce a ſpeedy diſſolution, as the vaſt tremblings and twitchings of the nerves and tendons are preludes to a general convulſion, which at once ſnaps off the thread of life. In one or other of theſe ways are the ſick carried off, after having languiſhed for fourteen, eighteen, or twenty days; nay, ſometimes much longer. All perſons grow deaf and ſtupid towards the end of this diſeaſe (ſome extremely deaf), though too quick and apprehenſive at the beginning; inſomuch that the leaſt noiſe or light greatly offended them. Many from their immoderate fears ſeem to hurry themſelves out of life, where little danger is apparent at the beginning: nay, ſome will not allow themſelves to ſleep, from a vain fear of dozing quite away; and others from the vaſt hurry, anxiety and confuſion they are ſenſible of in it, or at their awaking.

Cauſes of, and perſons ſubject to, the diſorder. The nervous fever is a conſequence of contagion received by means of ſome corrupted animal-ſubſtance. It moſt commonly attacks perſons of weak nerves, a lax habit of body, and a poor thin blood; thoſe who have ſuffered great evacuations, a long dejection of ſpirits, immoderate watchings, ſtudies, fatigue, &c.; alſo thoſe who have uſed much crude unwholeſome food, vapid impure drinks, or who have been confined long in damp foul air; who have broken the vigour of their conſtitutions by ſalivations, too frequent purging, immoderate venery, &c. Hence we ſee that the diſeaſe conſiſts principally in an extreme debility of the nervous ſyſtem; for, when people are prepared for this fever by having their nerves already weakened, the contagious particles immediately attack the nervous ſyſtem, without ſo much affecting the ſtate of the blood or juices, though the latter are greatly affected in the putrid malignant fevers.

Prognoſis. In nervous fevers, the prognoſis is very much the ſame with that of the putrid malignant kind. See below.

Cure. As this fever is produced by a contagion affecting the nervous ſyſtem of a perſon already debilitated, and thus producing weakneſs in an extreme degree, we have now occaſion to conſider Dr Cullen's *two indications* of cure omitted under the *Synocha;* namely, to remove the cauſe and obviate the effects of debility, and to correct the putreſcent tendency of the fluids; for though, in the beginning of nervous fevers, the tendency to putrefaction is not remarkable, it becomes exceedingly great towards their concluſion.

[1.] In anſwering the firſt indication, Dr Cullen obſerves, that moſt of the ſedative powers inducing debility ceaſe to act ſoon after they have been firſt applied; and therefore the removing them is not an object of the preſent indication. There is only one which may be ſuppoſed to continne to act for a long time, and that is the contagion applied; but we know nothing in the nature of contagion that can lead us to any meaſures for removing or correcting it. We know only its effects as a ſedative power inducing debility, or as a ferment inducing a tendency to putrefaction in the fluids, the former of which at preſent falls under our conſideration.—The debility induced in fevers by contagion, or other cauſes, appears, eſpecially in the weaker energy of the brain; but in what this conſiſts, or how it may be reſtored, we do not well know; but as nature, ſeemingly for this purpoſe, excites the motion of the heart and arteries, we muſt aſcribe the continuance of the debility to the weaker re-action of the ſanguiferous ſyſtem: the means, therefore, which we employ for obviating debility, are immediately directed to ſupport and increaſe the action of the heart and arteries; and the remedies employed are tonics or ſtimulants.

In contagious diſeaſes we know, both from the effects which appear, and from diſſections, that the tone of the heart and arteries is conſiderably diminiſhed; and that tonic remedies are therefore properly indicated. We are to conſider theſe remedies as of two kinds; 1. The power of cold; 2. That of tonic medicines.

The power of cold as a tonic in fevers may be employed in two ways; either as thrown into the ſtomach, or as applied to the ſurface of the body. As we have already obſerved that the power of cold may be communicated from any one part to every other part of the ſyſtem, ſo it will be readily allowed that the ſtomach is a part as fit as any other for this communication, and that cold drink taken into the ſtomach may prove an uſeful tonic in fevers.—This the experience of all ages has confirmed; but at the ſame time it has been frequently obſerved, that, in certain circumſtances, cold drink taken into the ſtomach has proved very hurtful; and therefore that its uſe in fevers requires ſome limitations. What theſe limitations ſhould be, and what are all the circumſtances which may forbid the uſe of cold drink, it is difficult to determine; but it ſeems clearly forbidden in all caſes where a phlogiſtic diatheſis prevails in the ſyſtem, and more eſpecially when there are topical affections of an inflammatory nature.

The other method of employing cold as a tonic, is by applying it to the ſurface of the body, as a refrigerant power fit to moderate the violence of reaction; but probably it may here alſo be conſidered properly as a tonic, and uſeful in caſes of debility.—Not only cool air, but cold water alſo, may be applied to the ſurface of the body as a tonic. The antients frequently applied it with advantage to particular parts as a tonic; but it is a diſcovery of modern times, that, in the caſe of putrid fevers attended with much debility, the body may be waſhed all over with cold water. This was firſt practiſed at Breſlaw in Sileſia, as appears from a diſſertation under the title of *Epidemia Verna, quæ Wratiſlaviam anno* 1737 *aſflixit*, to be found in the *Acta Nat. Curioſ.* vol. x. And from other writers it appears, that the practice has paſſed into ſome of the neighbouring countries; but in this iſland it doth not appear that we have yet had any experience of it.

The medicines which have been employed in fevers as tonics are various. If the *ſaccharum ſaturni* hath been found uſeful, it is probably as a tonic rather than as a refrigerant; and the *ens veneris*, or other preparations of iron which have been employed, can act as tonics only. The preparations of copper, from their effects in epilepſy, are preſumed to poſſeſs a tonic power; but whether their uſe in fevers be founded on their tonic or emetic powers, is uncertain. And upon the whole there may no doubt occur ſome inſtances of fevers being cured by tonics taken from the foſſile kingdom; but the vegetable tonics are the moſt efficacious, and among theſe the Peruvian bark certainly holds the firſt place.

The bark has commonly been conſidered as a ſpecific, or a remedy of which the operation was not underſtood. We muſt obſerve, however, that, as in many caſes the effects of the bark are perceived ſoon after its being taken into the ſtomach, and before it can poſſibly be conveyed to the maſs of blood, we may conclude, that its effects do not ariſe from its operating on the fluids; and muſt therefore depend upon its operating on the nerves of the ſtomach, and being thereby communicated to the reſt of the nervous ſyſtem. This operation ſeems to be a tonic power, the bark being a remedy in many caſes of debility, particularly in gangrene: and if its operation may be explained from its poſſeſſing a tonic power, we may eaſily perceive why it is improper when a phlogiſtic diatheſis prevails; and from the ſame view we can aſcertain in what caſes of continued fever it may be admitted. Theſe caſes are either where conſiderable remiſſions have appeared, when it may be employed to prevent the return of exacerbations, on the ſame footing as it is uſed in intermitting fevers; or in the advanced ſtate of fevers, when all ſuſpicion of an inflammatory ſtate is removed, and a general debility prevails in the ſyſtem; and its being then employed is ſufficiently agreeable to the preſent practice.

Another ſet of medicines to be employed for obviating debility and its effects, are the direct ſtimulants. Theſe, in ſome meaſure, increaſe the tone of the moving fibres; but are different from the tonics, as they more directly excite and increaſe the action of the heart and arteries. This mode of their operation renders their uſe ambiguous; and when an inflammatory diatheſis is preſent, the effects of theſe ſtimulants may be very hurtful; but it ſtill remains probable, that in the advanced ſtate of theſe fevers, when debility prevails, they may be uſeful.

Of all the ſtimulants which may be properly employed, wine ſeems to be the moſt eligible. It has the advantage of being grateful to the palate and ſtomach, and of having its ſtimulant parts ſo much diluted, that it can be conveniently given in ſmall doſes; and therefore it may be employed with ſufficient caution; but it is of little ſervice unleſs taken pretty largely.—It may be ſuſpected that wine has an operation analogous to that of opium; and on good grounds. But we can diſtinctly remark its ſtimulant power only; which renders its effects in the phrenitic delirium manifeſtly hurtful; and in the mild delirium depending on debility, as remarkably uſeful.

[2.] We muſt now proceed to the other indication of cure, namely, to correct or obviate the tendency in the fluids to putrefaction. This may be done, 1. By avoiding any new application of putrid or putreſcent matter. 2. By evacuating the putrid or putreſcent matter already preſent in the body. 3. By correcting the putrid or putreſcent matter remaining in the body by diluents and antiſeptics. 4. By ſupporting the tone of the veſſels, and thereby reſiſting further putrefaction, or obviating its effects. 5. By moderating the violence of re-action, conſidered as a means of increaſing putrefaction.

The further application of putrid or putreſcent matter may be avoided, 1. By removing the patient from places filled with corrupted air. By preventing the accumulation of the patient's own effluvia, by a conſtant ventilation, and by a frequent change of bed-clothes and body-linen. 3. By the careful and ſpeedy removal of all excremental matters from the patient's chamber. 4. By avoiding animal-food.

The putrid or putreſcent matter already preſent in the body, may be evacuated partly by frequent evacuations of the contents of the inteſtines; and more effectually ſtill by ſupporting the excretions of perſpiration and urine by the plentiful uſe of diluents. That which remains in the body may be rendered more mild and innocent by the uſe of diluents, or may be corrected by the uſe of antiſeptics. Theſe laſt are of many and various kinds; but which of them are conveniently applicable, or more particularly ſuited to the caſe of fevers, is not well aſcertained. Thoſe moſt certainly applicable and uſeful are aceſcent aliments, acids of all kinds, and neutral ſalts.

The progreſs of putrefaction may be conſiderably retarded, and its effects obviated, by ſupporting the tone of the veſſels; and this may be done by tonic medicines, of which the chief are Cold, and the Peruvian bark, as already mentioned. The violence of re-action increaſing the tendency to putrefaction, may be moderated by the means already mentioned under *ſynocha*.

Theſe are the proper indications to be obſerved in the cure of the ſlow nervous fever. Dr Huxham obſerves, that evacuations (eſpecially bleeding) are improper at the beginning. Even a common purge given at this time hath been followed by ſurpriſing languors, ſyncope, and a train of other ill ſymptoms. However, it may ſometimes be neceſſary to cleanſe the ſtomach and primæ viæ by a gentle emetic, or a little rhubarb, manna, &c. Indeed, where nauſea, ſickneſs, and load at ſtomach, are urgent, as is frequently the caſe in the beginning of this fever, a vomit is neceſſary. Clyſters of milk, ſugar, and ſalt, may be injected with ſafety and advantage every ſecond or third day, if nature wants to be prompted to ſtool.—The temperate, cordial, diaphoretic medicines are certainly, according to our author, moſt proper in theſe fevers; and a well-regulated, ſupporting, diluting diet is neceſſary. The latter of itſelf, judiciouſly managed, will go a great way in the cure, eſpecially aſſiſted by well-timed and well-applied bliſters, and a due care to keep the patient as quiet as poſſible both in body and mind. But it ſhould be noted, that any ſtrong opiates are commonly very pernicious, however much the want of ſleep and reſtleſſneſs may ſeem to demand them. Mild diaphoretics, as *pulv. contrayerv. comp.* with a little caſtor and ſaffron, and ſmall quantities of *theriac. Andromachi* or *elixir paregoricum*, have much better effects; which, by raiſing a gentle eaſy ſweat, or at leaſt a plentiful perſpiration, calm the hurry of the ſpirits, and a refreſhing ſleep enſues. Where the confuſion and dejection of ſpirits are very conſiderable, galbanum or ſilphium ſhould be added, and bliſters forthwith applied to the neck, occiput, or behind the ears; and during all this a free uſe of thin wine-whey, ſome pleaſant ptiſan or gruel, with a little ſoft wine, muſt be indulged. Indeed the patients, in this caſe, ſhould drink frequently: though ſuch quantities may not be neceſſary as in the ardent, or even putrid malignant fevers; yet they ſhould be ſufficient to carry on the work of dilution, ſupport the ſweats, and ſupply the blood with freſh and wholeſome fluids, in place of that noxious matter which is continually paſſing off. In this view alſo a thin chicken-broth is of ſervice, both as food and phyſic, eſpecially towards the decline of the diſeaſe; and for the ſame reaſon thin jellies of hartſhorn, ſago, panada, are uſeful, adding a little wine to them, and the juice of Seville orange or lemon.

It is obſervable, that the ſick are never ſo eaſy as when they are in a gentle ſweat; for this ſoon removes the hurry of ſpirits, exacerbations of heat, &c. But profuſe ſweats ſhould never be encouraged, much leſs attempted, by very ſtrong heating medicines, eſpecially in the beginning or advance of the fever; for they too much exhauſt the vital powers, and are followed by a vaſt dejection of ſpirits, tremors, ſtartings of the tendons, and ſometimes end in rigors, cold clammy ſweats, ſyncope, or a comatoſe diſpoſition. Sometimes irregular partial heats and fluſhes ſucceed, with great anxiety, reſtleſſneſs, delirium, difficulty of breathing, and a vaſt load and oppreſſion in the præcordia, ſo as to incline the leſs cautious obſerver to think there may be ſomething peripneumonic in it; but even here we muſt beware of bleeding, as the pulſe will be found very ſmall and unequal, tho' very quick. Nor is bleeding contra-indicated only by the weakneſs and fluttering of the pulſe, but alſo by the pale, limpid, and watery urine which is commonly attendant. Theſe ſymptoms denote the load, anxiety, and oppreſſion on the præcordia to proceed from an affection of the nervous ſyſtem, and not from a peripneumonic obſtruction or inflammation. The breathing, in this caſe, though thick and laborious, is not hot, but a kind of ſighing or ſobbing reſpiration, nor is there often any kind of cough concomitant; ſo that it evidently proceeds from ſome ſpaſm on the vitals. Here therefore the nervous cordial medicines are indicated, and bliſters to the thighs, legs, or arms. Our author commonly uſed the following bolus and ſaline draught.

℞ Pulv. contrayerv. c. gr. xv.
Croc. Angl. gr. iij.
Confect. Ralegh. ℈j.
Syr. Croci q. ſ. M. *f. Bolus.*

℞ Sal. C. C. ℈ſs.
Succ. limon. ʒiij.
Aq. alexit. ſimpl. ℥iſs. M. *Peracta efferveſcentia, adde ſp. lavend. c. ſyr. croc.* ana ʒiſs. *M. f. Hauſt.*

If great tremors and ſubſultus tendinum come on, he ſubſtitutes half a ſcruple of muſk inſtead of the contrayerva in the bolus, with advantage. One or other of theſe, or ſimilar preſcriptions, are to be taken every fifth, ſixth, or eighth hour, and a temperate cordial julep; *ſpiritus volatilis aromaticus* or *fœtidus*, may be now and then given out of thin wine, or cyder-whey, or, which is in many caſes better, out of muſtard-whey; which laſt is by no means a contemptible medicine. The ſaline draught made as above is much more apt to paſs thro' the pores of the ſkin than when made with ſalt of wormwood, which rather moves thro' the urinary paſſages.

The above-mentioned difficulty of breathing, anxiety, and oppreſſion, many times precede a miliary eruption, which often appears on the ſeventh, ninth, or eleventh day of the fever, and ſometimes later. Indeed great anxiety and oppreſſion on the præcordia always precede puſtular eruptions of any kind in all ſorts of fevers. This eruption ſhould be promoted by ſoft eaſy cordials, and proper diluents; to which ſhould be ſometimes added a little theriaca andromachi or elixir aſthmaticum. Theſe tend to calm the univerſal uneaſineſs commonly complained of, and alſo very effectually promote a diaphoreſis, or breathing kindly ſweats, with which the miliary eruptions freely and eaſily advance. But however advantageous theſe commonly are, profuſe ſweats are ſeldom or never ſo, even though attended with a very large eruption. Two or three crops of theſe miliary puſtules have been known to ſucceed one another, and large ſweats, not only without advantage, but with great detriment to the patients, as they were thereby reduced to an extreme degree of weakneſs; ſo that they may juſtly be reckoned ſymptomatical rather than any thing elſe, and the conſequent eruption is often merely the ſymptom of a ſymptom; for the miliary glands of the ſkin appear very turgid, and mimic a raſh, after profuſe ſweating, even in the moſt healthy.

In theſe profuſe colliquative ſweatings a little generous red wine (diluted ſomewhat, if neceſſary) may be given with the greateſt advantage; as it preſently moderates the ſweats, ſupports the patient, and keeps up the miliary papulæ if they happen to attend. Towards the decline of the fever alſo, where the ſweats are abundant and weakening, ſmall doſes of the tincture of the bark with ſaffron and ſnake-root were given with the greateſt advantage, frequently interpoſing a doſe of rhubarb to carry off the putrid colluvies in the firſt paſſages; which withal makes the remiſſions or intermiſſions that often happen in the decline of nervous diſeaſes more diſtinct and manifeſt, and gives a fairer opportunity of throwing in the bark; for in the proper exhibition of this medicine we are to place our chief hope of curing both the nervous and putrid malignant fevers.

XXVII. The *putrid*, *peſtilential*, or *malignant* Fever. Sp. I. var. 2. 277

Febris peſtilens, *P. Sal. Diverſ.* de febre peſtilenti.
Febris peſtilens Ægyptiorum, *Alpin.* de med. Ægypt. l. i. cap. 14.
Typhus Ægyptiacus, *Sauv.* ſp. 6.
Febris peſtilens maligna, *Sennert.* de febribus, l. iv. cap. 10.
Febris maligna peſtilens, *River.* l. xvii. ſect. iii. cap. 1.
Febris peſtilens maligna, ann. 1643. *Willis*, de febribus, cap. 14.
Typhus carcerum, *Sauv.* ſp. 1.
Febris nautica peſtilentialis, *Huxham* de aëre ad ann. 1740.
 Miliaris nautica, *Sauv.* ſp. g.
Febris putrida contagioſa in carceribus genita, *Huxham* de aëre ad ann. 1742.
 Miliaris purpurata, *Sauv.* ſp. h.
Febris carcerum et noſocomiorum. Ill. *Pringle*, Diſeaſes of the army, p. 294. Ill. *Van Swieten*, Maladies des armées, p. 136.
Typhus caſtrenſis, *Sauv.* ſp. 5.
Febris caſtrenſis, quam vulgo cephalalgiam epidemicam vocant, *Henr. Maii* et *A. Ph. Koph.* Diſſ. apud *Hallerum*, tom. v.
Febris Hungarica ſive caſtrenſis, *Juncker.* 74. et *plu-*

plurium auctorum.

Febris caſtrenſis Gallorum in Bohemia, ann. 1742. *Scrinci*. Diſſ. apud *Haller*. tom. v.

Febris petechialis, *Sennert*. l. iv. cap. 13. *River*. prax. l. xvii. ſect. iii. cap. 1. *Hoffm*. II. p. 84. *Juncker*. 73. *Huxham* on fevers, chap. 8. *Ludwig*. Inſt. med. clin. n° 146. *Schreiber* von erkentneſs, und cur der Krank heiten. p. 126. *Monro*, Diſeaſes of military hoſpitals, p. 1.

Febris catarrhalis maligna petechizans, *Juncker* 72. *Hoffm*. II. 75. *Eller* de cogn. et cur. morb. ſect. vi.

Febris quæ lenticulas, puncticula, aut peticulas vocant, *Fracaſtorius* de morb. contag. lib. ii. cap. 6.

Febris peticularis Tridenti, ann. 1591. *Roboretus* de febr. peticul.

Febris petechialis epidemica Coloniæ ann. 1672. *Donckers*, Idea febris petechialis.

Febris petechialis epidemica Poſonii 1683, *C. F. Loeu* in App. ad A. N. C. vol. ii.

Febris petechialis epidemica Mutinæ, 1692. *Ramazzini*. Conſt. Mutinenſis, oper. p. 187.

Febris maligna petechizans, ann. 1698. *Hoffm*. II. p. 80.

Febris petechialis Wratiſlaviæ ann. 1699. *Helwich*, Ephem. Germ. D. III. A. VII. et VIII. obſ. 132. p. 616.

Febris epidemia Lipſiæ 1718. *M. Adolph*. A. N. C. III. obſ. 131. p. 296.

Febris endemica et epidemica Corcagienſis ann. 1708, 1718, et ſeq. *Rogers*, Eſſay on epidemic diſeaſes.

Febris continua epidemica Corcagienſis ann. 1719. et ſeq. *M. O Connel* Obſ. de morbis.

Febris petechialis epidemica Cremonæ 1734. *Valcharengki* Med. ration. ſect. iii.

Febris petechizans Petropoli 1735. *Weitbrecht*. Diſſ. apud Haller. tom. v.

Febris petechialis, ann. 1740, 1741, in Haſſia, *Ritter*. A. N. C. vol. vii. obſ. 4.

Febris maligna petechialis Rintelii 1741. *Furſtenau*. A. N. C. vol. vii. obſ. 5.

Febris petechials epidemica Siliſiæ 1741 et ſeq. *Brandhorſt*. Diſſ. apud *Haller*. tom. v.

Febris petechialis epidemica Viennæ 1757. *Haſenohrl*. Hiſt. med. cap. 2.

Febris petechialis epidemica Lipſiæ 1757. *Luduvig*. Adverſar. tom. i. pars 1.

Febris petechialis epidemica variis Germaniæ locis ab. ann. 1755 ad 1761. *Strack* de morbo cum petechiis.

Deſcription. This is a diſeaſe of the moſt dangerous nature, as, beſides the extreme debility of the nervous ſyſtem, there is a rapid tendency of the fluids to putrefaction, which ſometimes cuts off the patient in a few days, nay, in the warm climates, in 12 or 14 hours; or if the patient recovers, he is for a long time, even in this country, in an exceedingly weak ſtate, and requires many weeks to recover his former health.

The putrid fevers, according to Huxham, make their attack with much more violence than the ſlow nervous ones; the rigors are ſometimes very great, though ſometimes ſcarce felt; the heats much ſharper and permanent; yet, at firſt, ſudden, tranſient, and remittent: the pulſe more tenſe and hard, but commonly quick and ſmall; though ſometimes ſlow, and ſeemingly regular for a time, and then fluttering and unequal. The head-ach, nauſea, and vomiting, are much more conſiderable even from the beginning. Sometimes a ſevere fixed pain is felt in one or both temples, or over one or both eye-brows; frequently in the bottom of the orbits of the eyes. The eyes always appear very dull, heavy, yellowiſh, and very often a little inflamed. The countenance ſeems bloated, and more dead-coloured than uſual. Commonly the temporal arteries throb much, and a tinnitus aurium is very troubleſome: a ſtrong vibration alſo of the carotid arteries frequently takes place in the advance of the fever, though the pulſe at the wriſt may be ſmall, nay even ſlow: this is a certain ſign of an impending delirium, and generally proceeds from ſome conſiderable obſtructions in the brain.

The proſtration of ſpirits, weakneſs, and faintneſs, are often ſurpriſingly great and ſudden, though no inordinate evacuation happens; and this too ſometimes when the pulſe ſeems tolerably ſtrong. The reſpiration is moſt commonly laborious, and interrupted with a kind of ſighing or ſobbing, and the breath is hot and offenſive.

Few or none of theſe fevers are without a ſort of lumbago, or pain in the back and loins; always an univerſal wearineſs or ſoreneſs is felt, and often much pain in the limbs. Sometimes a great heat, load, and pain, affect the pit of the ſtomach, with perpetual vomiting of porraceous or black choler, and a moſt troubleſome ſingultus; the matter diſcharged is frequently of a very nauſeous ſmell. The tongue, tho' only white at the beginning, grows daily more dark and dry; ſometimes of a ſhining livid colour, with a kind of dark bubble at top; ſometimes exceeding black; and ſo continues for many days together; nor is the tinge to be got off many times for ſeveral days, even after a favourable criſis: at the height of the diſeaſe, it generally becomes vaſtly dry, ſtiff, and black, or of a dark pomegranate colour. Hence the ſpeech is very inarticulate, and ſcarce intelligible. The thirſt in the increaſe of the fever is commonly very great, ſometimes unquenchable; and yet no kind of drink pleaſes, but all ſeem bitter and mawkiſh; at other times, however, no thirſt is complained of, tho' the mouth and tongue are exceedingly foul and dry; this is always a dangerous ſymptom, and ends in a frenzy or coma. The lips and teeth, eſpecially near the ſtate, are furred up with a very black tenacious ſordes. At the onſet of the fever, the urine is often crude, pale, and vapid, but grows much higher-coloured in the advance, and frequently reſembles a ſtrong lixivium, or citrine urine, tinged with a ſmall quantity of blood; it is without the leaſt ſediment or cloud, and ſo continues for many days together: by degrees it grows darker, like dead ſtrong high-coloured beer, and ſmells very rank and offenſive. In petechial fevers, the urine hath often been ſeen almoſt black and very *fetid*. The ſtools, eſpecially near the ſtate, or in the decline of the fever, are for the moſt part intolerably fetid, green, livid, or black, frequently with ſevere gripes and blood. When they are more yellow or brown, the leſs the danger; but the higheſt when they run off inſenſibly, whatever their colour may be. It is likewiſe a very bad ſymptom when the belly continues tenſe, ſwollen, and hard, after profuſe ſtools; for this is generally the conſequence of an inflammation or mortification of the inteſtines. A gentle diarrhœa is often very beneficial, and ſometimes ſeems to be the only way which nature takes to carry off the morbific matter.

Sometimes black, livid, dun, or greeniſh ſpots appear, which always indicate a high degree of malignity; however, the more florid the ſpots are, the leſs danger is to be feared. It is alſo a good ſign when the black or violet petechiæ become of a brighter colour. The large, black, or livid ſpots, are almoſt always attended with profuſe hæmorrhages; and the ſmall, duſky, brown ſpots, like freckles, are not much leſs dangerous than the livid or black; though they are ſeldom accompanied with fluxes of blood: exceſſively profuſe, cold, clammy ſweats are often concomitant, by which alſo they ſometimes vaniſh, though without any advantage to the patient. The eruption of the petechiæ is uncertain; ſometimes they appear on the fourth or fifth day, though ſometimes not till the eleventh, or even later. The *vibices*, or large, dark, greeniſh marks, ſeldom appear till very near the fatal period. Frequently alſo we meet with an effloreſcence like the meaſles in malignant fevers, but of a much more dull and livid hue; in which the ſkin, eſpecially on the breaſt, appears as it were marbled or variegated. This in general is an ill ſymptom, and is often attended with fatal conſequences.

Sometimes about the 11th or 14th day, on the coming on of profuſe ſweats, the petechiæ diſappear, and vaſt quantities of white miliary puſtules break out. This is ſeldom found of any conſiderable advantage; but an itching, ſmarting, red raſh, commonly gives great relief; and ſo do the large, fretting, watery bladders, which many times riſe upon the back, breaſt, ſhoulders, &c. A ſcabby eruption likewiſe about the lips and noſe is certainly one of the ſalutary ſymptoms; and the more hot and angry it is, ſo much the better. But of much more uncertain and dangerous event are the brown-coloured aphthæ; nor are thoſe that are exceeding white and thick like lard, of a very promiſing aſpect. They are ſoon ſucceeded by great difficulty of ſwallowing, pain and ulceration of the fauces, œſophagus, &c. and with an inceſſant ſingultus: the whole *primæ viæ* become at laſt affected; a bloody dyſentery comes on, followed by a ſphacelation of the inteſtines; as is evident from the black, ſanious, and bloody ſtools, extremely fetid and infectious. Vibices, or large, black, and bluiſh marks reſembling bruiſes, are frequently ſeen towards the cloſe of the fever; and, when attended with lividity and coldneſs of the extremities, are certain tokens of approaching death. In ſome caſes, the blackneſs hath been known to reach almoſt to the elbows, and the hands have been dead-cold for a day or two before the death of the patient.

Such are the general appearances of the putrid malignant fever in this country, among thoſe who enjoy a free air, and are not crowded together, or expoſed to the cauſes of infection: but in jails, hoſpitals, or other places where the ſick are crowded, and in ſome meaſure deprived of the benefit of the free air, the ſymptoms are, if poſſible, more terrible. Sir John Pringle, who had many opportunities of obſerving it, tells us, that the jail or hoſpital fever, in the beginning, is not eaſy to be diſtinguiſhed from a common fever. The firſt ſymptoms are ſlight interchanges of heat and cold, a trembling of the hands, ſometimes a ſenſe of numbneſs in the arms, weakneſs of the limbs, loſs of appetite; and the diſorder increaſing towards night, the body grows hot, the ſleep is interrupted, and not refreſhing. With theſe ſymptoms, for the moſt part, there is ſome pain or confuſion in the head; the pulſe at firſt is a little quicker than natural, and the patients find themſelves too much indiſpoſed to go about buſineſs, though too well to be wholly confined. When the fever advances, the above-mentioned ſymptoms are in a higher degree; and in particular the patient complains of a laſſitude, nauſea, pains in his back, a more conſtant pain and confuſion in his head, attended with an uncommon dejection of ſpirits. At this time the pulſe is never ſunk, but beats quick, and often varies in the ſame day both as to ſtrength and fulneſs. It is little affected by bleeding once, if a moderate quantity of blood is taken away; but if the evacuation is large, and eſpecially if it is repeated, to anſwer a falſe indication of inflammation, the pulſe, increaſing in frequency, is apt to ſink in force, and often irrecoverably, whilſt the patient becomes delirious. But withal we muſt obſerve, that, in every caſe, independent of evacuations, the pulſe ſooner or later ſinks, and then gives certain intelligence of the nature of the diſeaſe. The appearance of the blood is various; for though it is commonly little altered, yet ſometimes it will be ſizy, not only on the firſt attack, but after the fever is formed. The worſt appearance is when the craſſamentum is diſſolved; though this does not happen till the advanced ſtate of the fever: though indeed this ſeems not eaſy to be aſcertained, as blood has been ſo ſeldom taken away at that time. The urine is alſo various. Sometimes it is of a reddiſh or flame colour, which it preſerves a long time; but it is oftener pale, and changes from time to time in colour as well as crudity, being ſometimes clear, ſometimes clouded: towards the end, upon a favourable criſis, it becomes thick, but does not always depoſit a ſediment. If the ſick lie warm, and have had no preceding flux, the belly is generally bound; but when they lie cold, as they often do in field-hoſpitals, the pores of the ſkin being ſhut, a diarrhœa is a common ſymptom, but is not critical. In the worſt caſes, a flux appears in the laſt ſtage; then the ſtools are involuntary, colliquative, ichorous, or bloody, and have a cadaverous ſmell; the effects of a mortification of the bowels, and the ſign of approaching death. When the hoſpitals are filled with dyſenteric patients, ſome of the nurſes will be infected with the flux only, and others with this fever, ending in theſe bloody and gangrenous ſtools.

In the beginning the heat is moderate; and even in the advanced ſtate, on firſt touching the ſkin, it ſeems inconſiderable; but upon feeling the pulſe for ſome time, we are ſenſible of an uncommon ardour, leaving an unpleaſant ſenſation on the fingers for a few minutes after. A day or two before death, if care is not taken, the extremities become cold, and the pulſe is then hardly to be felt. The ſkin is generally dry and parched; though ſometimes there are longer or ſhorter ſweats, eſpecially in the beginning. Such as are produced by medicine are of no uſe, except on the firſt attack, at which time they will often remove the fever; and natural ſweats are never critical till the diſtemper begins to decline. Theſe laſt are rarely profuſe, but gentle, continued, and equally diffuſed over the body: ſometimes the diſeaſe will terminate by an almoſt imperceptible moiſture of the ſkin; the ſweats are uſually fetid, and offenſive even to the patient himſelf.

The tongue is commonly dry; and, without conſtant care of the nurſe, becomes hard and brown, with deep chops: but this ſymptom is common to moſt fevers. At other times, though rarely, the tongue is ſoft and moiſt to the laſt, but with a mixture of a greeniſh or yellowiſh colour. The thirſt is ſometimes great, but more frequently moderate. In the advanced ſtate, the breath is offenſive, and a blackiſh furring gathers about the roots of the teeth.

Some are never delirious, but all lie under a ſtupor or confuſion; few retain their ſenſes till death: many loſe them early, and from two cauſes; either from immoderate bleeding, or the premature uſe of warm and ſpirituous medicines. They rarely ſleep; and, unleſs delirious, have more of a dejected and thoughtful look than what is commonly ſeen in other fevers. The face is late in acquiring either a ghaſtly or a very morbid appearance; yet the eyes are always muddy, and generally the white is of a reddiſh caſt as if inflamed. The confuſion of the head generally riſes to a delirium, eſpecially at night; but, unleſs by an unſeaſonable hot regimen, it ſeldom turns to rage, or to thoſe high flights of imagination common in other fevers. When the delirium comes to that height, the face is fluſhed, the eyes red, the voice is quick, and the patient ſtruggles to get up. But when that ſymptom is owing to large evacuations, or only to the advanced ſtate of the diſeaſe, the face appears meagre; the eye-lids in ſlumbers are only half ſhut; and the voice, which is commonly low and ſlow, ſinks to a degree ſcarce to be heard. From the beginning there is generally a great dejection and failure of ſtrength. A tremor of the hands is more common than a ſtarting of the tendons; or if the ſubſultus occurs, it is in a leſſer degree than in many other fevers. In every ſtage of the diſeaſe, as the pulſe ſinks, the delirium and tremor increaſe; and in proportion as the pulſe riſes, the head and ſpirits are relieved. Sometimes in the beginning, but for the moſt part in the advanced ſtate, the patient grows dull of hearing, and at laſt almoſt deaf. When the fever is protracted, with a ſlow and low voice, the ſick have a particular craving for ſomething cordial, and nothing is ſo cordial or ſo acceptable as wine. They long for no food, yet willingly take a little panada if wine be added. But ſuch as are delirious, with a quick voice, wild looks, a ſubſultus tendinum, or violent actions, though their pulſe be ſunk, yet bear neither hot medicines, wine, nor the common cordials.

Vomiting, and complaints of a load and ſickneſs at ſtomach, though uſual ſymptoms, are not eſſential to the diſeaſe; nor are pleuritic ſtitches, difficulty in breathing, or flying pains, to be referred ſo much to it as to the conſtitution of the patient, or to a preceding cold.

A petechial efflореſcence is a frequent, though not an inſeparable, attendant of this fever. It ſometimes appears of a brighter or paler red, at other times of a livid colour, but never riſes above the ſkin. The ſpots are ſmall; but generally ſo confluent, that at a little diſtance the ſkin appears only ſomewhat redder than ordinary, as if the colour was uniform; but upon a nearer inſpection there are interſtices ſeen. For the moſt part this eruption is ſo little conſpicuous, that unleſs it is looked for attentively it may eſcape notice. The ſpots appear thickeſt on the back and breaſt, leſs on the legs and arms, and our author never remembers to have ſeen any on the face. As to the time of their appearance, he agrees entirely with Dr Huxham. Theſe ſpots are never critical, nor are they reckoned among the mortal ſymptoms; but only concur with other ſigns to aſcertain the nature of the diſeaſe. The nearer they approach to purple, the more they are to be dreaded. In a few caſes, inſtead of ſpots, purple ſtreaks and blotches were obſerved. Sometimes the petechiæ did not appear till after death; and there was one caſe in which, after bleeding, the petechiæ were ſeen only on the arm below the ligature, and nowhere elſe on the ſkin.

The hoſpital-fever, though accounted one of the continued kind, yet has generally ſome exacerbation at night, with a remiſſion and often partial ſweats in the day; and after a long continuance it is apt to change into a hectic, or an intermitting form. The length of the diſeaſe is uncertain. Sometimes it will terminate, either in death or recovery, in ſeven days after the patient took to his bed; but in the hoſpitals it generally continued from 14 to 20, and ſome died or recovered after four weeks. From the time of the ſinking of the pulſe until death or a favourable criſis, there is perhaps leſs change to be ſeen from day to day in this than in moſt other fevers. When its courſe is long, it ſometimes terminates in ſuppurations of the parotid or axillary glands; and when theſe do not appear, it is probable that the fever is kept up by the formation of ſome internal abſceſs. The parotid glands themſelves do not ſuppurate, but only ſome of the lymphatic glands that lie over them. Our author obſerved one inſtance of a ſwelling of this kind on both ſides, without any previous indiſpoſition, when the perſon, not ſuſpecting the cauſe, and applying diſcutient cataplaſms, was, upon the tumour ſubſiding, ſeized with the hoſpital-fever. Many patients after the criſis of this fever complain of a pain in the limbs, and want of reſt; and almoſt all of them mention great weakneſs, confuſion in their head, vertigo, and a noiſe in their ears.

Ten of the bodies of thoſe who died of this diſtemper in Houghton's regiment were opened. In ſome, all the cavities were examined; in others, only the brain or the bowels. In ſome of them, the brain appeared to be ſuppurated. The firſt of this kind our author met with at Ghent; but the man being brought into the hoſpital from the barracks no earlier than two days before he died, he could only conjecture from the ſymptoms and the imperfect accounts he had of him, that his death was owing to a fever of this kind, after lingering near a month in it. About three ounces of purulent matter were found in the ventricles of the brain, and the whole cortical and medullary ſubſtance was uncommonly flaccid and tender; nay, ſome of the ſame kind of matter was found in the ſubſtance of the upper part of the cerebellum: yet this perſon, with ſome ſtupor and deafneſs, had his ſenſes till the night before he died; ſo far, at leaſt, that he anſwered diſtinctly when rouſed and ſpoken to; but about that time the muſcles of his face began to be convulſed. Of two other inſtances of men who undoubtedly died of this fever, in one the cerebrum was ſuppurated, in the other the cerebellum. In the former caſe, the patient was under a ſtupor, with deafneſs from the beginning; but was never delirious, nor altogether inſenſible. His pulſe ſunk early: and about ten days before his death his head began to ſwell, and continued very large till within two days before he died, when it ſubſided a little. For ſeveral days before his end, he would taſte nothing but cold water, and during his illneſs he lay conſtantly upon one ſide. The head being opened, an abſceſs as large as an egg was found in the ſubſtance of the fore-part of the right hemiſphere of the brain, full of thin matter like whey. At that time five more, ill of the ſame fever, had the like ſwelling of their heads, but recovered. In the other caſe, the abſceſs in the cerebellum was about the ſize of a ſmall pigeon's egg, and contained alſo a thin ichorous matter; nor had this patient ever been ſo thoroughly inſenſible as not to anſwer reaſonably when ſpoken to. Two days before he died his urine turned pale.

Theſe ſuppurations, however, were not conſtant; for another who died about the ſame time, and had been ill about the ſame number of days with the like ſymptoms, the pale water excepted, had no abſceſs either in the brain or cerebellum. And two were opened afterwards, in whom the cortical ſubſtance of the brain had an inflammatory appearance, but no ſuppuration. In one of them the large inteſtines were corrupted: that man went off with a looſeneſs; and juſt before he died, an ichorous matter was diſcharged from his noſe. In the military hoſpital at Ipſwich, one who unexpectedly died of this fever after having been ſeemingly in a fair way of recovery, had no ſuppuration in his brain; but in another, who died after an abſceſs in both orbits, the brain was found flaccid, and about two ounces of a thin ſerum in the ventricles.

Cauſes of, and perſons ſubject to, this diſorder. The cauſe of this fever, as well as that of the ſlow nervous fever, is an infection or contagion from ſome diſeaſed animal-body, or from corrupted vegetables; and therefore is very little, if at all, different from thoſe peſtilential diſorders which have ariſen after battles, when great numbers of dead bodies were allowed to lie above ground and infect the air with their effluvia. This is confirmed by an obſervation of Foreſtus, who was eye-witneſs to a diſtemper of this kind, (which indeed he calls a *plague*), owing to the ſame cauſe, attended with buboes and a high degree of contagion. The ſame author alſo gives an account of a malignant fever breaking out at Egmont in North-Holland, occaſioned by the rotting of a whale which had been left on the ſhore. We have a like obſervation of a fever affecting the crew of a French ſhip, by the putrefaction of ſome cattle which they had killed on the iſland of Nevis in the Weſt Indies. Theſe men were ſeized with a pain in their head and loins, great weakneſs, and a diſorder of the ſtomach, accompanied with fever. Some had carbuncles; and on others purple ſpots appeared after death.

Galen aſſigns two cauſes for peſtilential fevers: 1. The great heat of the weather, when the humours happen to be in a more putreſcent ſtate than uſual. 2. A putrid ſtate of the air, ariſing either from a multitude of dead bodies left unburnt, as after a battle, or from the evaporation of corrupted lakes and marſhes.

One of the moſt remarkable diſeaſes incident to an army is related by Diodorus, as breaking out among the Carthaginians at the ſiege of Syracuſe. That author not only relates ſome of its moſt diſtinguiſhing ſymptoms, but reaſons well about its cauſe. He obſerves, that pains in the back and eruptions (φλυκταιναι) were common; that ſome had bloody ſtools; that others were ſeized with a delirium, ſo as to run about and beat all that came in their way; that the phyſicians knew no cure; and that it was the more fatal as the ſick were abandoned by every body on account of the contagion. As to the cauſe, the author takes notice of the multitude of people confined within a narrow compaſs; of the ſituation of the camp in a low and wet ground; of the ſcorching heats in the middle of the day, ſucceeded by the cold and damp air from the marſhes in the night-time; he adds, the putrid ſteams ariſing firſt from the marſhes, and afterwards from the bodies of thoſe who lay unburied. This diſtemper ſeems to have been a compound of the marſh and peſtilential fever.

Foreſtus remarks, that, from the putrefaction of the water only, the city of Delft, where he practiſed, was ſcarce ten years together free from the plague or ſome peſtilential diſtemper. He adds, that the magiſtrates, upon his repreſentation of the cauſe, erected a wind-mill for moving and refreſhing the water. At that time Holland was much more ſubject to inundations and the ſtagnation of water than at preſent. In 1694, a fever broke out at Rochfort in France, which, on account of the uncommon ſymptoms and great mortality, was at firſt believed to be the plague. But M. Chirac, who was ſent by the court to inquire into its nature, found the cauſe to ariſe from ſome marſhes that had been made by an inundation of the ſea; and obſerved, that the corrupted ſteams, which ſmelled like gun-powder, were carried to the town by the wind, which had long blown from that quarter. About two-thirds of thoſe who were taken ill died. In ſuch as were opened, the brain was found either inflamed or loaded with blood; the fibres of the body were uncommonly tender; and the bowels had either ſuppurated or were mortified.

It is needleſs to mention more inſtances of peſtilential fevers being brought on by the ſteams of corrupted ſubſtances, whether animal or vegetable. In general it may be remarked, that the putrefaction of theſe ſubſtances in a dry air is more apt to bring on a fever of the continued form; but in a moiſt air hath a greater tendency to produce remitting fevers. But it muſt alſo be obſerved, that, even in caſes where the moſt malignant fevers prevail, all perſons are not equally diſpoſed to receive the infection, tho' equally expoſed to it with others. Some, through mere vigour of body and mind, cannot be infected with the moſt contagious diſeaſes; while, on the other hand, thoſe whoſe bodies are debilitated by a former diſeaſe,

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at length the officers were obliged to employ none but the natives on that buſineſs. Great numbers of men have periſhed from being employed in this manner at Bengal, where the European ſhips often anchor in the moſt unhealthy ſpots of the river; and even when the great night-fogs ariſe, after the rainy ſeaſon, the men are often obliged to perform ſuch night-ſervices in boats. Now ſince it is ſo dangerous for Europeans in unhealthy countries, particularly during a ſeaſon of ſickneſs, to be expoſed in an open boat to the foggy night-air, it muſt appear, that ſending them unſheltered, in open boats, far up rivers, in unhealthy ſouthern climates, for the ſake of wood, water, trade, or other purpoſes, muſt be attended with the moſt deſtructive and fatal conſequences.

Burying the dead in ſwampy countries is another occupation which has proved fatal to many, and which ought to be entruſted to negroes or the natives of the country. The effluvia from the ground when newly opened, whether from graves or ditches, are far more dangerous than from the ſame ſwampy ſoil when the ſurface is undiſturbed; nay, in ſome places, it has been found almoſt certain death for an European to dig a grave, unleſs long ſeaſoned to the country. In ſuch a place, the attendance of friends at funerals ought to be diſpenſed with.

In all caſes where it is practicable, the ſhips which viſit theſe unhealthy countries ſhould anchor at as great a diſtance as poſſible from ſhore; or if obliged to anchor near marſhy grounds or ſwamps, eſpecially during ſummer or in hot weather, and when the wind blows directly from thence, the gun-ports which would admit the noxious land-breeze ought to be kept ſhut, eſpecially at night. Or if the ſhip rides with her head to the wind, a thick ſail ought to be put upon the fore-maſt, along which the ſmoke from the fire-place might be made conſtantly to play and aſcend. If the ſail ſhould occaſion a little ſmoke between decks, this inconvenience will be ſufficiently compenſated by its keeping off the direct ſtream of the ſwampy ſhore effluvia; which now being obliged to form a curve before they reach the more diſtant parts of the veſſel, muſt needs be greatly diverted and ſcattered.

The beſt preſervative againſt the miſchievous impreſſions of a putrid fog, or of a marſhy exhalation, is a cloſe, ſheltered, and covered place; ſuch as the lower apartments in a ſhip, or a houſe in which there are no doors or windows facing the ſwamps. If in ſuch places a fire is kept either at the doors and other inlets to a houſe, or in the chambers, as is practiſed in ſome unhealthy countries during the rainy or foggy ſeaſon, it will prove an excellent and effectual protection againſt the injuries of a bad air. On board of ſhips alſo fires may be made at the hatchways; and of the good effects of this, we have the following example. When the Edgar, a ſhip of war of 60 guns, was upon the coaſt of Guinea in the year 1768, her men were very ſickly, and many of them died: whereas it was obſerved, that in a ſloop of war, which was conſtantly in company with her, few were taken ill, and not one died during the whole voyage. This could be aſcribed to no other cauſe, but that in the ſloop the fireplace for cooking victuals was on the ſame level with the deck where the men lay; and every morning when the fire was lighted, eſpecially when there was but little wind, the ſmoke from the cook-room ſpread itſelf all over the ſhip, and particularly over thoſe parts where the men lay; but from the conſtruction of the fire-place of the Edgar, no ſmoke from it ever came between her decks.

Perſons on board any ſhip whatever, are much more ſafe, and their ſituation is much preferable to that of thoſe who make diſtant inland excurſions in ſmall boats upon the rivers, and who are for the moſt part ignorant of the cauſe of thoſe maladies which deſtroy them. The intolerable heat at noon often obliges ſuch perſons to go in a manner half-naked; while a free and plentiful perſpiration iſſues from every pore. A near approach to putrid ſwamps at this time is apt to produce an immediate ſickneſs, vomiting, and afterwards a low nervous or malignant fever. But if they happen to paſs them at night, or lie near them in an open boat, the air from thoſe ſwamps is perceived to be quite chill and cold; in ſo much that warm thick clothing becomes abſolutely requiſite to guard the body againſt the impreſſions of ſo great an alteration in the air, and againſt its cold and inclement quality; for the effects of it then, even on the moſt healthy and vigorous conſtitution, is frequently a chilling cold fit of an ague, terminating in a fever with delirium, bilious vomitings, a flux, or even death itſelf.

But where ſuch expoſure becomes unavoidable, the only method is then to defend the body as much as poſſible againſt the pernicious miaſmata with which the air abounds.—All thoſe who are employed in cutting down woods, or in other laborious and dangerous ſervices in hot climates, during the heat of the day ought to have their heads covered with a bladder dipt in vinegar, and to waſh their mouths often with the ſame liquor; never to ſwallow their ſpittle, but rather to chew a little rhubarb or ſome other bitter and ſpit it out frequently; to ſtop their noſtrils with a ſmall bit of linen, or tow, dipped in camphorated vinegar; and to infuſe ſome bark, garlic, and rhubarb, in brandy, of which a dram is to be taken, either by itſelf or diluted with water, morning and evening.

In the evening before ſunſet they ſhould leave off work, and not return to their labour in the morning till the ſun has diſperſed the unwholeſome dews and vapours. Thoſe who muſt of neceſſity remain on ſhore, and ſleep in dangerous places, muſt take care not to ſleep upon the ground expoſed to the dews, but in hammocks in a cloſe tent, ſtanding upon a dry ſand, gravel, or chalk, near the ſea ſhore, and where there is no ſubterraneous water for at leaſt four feet below the ſurface of the ground. The door of this tent ſhould be made to open towards the ſea; and the back part of it which receives the land breeze, muſt be well ſecured by double canvaſs, or covered with branches of trees. But in ſuch circumſtances, a hut, when it can be procured, is preferable to a tent, eſpecially if it is well thatched, ſo as to prove a defence both againſt the exceſſive heat of the ſun by day, and the noxious dews which fall at night. Here the men may be enjoined to ſmoke tobacco. When the air is thick, moiſt, and chill, the earth being overſpread with cold dew, a conſtant fire muſt be kept in and about the tent or hut, as the moſt excellent means of purifying ſuch unwholeſome air, and of preſerving the health of thoſe who either ſleeping or waking are expoſed to its influence. The centinels who guard the water-caſks, ought likewiſe at ſuch a time to have a fire burning near them. All old and forſaken habitations, natural caves and grottoes in the earth, where the men may be induced to take up their abode, muſt, before their admiſſion, be perfectly dried and purified with ſufficient fires. Fire and ſmoke are undoubtedly the great purifiers of all tainted and unwholeſome air, and the moſt excellent preſervatives againſt its noxious influence. It is the cuſtom of the negroes in Guinea, as alſo of ſome Indians, (who both ſleep for the moſt part on the ground), to have a fire, producing a little ſmoke, conſtantly burning in their huts where they ſleep. This not only corrects the moiſture of the night, but alſo, by occaſioning more ſmoke than heat, renders the damp from the earth leſs noxious; of which our author gives the following remarkable inſtance. A Guinea ſhip being up one of the rivers for the ſake of trade, it was found to be very dangerous to ſleep on ſhore; without which their trade could not be ſo conveniently carried on. Firſt the captain, then the mate, and two or three of the ſeaman, were taken ill; each of them the morning after they had lain on ſhore. By theſe accidents the men were greatly intimidated from lying aſhore; till the ſurgeon boldly offered to try the experiment on himſelf. Next morning when he waked, he found himſelf ſeized, as the reſt, with a giddineſs and pain in the head, &c. He immediately acquainted one of the negroes with his condition, who carried him to his hut, and ſet him down in the ſmoke of it; when his ſhiverings and giddineſs ſoon left him. He then took a dram of the bark bitter; and found himſelf greatly relieved, eſpecially by breathing ſome time in the ſmoke.—Thus inſtructed by the negroe, he ordered a large fire to dry the hut he ſlept in; and afterwards had every night a ſmall fire ſufficient to raiſe a gentle ſmoke, without occaſioning a troubleſome heat: and by this means he and ſeveral others, uſing the ſame precautions, ſlept many nights on ſhore without any inconvenience.

Fire and ſmoke indeed are found to be certain correctors, or rather deſtroyers, of infection in all caſes, whether ariſing from the noxious effluvia of marſhes, or from the contagion of diſeaſed bodies. Even thoſe moſt extraordinary and fatal damps called *harmattans*, formerly mentioned, are unable to reſiſt the ſalutary effects of ſmoke. In other caſes, our author remarks, that, under ſome circumſtances, the ſource of an infection in a ſick chamber or any other place, may be removed or deſtroyed by accidental means, for which we cannot account, and which we often cannot aſcertain. But it oftener happens, that it is very difficultly rooted out; and that exact cleanlineſs, with the benefit of a pure air, often proves inſufficient to remove the evil. Smoke, however, hath never been known to fail. It is not to be doubted, but that, excepting the true plague, there has been an infection fully as peſtilential and as mortal in ſome ſhips, as in any other place whatever; yet it hath never been heard, that any ſhip, after having been carefully ſmoked, did not immediately become healthy: and if afterwards they turned ſickly, it was eaſy to trace that ſickneſs from other infected ſhips, jails, and the like places.

There are three methods practiſed for purifying veſſels after the men have been removed out of them. The firſt is by burning of tobacco. A quantity of tobacco is ſpread on ſeveral fires, made with ſuch old pieces of rope as are called *junk*. Theſe are diſperſed into different places of the ſhip, and their heat and ſmoke afterwards cloſely confined below for a conſiderable time.—The ſecond method is by charcoal fires ſtrewed with brimſtone. The heat and ſteam of theſe burning materials muſt alſo be long and cloſe ſhut up: but, although this fume, properly applied, hath been experienced to purify moſt effectually tainted apartments, ſhips, clothes, &c. yet there are ſome kinds of vermin which it will not deſtroy, particularly lice.—The third method of purification is performed by the addition of arſenic to the materials of the ſecond proceſs, in the following manner. After carefully ſtopping up all the openings, and every ſmall crevice of the ſhip, (as was alſo neceſſary in the preceding proceſſes) a number of iron pots, properly ſecured, are to be placed in the *hold*, *orlope*, *gun-deck*, &c. Each of theſe are to contain a layer of charcoal at the bottom, then a layer of brimſtone, and ſo alternately three or four layers of each, upon which the arſenic is to be ſprinkled, and on the top of it ſome oakum dipped in tar is to be laid to ſerve as a match. The men, upon ſetting fire to the oakum, muſt ſpeedily leave the place, ſhutting cloſe the hatchway by which they came up.

From the known and experienced efficacy of theſe proceſſes, it appears, that fire and ſmoke are the moſt powerful agents for annihilating infection; and, it may be preſumed, even the plague itſelf. This is in ſome meaſure agreeable to what we learn from the ancient records of phyſic. But the prepoſterous uſe, or rather abuſe, of fire on ſuch occaſions, has cauſed its effects to be diſregarded by ſome, and to be ſuſpected of miſchief by others. The modern practice of burning large fires in the open air, in the ſtreets, and about the walls of towns infected with the plague or other contagion, is founded on principles groundleſs and erroneous; and hath, therefore, been experienced not only unſucceſsful, but hurtful. But though this muſt be allowed, it doth not thence by any means follow, that when once a houſe hath been infected and the patients removed from it, the doors and windows at the ſame time being ſhut, that ſuch fires will then prove hurtful; or that, by this method of purification, all the ſeeds of contagion will not be effectually deſtroyed. Whenever, therefore, perſons die of a ſpotted fever, a malignant ſore throat, the ſmall-pox, or any diſtemper found to be communicable from the ſick to others, the corpſe ought quickly after death to be removed into another room; that in which the perſon died ſhould be well aired, by having the windows opened, till a charcoal-fire be kindled, with ſome rolls of ſulphur upon it; after which, both doors and windows ſhould be kept ſhut for a conſiderable time, not leſs than eight or ten hours, till the room be throughly ſmoked. In ſeveral ſhips, where there are the faireſt opportunities of trying and judging things of this nature, the contagion of the ſmall-pox has been entirely ſtopped by wood-fires, ſprinkled with brimſtone, kept burning and cloſely confined in the infected place. In a word, a judicious and proper application of fire and ſmoke is the beſt means for the deſtruction and utter extinction of the moſt malignant ſources of diſeaſe; and they are beſides the greateſt purifiers of all bad and tainted air.

Next to the ſmoke of wood for purifying a tainted air, that of gun-powder is to be eſteemed the beſt; and hath this further good property, that it is entirely inoffenſive to the lungs. The caſcarilla-bark, when burning, gives a moſt agreeable ſcent to the chamber of the ſick; ſo is at leaſt an elegant preſervative, and may prevent bad ſmells from taking effect. The ſteam of camphorated vinegar warmed, is ſtill more powerful for this purpoſe. But, beſides correcting the ill quality of the air, and purifying the chamber, another good effect is produced from ſuch ſteams and ſmoke as are inoffenſive to the lungs. As ſoon as the vapour becomes denſe, the nurſes and patients become deſirous of the admiſſion of freſh air by the door or windows. Now it is certain, that the air in the chambers of the ſick cannot be too often changed, provided the patient be well covered, and the curtains of his bed, if neceſſary, be drawn cloſe. No argument is ſo forcible to obviate the danger of foul air in a room or ward, (occaſioned by the obſtinacy of nurſes or relations), as ordering it to be frequently fumigated or ſmoked: A practice more frequent in other countries than in this, but of great benefit to the ſick.

Laſtly, with regard to the method of purifying goods, moveables, clothes, &c. which are ſuppoſed to harbour infection, it muſt be obſerved, that the uſual cuſtom of only unpacking and expoſing ſuch materials to the open air, is in many inſtances inſufficient to deſtroy the latent ſeeds of diſeaſe. It is certain indeed, that in moſt caſes the contagious particles are more readily and fatally communicated from the clothes of a ſick perſon, than from his body. The ſpreading abroad, therefore, of contaminated clothes to dry or to be aired, without a previous fumigation of them, may be of dangerous and fatal conſequence. All ſuch ſuſpected ſubſtances ſhould be firſt fumigated in a cloſe place, and in the ſame manner as an infected chamber, after which they may be ſpread abroad and expoſed to the air. In infectious diſeaſes, eſpecially fevers, the linen of the ſick, or ſuch clothes about them as will admit of being waſhed, ought never at firſt to be put in warm water, as it is dangerous to receive the ſteam that may hence ariſe. It is neceſſary to ſteep them firſt either in cold water, or in cold ſoap-lees, for ſeveral hours, that the filth may be waſhed off.

We muſt now proceed to give an account of the method of cure, after theſe methods of preventing the infection from being received into the body have either been neglected or proved ineffectual. Here it is of the utmoſt importance to take the diſeaſe in the very beginning, before it hath time to corrupt the fluids to ſuch a degree as to endanger life. In theſe ſlight degrees of infection, a vomit properly adminiſtered, eſpecially if ſucceeded by a bliſter, never fails to remove the diſorder, and prevent the fever which would otherwiſe unavoidably follow. Of this Dr Lind gives the following inſtances. A lady afflicted with the bilious cholic, had intolerably fetid diſcharges of corrupted matters upwards and downwards. A gentlewoman, only in paſſing the room, was immediately ſeized with a retching and ſickneſs, which continued 24 hours. The nurſe who attended, was ſuddenly ſeized with a giddineſs and vomiting from the bad ſmell, which, as ſhe expreſſed it, reached into her ſtomach. The vomiting became more ſevere at night, accompanied with a purging and frequent ſhiverings. By means of an emetic both evacuations were ſtopped: notwithſtanding which, for ſome days afterwards, ſhe continued to have frequent tremors, and a violent headach, with a low irregular pulſe; and did not recover ſo ſoon as the patient.

Such ſlight degrees of infection have been often obſerved to be derived from patients of a groſs habit of body, when labouring under inflammatory diſtempers, and even other complaints. A man was ſent to Haſlar Hoſpital, ſuppoſed to have a fever. He was furiouſly delirious, with a quick full pulſe. Notwithſtanding plentiful evacuations, this delirium continued for two months with ſhort intervals; when the caſe was found to be plainly *maniacal*. A nurſe, upon raiſing this perſon up in her arms, perceived an intolerably bad ſmell, and was inſtantly ſeized with ſhiverings, ſickneſs, and head-ach. Finding herſelf very ill, ſhe took a vomit in ſix hours afterwards, and paſſed the night in profuſe ſweats by means of a ſudorific draught. Next morning the violence of the head-ach was but little abated; upon every attempt to move, ſhe complained of a burning heat and pain in her forehead, and became giddy. Her inclination to drink was frequent, and her pulſe low and quick. A bliſter was immediately applied to the back: as ſoon as the bliſter took effect, the head-ach and thirſt entirely left her, and the pulſe was calm. Next day ſhe aroſe and was well.

Many ſimilar inſtances of infection have been obſerved from putting the dead into their coffins. In particular, one man, who, from performing that duty to his meſſmate, was ſo ill, even after the operation of the vomit, as to require a bliſter. In the courſe of one week two nurſes were infected by a perſon in the ſmall-pox. Both were ſeized in like manner with ſhiverings, ſickneſs, and head-ach; the one upon receiving the patient's breath, the other upon making his bed. In one, a pain darted into her breaſt; in the other, into the breaſt and in the ſmall of the back. The complaints of the former were ſpeedily removed by a vomit, though ſhe continued to have irregular returns of ſhiverings for three days afterwards. But in the latter, though the head-ach, ſickneſs, and rigors, were greatly abated by the vomit, yet a conſtant heat and thirſt, with a low pulſe, and a violent pain in the breaſt, indicated the neceſſity of applying a bliſter to the affected parts which next morning removed all her complaints.

A perſon is often immediately ſenſible of his having received an infection from the firſt attack: they generally compare the firſt impreſſion to an earthy, diſagreeable ſmell, reaching down, as they expreſs it, into their ſtomach, as from a grave newly opened, but not quite ſo raw as the cadaverous ſtench; and the effects of it, ſhivering and ſickneſs, are inſtantaneous. It is a ſmell difficult to deſcribe; but is well known to the nurſes and attendants about the ſick, as it uſually accompanies fevers of extreme malignity, and, with the peculiar diſcharges from the bliſtered parts, may be reckoned among the moſt conſtant ſymptoms of a bad fever. Some compare the ſmell to that of rotten ſtraw. It often reſembles the diſagreeable ſmell of a perſon labouring under the confluent ſmall-pox at their turn, though not ſo ſtrong. One perſon, on receiving the infection, was ſenſible of ſomething like an electric ſhock through his body. But many are not ſenſible of any effect from an infection at firſt; and an infection from a fever will ſometimes continue for many days, nay weeks, diſcovering itſelf chiefly by irregular ſhiverings, ſometimes ſo ſevere as to oblige the patients to have recourſe to their beds once or twice a-day; ſometimes every other day. Among a number thus affected, it alſo appears, that ſuch as are put into unſeaſoned chambers, or have ſat down on the cold ground, lain in raw damp apartments, &c. are immediately ſeized with a ſickneſs at ſtomach, ſometimes with a dangerous purging, and often with fevers accompanied with bad ſymptoms, which others have entirely eſcaped.

It now remains to conſider the proper method of curing putrid fevers, on the ſuppoſition that the infection hath been allowed to operate till the blood becomes radically tainted, and of conſequence the nervous ſyſtem affected to ſuch a degree, that its power cannot be reſtored by any of the ſimple medicines above-mentioned. Here all authors agree, that a change of air, when it can be effected, is abſolutely neceſſary, and often contributes more towards the removing of the diſeaſe than all the medicines that can be exhibited. The utility of this change will appear from what hath been formerly ſaid; and we ſhall only further allege one inſtance from Dr Lind, in which the effects of bad air appear to a degree almoſt incredible. "It is remarkable, (ſays he), that in the laſt war, the Engliſh ſhips which touched at Batavia ſuffered more by the malignant and fatal diſeaſes of that climate, than they did in any other part of India, if we except a fatal ſcurvy which once raged in that fleet at ſea. Soon after the capture of Manila, the Falmouth, a ſhip of 50 guns, went to Batavia, where ſhe remained from the latter end of July to the latter end of January; during which time ſhe buried 100 ſoldiers of the 79th regiment, and 75 of the ſhips company; not one perſon in the ſhip having eſcaped a fit of ſickneſs, except her commander Captain Brereton. The Panther, a ſhip of 60 guns, was there in the years 1762 and 1764; and both times during the rainy ſeaſon. In the former of theſe years, ſhe buried 70 of her men; and 92 of them were very ill when ſhe left the place. In the year 1764, during a ſhort ſtay, 25 of her men died. The Medway, which was in company with her, loſt alſo a great number of men. Nor was the ſickneſs at that time confined to the ſhips; the whole city afforded a ſcene of diſeaſe and death: ſtreets crowded with funerals, bells tolling from morning to night, and horſes jaded with dragging the dead in herſes to their graves. At that time a ſlight cut of the ſkin, the leaſt ſcratch of a nail, or the moſt inconſiderable wound, turned quickly to a ſpreading putrid ulcer, which in 24 hours conſumed the fleſh even to the bone. This fact is ſo extraordinary, that, upon a ſingle teſtimony, credit would hardly be given to it; yet on board the Medway and Panther they had the moſt fatal experience of it, and ſuffered much from it."

But where this change of air is impracticable or ineffectual, and where the fever hath already made ſome progreſs, Sir John Pringle generally took away ſome blood if the pulſe was full. When the ſymptoms run high, a plentiful evacuation of that kind ſeemed indicated; yet it was obſerved that large bleedings generally did harm, by ſinking the pulſe, and affecting the head. Nor was a moderate bleeding to be repeated without caution; even thoſe whoſe blood was ſizy, unleſs their lungs were inflamed, were the worſe for a ſecond bleeding. If the head only ſuffered, it was much ſafer to uſe leeches than to open a vein in the arm; but in the delirium with a ſunk pulſe, even leeches were hurtful. Many recovered without letting blood, but few who loſt much of it.

Vomits alſo muſt be uſed with caution; for though they may be of uſe by way of prevention, yet in the advanced ſtate of the diſeaſe, when the patient has all along complained of a ſickneſs at ſtomach, they are evidently unſafe. Here the antiſeptic quality of fixed air is of much uſe, and the neutral draughts given in the act of efferveſcence are generally attended with happy effects. Nay, clyſters of fixed air itſelf have been found very ſerviceable. Even in very bad ſtages of the diſtemper, where a putrid and colliquative looſeneſs hath taken place, clyſters of fixed air have been known to alleviate the ſymptoms. We muſt not, however, put too much confidence in medicines of this kind. Mild aſtringent cordials, eſpecially the wine and Peruvian bark, are the only reſources in theſe diſorders. Concerning the former, Sir John Pringle obſerves, in the low ſtate of theſe fevers, and in great ſinkings, which either come after unſeaſonable bleedings, or long want of nouriſhment, it was a moſt grateful and efficacious cordial, to which nothing was comparable. The common men had an allowance, from a quarter to half a pint in a day, of a ſtrong kind, made into whey, or added to the panada which was their ordinary food. But to others out of the hoſpital, he uſually preſcribed Rheniſh, or a ſmall French wine, whereof ſome conſumed near a quart per day, and part of that undiluted. Nay, ſo great was the virtue of wine in this ſtage of the fever, that ſeveral were known to recover from the loweſt condition, when, refuſing the bark on account of its taſte, they took nothing but a little panada with wine and a volatile diaphoretic mixture every two or three hours by turns. Perhaps there is no rule more neceſſary in this ſtate, than not to let the patient when low remain long without taking ſomething cordial and nouriſhing; as many have been obſerved paſt recovery, by being ſuffered to paſs a whole night without any ſupport about the time of the criſis. In the advanced ſtate of this fever the ſick are remarkably low; and therefore Hoffman adviſes in ſuch caſes, that they ſhould be conſtantly kept in bed, and not permitted even to ſit up in it. In the laſt ſtage of this fever, as well as in that of the ſea-ſcurvy, it would ſeem that the force of the heart was too ſmall to convey the blood to the brain, except when the body is in an horizontal poſture.

But, however neceſſary wine and the bark may be in the low ſtage of this fever, we muſt remember, that theſe remedies are to be adminiſtered only as antiſeptics and ſupporters of the *vis vitæ*, without aiming at thoroughly raiſing the pulſe or relieving the head, or at forcing a ſweat by them before nature points that way, and which Sir John Pringle ſeldom obſerved before the 14th day. For though the patient may die before that time if he has been largely bled, or if the cordial medicines have been given him too freely, yet ſuch means as our author made uſe of were not powerful enough to bring on a criſis ſooner.

In the low ſtate of the hoſpital-fever, a ſtupor was a conſtant attendant, which was very apt, in the evening, to change to a ſlight delirium. If this was all, as being in the common courſe, nothing was done. But if the delirium increaſed upon uſing wine, if the eyes looked wild or the voice became quick, there was reaſon to apprehend a phrenitis; and accordingly it was obſerved, that at ſuch times all internal heating medicines aggravated the ſymptoms; and in theſe caſes bliſters were of the greateſt ſervice. Fomentations of vinegar and warm water for the feet, our author is of opinion, would anſwer better than either ſinapiſms or bliſters, provided they were long enough and often enough applied. In the inflammatory fevers, he has known theſe fomentations have little effect for the firſt hour, and yet ſucceed afterwards. For internal medicine, the bark was omitted for ſome time, but the patient was continued with an acidulated drink, viz. barley-water and vinegar; and treated alſo with camphire, *pulvis contrayerva compoſitus*, and nitre, as was uſual in the beginning of the fever. If the delirium was of the low kind, a decoction of the bark and wine were the only remedies; for in no inſtance was the delirium perfectly removed till the time of the criſis. It muſt alſo be obſerved, that a delirium may ariſe in putrid fevers from two oppoſite errors; one from large and repeated bleedings, and the other from wine and the cordial medicines being taken too early. It appears therefore how nice the principles are that regard the cure; as neither a hot nor a cool regimen will anſwer with every patient, or in every ſtate of the diſeaſe.

If a diarrhœa came on in the decline of the fever, it was moderated, but not ſuppreſſed, by adding an opiate to the uſual medicines. For though the looſeneſs may be conſidered as critical; yet as the ſick were too low to bear evacuations, there was a neceſſity for reſtraining it in ſome meaſure; and it has often been obſerved, that when it has been treated in this manner, about the uſual time of the criſis, the patient has fallen into a gentle ſweat, which has carried off the diſeaſe. In the worſt caſes of this fever, and eſpecially when it coincides with the dyſentery, the ſtools are frequently bloody; in which dangerous ſtate, if any thing could be done, it was attempted by medicines of the ſame kind. In proportion to the putrid nature of the ſtools, opiates and aſtringents were uſed with the greater caution.

If the diſeaſe terminated in a ſuppuration upon one of the parotid glands (for the gland itſelf does not ſuppurate), the abſceſs was opened without waiting for a fluctuation, which might never happen; the pus being often here ſo viſcid, that after it was ripe the part felt nearly as hard as if the ſuppuration had not begun.

Almoſt every patient, after the fever, complained of want of reſt, frequently of a vertigo or confuſion of the head, of a continuation of the deafneſs, or of other ſymptoms commonly called *nervous*. An opiate was then given at night; and in the day ſome ſtrengthening medicines, ſuch as the bark and the elixir of vitriol. In theſe caſes, the bark was found not only to be the beſt ſtrengthener, but the ſureſt preſervative againſt a return of the diſeaſe. For this laſt intention the convaleſcent was ordered about three drachms a-day for ſix or ſeven days together; and afterwards, if he remained longer in the hoſpital, ſome ſmaller quantity daily. But if there was any appearance of a hectic fever from an inward abſceſs, the caſe was treated accordingly. Upon comparing ſome of the remaining ſymptoms of thoſe who recovered, with the condition of the brain in thoſe who died and were opened, our author was induced to think, that ſome part even of that ſubſtance might ſuppurate, and yet the perſon recover.

Sometimes the patient falls into an irregular intermittent; which, if not of a hectic nature from an internal abſceſs, may proceed from neglecting to clear the *primæ viæ*. For it is eaſy to conceive, that after a long fever of ſuch a putrid nature, often attended with languor of the bowels, the fæces may be ſo much accumulated, and ſo corrupted, as to occaſion new diſorders. In ſuch caſes, after proper evacuation by a purge, the bark was almoſt an infallible remedy.

XXVIII. The *Yellow* Fever. Sp. II. 278

Typhus icteroides, *Sauv.* ſp. 7.

Febris flava Indiæ Occidentalis, *Warren.* Malignant fever of Barbadoes, *Hillary's* Diſeaſes of Barbadoes. *Lining* on the yellow fever of South Carolina, Edin. phyſ. and liter. Eſſays, vol. ii. *Mackittrick* de febre flava Indiæ Occidentalis, Edin. 1766.

Deſcription. This is one of the moſt fatal diſeaſes to which the inhabitants of warm climates are ſubject, and is the ſame with that called, from one of its worſt ſymptoms, the *black vomit*, which is ſo terribly deſtructive in ſome of the warm parts of America, particularly at Carthagena. According to Dr Hillary, the yellow or putrid bilious fever moſt commonly ſeizes the patient at firſt with a faintneſs, then a ſickneſs at ſtomach, accompanied moſtly with a giddineſs of the head; ſoon after with a ſlight chillineſs and horror, very rarely with a rigor, which is ſoon followed by a violent heat and high fever, attended with acute darting pains in the head and back. A fluſhing in the face, with an inflamed redneſs and a burning heat in the eyes, great anxiety and oppreſſion about the præcordia, are the pathognomic ſigns of the diſtemper; eſpecially when attended with ſickneſs at ſtomach, violent retchings, bilious yellow vomitings, with frequent ſighing. The pulſe is now generally very quick, high, ſoft, and ſometimes throbbing, but never hard: in ſome it is very quick, ſoft, low, and oppreſſed; the reſpiration quick, full, and ſometimes difficult; the ſkin very hot, and ſometimes dry, though more frequently moiſt. Blood taken from the patient, even at the very beginning of the diſeaſe, is often of an exceeding florid red colour; much rarefied and thin, and without the leaſt appearance of ſize; and the craſſamentum, when it has ſtood till it is cold, will ſcarce cohere, but fluctuates; the ſerum is very yellow.

Moſt of the abovementioned ſymptoms continually increaſe, and are much aggravated: the retching and vomiting become almoſt inceſſant; the anxiety great, and ſighing frequent; great reſtleſſneſs; continual toſſing; no eaſe in any poſture; little ſleep, and that diſturbed and uneaſy, and without any refreſhment to the ſick: and when they are fainting, they turn yellow about the face and neck, inſtead of turning pale; and as the fainting goes off, they recover their natural colour. Theſe ſymptoms generally continue to the third day, though ſometimes not longer than the firſt or ſecond, in others to the end of the fourth: the firſt ſhews the greater diſſolution of the blood, and the greater malignity of the diſeaſe; the laſt, the contrary; which the improper manner of treating the diſeaſe ſometimes haſtens and increaſes, or the proper method retards. This may be called the firſt ſtadium of the diſeaſe, and generally ends on the third day.

Blood taken from the ſick on the ſecond or third day, is much more diſſolved, the ſerum more yellow, and the craſſamentum florid, looſe, ſcarce cohering, but undulates like ſizy water when ſhaken, and ſometimes has dark blackiſh ſpots on its ſurface, ſhewing a ſtrong gangraneſcent diatheſis.

About the third day, the pulſe, which was quick and full before, now generally ſinks greatly, and becomes very low: though ſometimes it remains very quick, yet in others it is not much quicker than when the patient is in health, but is always low; the vomiting becomes almoſt inceſſant if not ſo before, and the matter thrown up is black; the patient then becomes comatoſe, with interrupted deliria. The thirſt in ſome is very great, in others but little; the pulſe ſtill low and quick, attended with cold clammy ſweats, and ſometimes with deliquia. The eyes, which were inflamed and red before, and began to be of a more duſkiſh colour, now turn yellow; and this yellowneſs alſo ſoon after appears round the mouth, eyes, temples, and neck, and in a ſhort time diffuſes itſelf all over the body. But this yellowneſs is ſo far from being always an encouraging prognoſtic, as ſome would have it, that it moſt commonly proves a mortal ſymptom. Sometimes indeed, though ſeldom, this ſuffuſion of bile upon the ſurface has proved critical: but then it did not come on till the eighth or ninth day, nor appear till the coma and all the other bad ſymptoms began to abate; and then in proportion as the yellowneſs increaſes, all the bad ſymptoms decreaſe. But the caſe is moſt commonly quite the reverſe; eſpecially when the yellowneſs comes ſoon on: and then it is not only ſymptomatical, but uſhers in the moſt fatal ſymptoms of the diſeaſe, viz. a deep coma, a low, vermicular, and intermitting pulſe, great hæmorrhages from various parts of the body, a delirium with laborious and interrupted reſpiration, great anxiety, deep ſighing, reſtleſſneſs, a ſubſultus tendinum, coldneſs of the extreme parts firſt, and then all over the body, a faltering of the ſpeech, tremors, and convulſions, which are ſoon after followed by death. So that from the firſt appearance of the yellowneſs we may ſay the patient is in the laſt ſtage of the diſeaſe, whether it terminates in death or recovery.

It has been obſerved, that, in ſome ſtrong ſanguine conſtitutions, when the patients have not been bled to a ſufficient quantity in the beginning of the diſeaſe, the pulſe has continued full, ſtrong, and rapid, but never hard; the face fluſhed, eyes inflamed; the tongue dry, with great thirſt and heat, till the ſecond or laſt ſtage of the fever is come on, when the pulſe has ſuddenly ſunk, and death ſoon after enſued. Yet in others, who ſeemed to be of a plethoric habit, the tongue has been moiſt all along, though they have been delirious moſt of the time, and the heat of their ſkin and the ſtrength and quickneſs of their pulſe have continued, after the firſt ſtage of the diſeaſe was over, pretty near to that of their natural ſtate in health, till within a few hours of their death; and when they have had a coma on them, one who is not well acquainted with the nature of this diſeaſe would, from their pulſe, heat, breathing, and other ſymptoms, have taken them to be in a natural ſleep. Others, when the pulſe has begun to ſink, and the fatal period ſeemed to be juſt approaching, to the great ſurpriſe of all preſent have recovered their ſenſes, ſat up, and talked pretty cheerfully for an hour or two, and in the midſt of this ſeeming ſecurity have been ſuddenly ſeized with convulſions, which carried them off immediately.

In the latter ſtage of this fever, the blood is ſo attenuated and diſſolved, that we frequently ſee it flowing not only out of the noſe and mouth, but from the eyes, and even through the pores of the ſkin; alſo great quantities of black, half-baked, or half-mortified blood, are frequently voided both by vomiting and by ſtool, with great quantities of yellow and blackiſh putrid bile by the ſame ways; and the urine, which was before of a high icteritious colour, is now almoſt black, and is frequently mixed with a conſiderable quantity of half-diſſolved blood. The pulſe, which was much ſunk before, now becomes very low, unequal, and intermitting; the breathing difficult and laborious; and the anxiety inexpreſſible: an oppreſſion with a burning heat about the præcordia comes on, tho' the extremities are cold, and often covered with cold clammy ſweats: a conſtant delirium follows; and then a total loſs of the outward ſenſes as well as the judgment, with livid ſpots in many parts of the body, eſpecially about the præcordia; and ſometimes gangrenes in other parts of the body, which are very ſoon ſucceeded by death.

In a ſhort time after death, the body appears much more full of livid, large, mortified ſpots, particularly about the præcordia and hypochondres, eſpecially the right; which parts ſeem, even from the firſt ſeizure, to be the principal ſeat of this terrible diſeaſe; and, upon opening the bodies of thoſe who die of it, we generally find the gall-bladder and biliary ducts turgid, and filled with a putrid blackiſh bile; and the liver, ſtomach, and adjoining parts, full of livid or blackiſh mortified ſpots; and the whole corpſe ſoon putrifies after death, and can be kept but a few hours above ground.

Dr Lind is of opinion, that the remarkable diſſolution of the blood, the violent hæmorrhages, black vomit, and the other ſymptoms which characterize the yellow fever, are only accidental appearances in the common fever of the Weſt-Indies; that they are to be eſteemed merely as adventitious, in the ſame manner as purple ſpots and bloody urine are in the ſmall-pox, or as an hickup in the dyſentery: like theſe they only appear when the diſeaſe is attended with a high degree of malignity, and therefore always indicate great danger. This opinion he thinks is confirmed by an obſervation of Dr Wind's, that in 1750 the crew of a Dutch ſhip of war were diſtreſſed by the yellow fever, accompanied with the black vomit; but when the ſhip left the harbour, and changed the noxious land-air for one more healthy, the fever continued, but was not accompanied with the black vomit.

Diſeaſes ſimilar to this fever, our author informs us, may ariſe in any part of the world where the air is intenſely hot and unwholeſome; and therefore he treats as chimerical the notion of its being imported from one part of the world to another. An example of this happened at Cadiz in Spain, in the months of September and October 1764, when exceſſive heat, and want of rain for ſome months, gave riſe to violent, epidemic, bilious diſorders, reſembling thoſe of the Weſt-Indies, of which 100 perſons often died in a day. At this time the winds blew moſtly from the ſouth, and after ſunſet there fell an unuſual aud very heavy dew.

This diſeaſe began commonly with alternate ſlight chills and heats, nauſea, pains of the head, back, loins, and at the pit of the ſtomach. Theſe ſymptoms were often followed, in leſs than 24 hours, with violent retchings, and vomiting of a green or yellow bile, the ſmell of which was very offenſive. Some threw up an humour as black as ink, and died ſoon after in violent convulſions and in a cold ſweat. The pulſe was ſometimes ſunk, ſometimes quick, but often varying. After the firſt day, the ſurface of the body was generally either cold, or dry and parched. The head-ach and ſtupor often ended in a furious delirium, which quickly proved fatal. The dead bodies having been examined by order of the court of Madrid, the ſtomach, meſentery, and inteſtines, were found covered with gangrenous ſpots. The orifice of the ſtomach appeared to have been greatly affected, the ſpots upon it being ulcerated. The liver and lungs ſeemed to be putrid, both from their texture and colour. The ſtomach contained a quantity of an atrabilious liquor, which, when poured on the ground, produced a ſenſible efferveſcence; and, when mixed with ſpirit of vitriol, a violent ebullition enſued. The dead bodies ſo quickly turned putrid, that at the end of ſix hours their ſtench was intolerable; and, in ſome of them, worms were found already lodged in the ſtomach. His majeſty's ſhip the Tweed being at that time in Cadiz bay, ſeveral of her men were taken ill when on ſhore, but by being carried on board all of them recovered. Neither did the black vomit, or any other deadly ſymptom of that fever, make its appearance in any of the ſhips.

It hath been a matter of much diſpute, whether the yellow fever is of an infectious nature or not. Not long ago it became an object of conſideration before the Right Hon. the Lords Commiſſioners of Trade and Plantations, where it was urged, among other reaſons, for not removing the ſeat of government and juſtice in the iſland of Jamaica from Spaniſh Town to Kingſton, that there was danger from Greenwich hoſpital, ſituated near Kingſton, of an infection from the yellow fever being frequently communicated to that town. On this affair a phyſician was conſulted, who had long practiſed in that iſland, and who gave it as his opinion, that from the yellow fever in that iſland there was no infection. This was the opinion not only of that gentleman, but of many others who had an opportunity of being well acquainted with this fever in Jamaica. Nevertheleſs Dr Lind gives a remarkable inſtance of its being of an infectious nature.—A gentleman dying at Barbadoes of a yellow fever, his wearing apparel and linen, packed up in a cheſt, were ſent to his friends at Philadelphia; where, upon opening the cheſt, the family was taken ill; and the clothes being unluckily hung abroad to be aired, they preſently diffuſed the contagion of the yellow fever over the whole town, by which 200 perſons died. Theſe contradictions, Dr Lind thinks, can only be reconciled by ſuppoſing the yellow fever in the Weſt-Indies to be ſometimes of an infectious nature, and ſometimes not.

In the deſcription of the ſame fever, as it appears in South-Carolina, by Dr Lining, there are ſeveral particulars conſiderably different from that by Dr Hillary. According to the former, people complained, for a day or two before the attack, of a head-ach, pain in the loins and extremities, eſpecially in the knees and calves of the legs, loſs of appetite, debility, and a ſpontaneous laſſitude. Some, however, were ſeized ſuddenly, without any ſuch previous ſymptoms. After a chillneſs and horror with which this diſeaſe generally invades, a fever ſucceeded. The pulſe was very frequent, till near the termination of the fever, and was generally full, hard, and conſequently ſtrong: in ſome, it was ſmall and hard; in others, ſoft and ſmall; but in all thoſe caſes, it frequently varied in its fullneſs and hardneſs. Towards the termination of the fever, the pulſe became ſmaller, harder, and leſs frequent. In ſome there was a remarkable throbbing in the carotids and in the hypochondria; in the latter of which it was ſometimes ſo great, that it cauſed a conſtant tremulous motion of the abdomen. The heat generally did not exceed 102 degrees of Fahrenheit's thermometer; in ſome it was leſs; it varied frequently, and was commonly nearly equal in all parts, the heat about the præcordia being ſeldom more intenſe than in the extremities when theſe were kept covered. In the firſt day of the diſeaſe, ſome had frequent returns of a ſenſe of chillneſs, though there was not any abatement of their heat. In a few, there happened ſo great a remiſſion of the heat for ſome hours, when at the ſame time the pulſe was ſoft and leſs frequent, and the ſkin moiſt, that one from theſe circumſtances might reaſonably have hoped that the fever would only prove a remittent or intermittent. About the end of the ſecond day, the heat began to abate. The ſkin was ſometimes (though rarely) dry; but oftener, and indeed generally, it was moiſt, and diſpoſed to ſweat. On the firſt day, the ſweating was commonly profuſe and general; on the ſecond day, it was more moderate: but on both theſe, there happened frequent and ſhort remiſſions of the ſweatings; at which times the febrile heat increaſed, and the patient became more uneaſy. On the third day, the diſpoſition to ſweat was ſo much abated, that the ſkin was generally dry; only the forehead and backs of the hands continued moiſt. The reſpiration was by no means frequent or difficult; but was ſoon accelerated by motion, or the fatigue of drinking a cup of any liquid. The tongue was moiſt, rough, and white, even to its tip and edges. On the ſecond day, its middle in ſome was brown. On the third day, the whiteneſs and roughneſs of the tongue began to abate. The thirſt in very few was great,

great. A nauſea, vomiting, or frequent retchings to vomit, eſpecially after the exhibition of either medicines or food, came on generally the third day, as the fever began to leſſen; or rather as the fulneſs of the pulſe, heat, and diſpoſition to ſweat, began to abate. Some indeed, but very few, on the firſt day, had a vomiting, either bilious or phlegmatic. Very few complained of anxiety or oppreſſion about the præcordia or hypochondria, nor was there any tenſion or hardneſs about the latter. On the firſt day they generally dozed much, but were afterwards very watchful. Reſtleſſneſs and almoſt continual jactations came on the ſecond day. A great deſpondency attended the ſick, and the ſtrength was greatly proſtrated from the firſt attack. The pain in the head, loins, &c. of which they had complained before the attack, were greatly increaſed, and in ſome the pain in the forehead was very acute and darting; but thoſe pains went generally off the ſecond day. The face was fluſhed; and the eyes were hot, inflamed, and unable to bear much light. On the firſt day, many of them at times were a little delirious, but afterwards not until the receſs of the fever. The blood ſaved at veneſection had not any inflammatory cruſt; in warm weather, it was florid like arterial blood, and continued in one ſoft homogeneous-like maſs, without any ſeparation of the ſerum after it was cold. When there was any ſeparation, the craſſamentum was of too lax a texture. The ſtools, after the firſt day, were fetid, inclined to a black colour, and were very rarely bilious, ſoft, or liquid, excepting when forced by art; for an obſtinate coſtiveneſs attended the febrile ſtate. The urine was diſcharged in a large quantity, was pale, ſometimes limpid, and rarely of a higher than a ſtraw colour, except when the weather was very warm, and then it was more ſaturated, of a deep colour, and diſcharged in ſmaller quantities. It had a large cloud, except when it was very pale or limpid; but more generally it had a copious white ſediment, even on the firſt day of the fever. On the ſecond day, the urine continued to be diſcharged very copiouſly; in ſome, it was then turbid, and depoſited a more copious ſediment than on the firſt day: this ſediment was ſometimes of a browniſh colour; in which caſe it was generally followed by bloody urine, either about the end of the ſecond or beginning of the third day. The colour and quantity of the urine, diſcharged in equal times, were remarkably variable, being now limpid, then of a deeper colour, now diſcharged in a larger, then in a ſmaller quantity; which could not be aſcribed to any change made either in the quantity or quality of the drink, &c.

The fever accompanied with thoſe ſymptoms terminated on the third day, or generally in leſs than 72 hours from the firſt attack, not by any aſſimilation or coction and excretion of the morbid matter: for if by the latter, there would have been ſome critical diſcharge by ſweat, urine, ſtool, or otherways, none of which happened; and if by the former, nothing then would have remained but great debility. This fever, however, did not terminate in either of theſe ſalutary ways, excepting in ſome, who were happy enough to have the diſeaſe conquered in the beginning by proper evacuations, and by keeping up a plentiful ſweat, till the total ſolution of the fever, by proper mild diaphoretics and diluents. But thoſe who had not that good fortune, however tranquil things might appear at this period, (as great debility, and a little yellowneſs in the white of the eyes, ſeemed then to be the chief complaint, excepting when the vomiting continued,) yet the face of affairs was quickly changed: for this period was ſoon ſucceeded by the ſecond *ſtadium*; a ſtate, though without any fever, much more terrible than the firſt: the ſymptoms in which were the following. The pulſe, immediately after the receſs of the fever, was very little more frequent than in health, but hard and ſmall. However, though it continued ſmall, it became, ſoon afterwards, ſlower and very ſoft; and this ſoftneſs of the pulſe remained as long as the pulſe could be felt. In many, in this ſtage of the diſeaſe, the pulſe gradually ſubſided, until it became ſcarce perceptible; and this, notwithſtanding all the means uſed to ſupport and fill it; and when this was the caſe, the icteritious-like ſuffuſion, the vomiting, delirium, reſtleſſneſs, &c. increaſed to a great degree. In ſome, the pulſe, after being exceedingly ſmall and ſcarce perceptible, recovered conſiderably its fullneſs; but that favourable appearance was generally of but ſhort continuance. The heat did not exceed the natural animal-heat; and when the pulſe ſubſided, the ſkin became cold, and the face, breaſt and extremities acquired ſomewhat of a livid colour. The ſkin was dry when the weather was cold, but was moiſt and clammy when the weather was hot. The reſpiration was natural, or rather ſlow. The tongue was moiſt, and much cleaner than in the former ſtage; its tip and edges, as alſo the gums and lips, were of a more florid red colour than uſual. Very few complained of thirſt, though they had a great deſire for cold liquors. The vomiting or reaching to vomit increaſed, and in ſome was ſo conſtant that neither medicines nor aliment of any kind were retained. Some vomited blood; others only what was laſt exhibited, mixed with phlegm; and others again had what is called the *black vomit* (A). The reaching to vomit continued a longer or ſhorter time according to the ſtate of the pulſe; for as that became fuller, and the heat greater, the reaching to vomit abated, and è contra.

(A) That which is called the *black vomit*, at firſt ſight appears to be black; but on a more careful examination, it was obſerved that this colour proceeded from a great quantity of ſmall flakey black ſubſtances which floated in the liquor thrown up by vomit; but the colour of this liquor was much the ſame with that which the patient had laſt drank, and was by no means black. Thoſe black flakey ſtubſtances are the bile mixed with, or adhering to, the mucus which lined the ſtomach. For, upon diſſection of thoſe who died of this diſeaſe, it was always obſerved that the mucus of the ſtomach was abraded, and the bile in its cyſtis was black and ſometimes very viſcid. In a lad who died of this diſeaſe in the beginning of the fourth day, and who was immediately opened, the bile was not only black, but had the conſiſtence of thick venice-turpentine, and was exceedingly tough. On the inſide of the ſtomach, there were ſeveral carbuncles or gangrenous ſpecks. And in all thoſe who were diſſected, and had died of this diſeaſe, the ſame appearances were not only always obſerved, but likewiſe the blood was very fluid, and the veſſels of the viſcera were much diſtended.

è contra. The inquietude was very obſtinate; and when they dozed, their ſlumbers were but ſhort and unrefreſhing. There were ſome who were drowſy; but theſe always awaked, after the ſhorteſt ſlumbers, with a great dejection of ſpirits and ſtrength. The jactations or reſtleſſneſs were ſurpriſing: it was frequently ſcarce poſſible to keep the patients in bed; though, at the ſame time, they did not complain of any anxiety or uneaſineſs; but if aſked how they did, the reply was, *very well.* The debility was ſo great, that, if the patient was raiſed erect in the bed, or, in ſome, if the head was only raiſed from the pillow, while a cup of drink was given, the pulſe ſunk immediately, and became ſometimes ſo ſmall, that it could ſcarce be felt; at this time, they became cold, as in a horripilatio, but without the anſerine-like ſkin: their ſkin became clammy, the delirium increaſed, their lips and ſkin, eſpecially about the neck, face and extremities, together with their nails, acquired a livid colour. The delirium returned and increaſed; it was generally conſtant in thoſe whoſe pulſe was ſmall and ſubſiding. The inflammation of the tunica conjunctiva or white of the eyes increaſed much, but without pain. A yellowneſs in the white of the eyes, if it did not appear before in the febrile ſtate, became now very obſervable, and that icteritious-like colour was ſoon diffuſed over the whole ſurface of the body, and was continually acquiring a deeper ſaffron-like colour. In ſome indeed no yellowneſs was obſervable, excepting in the white of the eyes, until a little before death, when it increaſed ſurpriſingly quick, eſpecially about the breaſt and neck. There were many ſmall ſpecks, not raiſed above the ſkin, which appeared very thick in the breaſt and neck, but leſs ſo in the extremities, and were of a ſcarlet, purple, or livid colour. In women the menſtrua flowed, and ſometimes exceſſively, though not at their regular period.

There was ſuch a putrid diſſolution of the blood in this ſtadium of the diſeaſe, that, beſides the vomiting of blood formerly mentioned, and the bloody urine ſoon to be taken notice of, there were hæmorrhagies from the noſe, mouth, ears, eyes, and from the parts which were bliſtered with cantharides. Nay, in the year 1739 or 1745, there was one or two inſtances of an hæmorrhage from the ſkin, without any apparent puncture or loſs of any part of the ſcarf-ſkin.

An obſtinate coſtiveneſs continued in ſome; in others, the ſtools were frequent and looſe; in ſome, they were black, liquid, large, and greatly fatiguing; in others, when the ſtools were moderate, even tho' they were black, they gave great relief; in others, again, the ſtools nearly reſembled tar in ſmoothneſs, tenacity, colour and conſiſtence.

The urine was diſcharged in a large quantity, in proportion to the drink retained by the patient: it was pale if the patient was not yellow; but if yellow, then it was of a deep ſaffron-colour: in either caſe, it had a ſediment, or at leaſt a large cloud, which remained at the bottom of the glaſs; in ſome, it was very turbid; in others, it was bloody: and the quantity of blood diſcharged with the urine bore always ſome proportion to the ſtate of the pulſe; when that became fuller, the quantity of blood in the urine was diminiſhed; when the pulſe ſubſided, the bloody urine increaſed, and even returned after it had ceaſed ſome days, ſoon after the pulſe became ſmaller. This ſtage of the diſeaſe continued ſometimes ſeven or eight days before the patient died.

When this ſtadium of the diſeaſe terminated in health, it was by a receſs or abatement of the vomiting, hæmorrhagies, delirium, inquietude, jactations, and icteritious-like ſuffuſion of the ſkin and white of the eyes; while, at the ſame time, the pulſe became fuller, and the patient gained ſtrength, which, after this diſeaſe, was very ſlowly. But when it terminated in death, thoſe ſymptoms not only continued, but ſooner or later increaſed in violence, and were ſucceeded with the following, which may be termed the third *ſtadium* of the diſeaſe, which quickly ended in death. The pulſe, though ſoft, became exceedingly ſmall and unequal; the extremities grew cold, clammy, and livid; the face and lips, in ſome, were fluſhed; in others, they were of a livid colour; the livid ſpecks increaſed ſo faſt, that in ſome the whole breaſt and neck appeared livid; the heart palpitated ſtrongly; the heat about the præcordia increaſed much; the reſpiration became difficult, with frequent ſighing; the patient now becames anxious, and extremely reſtleſs; the ſweat flowed from the face, neck, and breaſt; blood flowed from the mouth, or noſe, or ears, and in ſome from all thoſe parts at once; the deglutition became difficult; the hiccoughs and ſubſultus of the tendons came on, and were frequent; the patients trifled with their fingers, and picked the naps of the bed-clothes; they grew comatous, or were conſtantly delirious. In this terrible ſtate, ſome continued eight, ten, or twelve hours before they died, even after they had been ſo long ſpeechleſs, and without any perceptible pulſation of the arteries in the wriſts; whereas, in all other acute diſeaſes, after the pulſe in the wriſts ceaſes, death follows immediately. When the diſeaſe was very acute, violent convulſions ſeized the unhappy patient, and quickly brought this ſtadium to its fatal end. After death, the livid blotches increaſed faſt, eſpecially about the face, breaſt, and neck, and the putrefaction began very early, or rather increaſed very quickly.

This was the progreſs of this terrible diſeaſe thro' its ſeveral ſtadia. But in hot weather, and when the ſymptoms in the firſt ſtage were very violent, it paſſed thro' thoſe ſtages with ſuch precipitation, that there was but little opportunity of diſtinguiſhing its different ſtadia, the whole tragedy having been finiſhed in leſs than 48 hours. It was remarkable, that, 1. The infection was increaſed by warm and leſſened by cold weather. 2. The ſymptoms in the ſeveral ſtadia were more or leſs violent, according to the heat or coolneſs of the weather. In hot days, the ſymptoms were not only more violent, but in thoſe who ſeemed, in moderate weather, to be on the recovery, or at leaſt in no danger, the ſymptoms were all ſo greatly heightened, when the weather grew conſiderably warmer, as frequently to become fatal. In cool days, the ſymptoms were not only milder, but many, who were apparently in great danger in hot days, were ſaved from the very jaws of death by the weather becoming happily cooler. 3. The diſeaſe was generally more fatal to thoſe who lay in ſmall chambers not conveniently ſituated for the admiſſion of freſh air, to thoſe of an athletic and full habit, to ſtrangers who were natives of a cold climate, to thoſe who had the greateſt dread of it, and to thoſe who before the attack of the diſeaſe had overheated themſelves by exerciſe in the ſun, or by exceſſive drinking of ſtrong liquors; either of which indeed ſeemed to render the body more ſuſceptible of the infection. Laſtly, the diſeaſe proved moſt certainly fatal to valetudinarians, or to thoſe who had been weakened by any previous diſeaſe.

Cauſes of, and perſons ſubject to, this diſeaſe. The yellow fever attacks only Europeans, eſpecially thoſe who have but lately arrived in the hot climates. Negroes are entirely exempt from it, though the mulattoes and tawnies are as liable to be ſeized with it as the whites themſelves. The cauſe of the diſeaſe ſeems to be a particular kind of contagion; but Dr Lind ſeems to be of opinion, that the immediate cauſe of the ſymptoms is a diſpoſition in the glutinous part of the blood to ſeparate from the others, and to become purulent. In ſome perſons who have been bled in the yellow fever, the blood hath been obſerved prodigiouſly viſcid; the craſſamentum covered with a yellow gluten half an inch in thickneſs, and impenetrable to the finger unleſs cut by the nail; the ſerum being at the ſame time of the conſiſtence of a thin ſyrup, and of a deep yellow tinge. This ſerum taſted bitter, and was taken for a compoſition of ſoot. The appearances on diſſection, with his concluſions from them, we ſhall give in his own words: "In a man who died on the eleventh day of a yellow fever, whoſe body emitted no bad ſmell thirty-ſix hours after death, and was ſtill yellow, I found all the bowels of the abdomen ſound; the liver and ſpleen were remarkably ſo; as alſo the ſtomach and inteſtines. There was no ſuffuſion of the bile either in the inteſtines or ſtomach. The gall-bladder, of the natural ſize, contained the uſual quantity of bile, ſomewhat thicker than common, and grumous [B].

"Upon examining further, his diſeaſe was found to have lain wholly on the left ſide, where, within the breaſt, was found near a quart of yellowiſh water, in which were many large flakes of yellowiſh gluten, appearing, by compariſon, preciſely the ſame with the thick pellicle which had covered the blood taken from his arm. Theſe flakes bore in ſeveral places a reſemblance to a membranous ſubſtance beginning to be converted into a purulent jelly. The pleura, both on its inſide and outſide, as alſo its continuation, the inveſting membrane of the lungs, (which in ſome parts was greatly thickened), were covered with cakes of this gluten, hanging in ſome places looſely, in others adhering more ſtrongly; and all in different ſtates of yellow or purulent corruption. The right cavity of the breaſt, and all the other parts of his body, were found entirely free from diſeaſe.

"His complaints had been chiefly in his breaſt; and a ſmall quantity of blood, taken from him two days before his death, was covered with an impenetrable, yellow, thick gluten; the red portion below it being quite looſe.

"In thoſe fevers, I have alſo ſeen the diſeaſe entirely confined to the heart and pericardium. In one who died the tenth day of the fever, without having been yellow, a quantity of pus and purulent cruſts were found mixed with the water of the pericardium. The heart in different places was excoriated, and, together with the inſide of the pericardium, was lined with a thick membranous cake, ſimilar to that already mentioned on the lungs and pleura. In ſome places, this cake had a purulent, in others a gelatinous appearance, exactly reſembling the coagulum of the blood. His complaints had been, a great oppreſſion on the breaſt, and an extreme difficulty of breathing. In a third perſon, who died on the thirteenth day of the fever, above two quarts of pus and purulent jelly were found in the cavity of the belly. The ſource of ſuch an extraordinary quantity of matter was not from any preceding inflammation, nor any impoſthume, that we could diſcover; but from innumerable ulcerations on the ſurface of the inteſtines, omentum, meſentery, and peritonæum. Neither did thoſe ulcerations (or excoriations, as they rather appeared in ſeveral places) ſeem to be the primary fountains of the matter, but to have been occaſioned by its acrimony.

This purulent appearance ſeems to ariſe merely from an extravaſation of one of the component parts of the blood, the gluten or coagulable lymph, blood taken from perſons in a fever, and frequently even from perſons in perfect health, after ſtanding in a clean veſſel for a ſhort time, commonly ſeparates into three diſtinct portions; viz. the ſerum, or water of the blood, the red concreted maſs, and a viſcid pellicle termed the *ſize*, which ſpreads itſelf on the top of the red concretion. Some time ago, when making experiments with the blood taken from perſons in the ſcurvy, I was ſurpriſed to find it often covered with that ſizy cruſt. This induced me to extend my experiments to large quantities of blood from different ſubjects, which I had opportunities of inſpecting at once in ſo large an hoſpital. For this purpoſe I one morning ordered ten patients in the ſcurvy to be bled, taking two ounces from each. A larger quantity was taken, for its inſpection, from two men in health. That day I had occaſion to preſcribe bleeding to a woman in labour, two hours before her delivery; to a girl of ſixteen years of age afflicted with a lunacy proceeding from the chloroſis; to three patients in the rheumatiſm; and to a perſon labouring under an obſtruction of the liver.

"From a nice compariſon, and an examination of the different blood, I found in general, that the more ſize there was on the top, and the thicker and more viſcid this white pellicle ſhewed itſelf, the concretion below it was of a more looſe coherence. This was not ſo obſervable when only ſome ſlight white ſtreaks appeared on the top. But when much ſize had ſeparated itſelf, the red maſs became very ſoft at the bottom of the veſſel, and leſs compact in its different parts, in proportion to their diſtance from the ſurface, towards which this whitiſh portion had aſcended.

From this and from other experiments it appears, that

(B) In others who died in this yellow ſtate, the bile in the gall-bladder was found of a thick ropy conſiſtence like pitch, but the liver never appeared in the leaſt affected. Dr Lind at firſt, in ſeveral bodies, opened the head only; but afterwards judged that all the cavities ought to be inſpected.

that this cruſt or pellicle is the natural gluten or cement of the blood, (called by ſome the *coagulable lymph)*, which becomes ſtrongly diſpoſed, in certain circumſtances and diſeaſes, to ſeparate itſelf. And whereas the ſerum and red concretion are eaſily incorporated together, it will be found, that this glue, after its ſeparation, becomes immiſcible with either. We have, by gentle drying, converted it into a perfectly tough elaſtic membrane; and, by the means of a ſmall portion of the red maſs being left adhering to it, into a ſubſtance reſembling muſcular fleſh; and it is capable of undergoing various changes into corruption, in the ſame manner as either of theſe.

“ Now, I can ſee no reaſon why this gluten, in its morbid ſtate, may not ſeparate itſelf from the circulating blood, and be depoſited in the cavities of the body, as readily as the ſerum does in dropſies; the former having always a leſs diſpoſition than the latter to incorporate with the maſs.

“ In diſſecting perſons who died of fevers in London and Minorca, and where no infection was ſuſpected, appearances ſimilar to theſe have alſo fallen under the inſpection of thoſe accurate anatomiſts Drs Hunter and Cleghorn. Hence it may be preſumed very difficult to diſtinguiſh fevers that are produced by infection, from ſome others. I cannot, however, be induced to think, as thoſe gentlemen ſeem to do, that theſe preternatural ſubſtances which were found in the cavities of the body are the conſequence, but rather that they are the cauſe, of the inflammation and excoriations. I believe theſe ſubſtances to be at firſt diſeaſed extravaſated gluten, and conjecture their different ſtates greatly to depend upon the different times at which they were depoſited.

“ I have remarked, in a variety of dead bodies, three different kinds of extravaſation; theſe occurred in ſuch as had died of the ſcurvy, the conſumption, and of fevers. In the former of thoſe diſeaſes, red coagulated blood is found extravaſated in almoſt all parts of the body, not only into the tela celluloſa, but into the bellies of the muſcles, particularly of the legs and thighs, which often become quite ſtuffed, and even diſtorted, with large grumous maſſes. The inteſtines and meſentery are often ſpotted alſo with extravaſated blood; and I have ſeen large ecchymoſes on the ſtomach. Thoſe appearances, at firſt ſight, reſembled ſo many diſtinct mortifications; and by this appearance ſome anatomiſts have been deceived; but, upon a nice examination, the texture of the parts is found to be ſound and firm. There is likewiſe, in that diſeaſe, ſometimes an extravaſation of water, chiefly collected in, and always, when in the legs, confined to, the tela celluloſa.

“ But whereas, in the limbs of ſcorbutic perſons, it is extremely difficult to make a good diſſection by reaſon of ſuch quantities of extravaſated blood that every-where obſtruct the operator; ſo, on the contrary, the lower extremities of thoſe who have died conſumptive, with ſwelled legs, are, of all other ſubjects, in the beſt ſtate to afford a ſatisfactory view of the muſcles. The water incloſed in their legs having inſinuated itſelf, by paſſing the tela celluloſa, into the ſpaces between the muſcles, the muſcles are eaſily ſeparated from each other; and their ſeveral origins and inſertions may be diſtinctly traced by means of their having been cleanſed and waſhed by the water in the inveſting cellular membrane. Thus there are extravaſations of three ſorts; viz. firſt, the grumous maſs in the ſcurvy; and this I have often remarked where no ſerum was obſerved. Secondly, The ſerum alone in anaſarcous ſwellings. The third and laſt is what was taken notice of in thoſe who died of fevers, being the gluten of the blood, accompanied for the moſt part with ſome ſerum; both of them altogether confined in the large cavities of the body.

“ I conjecture, that in thoſe fevers there is always an ulcerous or purulent diſpoſition in the blood; and that this gluten, or coagulable lymph, is greatly diſeaſed. I have frequently ſeen it have a true purulent appearance ſoon after it was drawn off, when the patient ſeemed not very ill.

“ And I further conjecture, that the miſchief often lies within the breaſt; as alſo that the great benefit derived from the very early application of bliſters, in a great meaſure flows from ſo many ulcerations and vents being timely provided for the free diſcharge of thoſe purulent and tainted particles from the body.

“ If an infection depends, as many have imagined, on the admiſſion of certain foreign particles into the blood, this gluten ſeems to be its more immediate ſeat, and to be primarily affected by it; and a diſcharge of this, as though by waſhing thoſe particles out of the body, tends in a great meaſure to remove the diſeaſe.

“ It is an obſervation of the beſt practical writers, that iſſues and ſetons are moſt excellent preſervatives againſt receiving an infection, nay, even that of the plague itſelf. And indeed a ſuppuration and plentiful diſcharge from a proper ulcer, whether produced by nature or by art, ſeems to open a channel the beſt appropriated for an exit out of the body to ſome of the moſt malignant poiſons. Thus the moſt favourable criſis in the plague, and in moſt peſtilential fevers, happens when nature excites tumours kindly ſuppurating in the groin or arm-pits, by whoſe beneficial and plentiful diſcharges the deadly poiſon is expelled from the conſtitution.

“ I have obſerved it to be amongſt the moſt certain characteriſtics of the worſt fevers, that the bliſters either do not riſe and fill, or diſcharge ſuch yellow, greeniſh, fetid, and highly offenſive ſtuff, that even experienced nurſes could give a pretty certain conjecture, from the bliſters, of the different degrees of malignity in the fever. We have more than once endeavoured to conceal the bad ſtate of ſome patients in the hoſpital; but a diſcovery was always made of their condition in the waſh-houſe, from the linen ſent there ſtained with the diſcharges from the bliſtered parts. And indeed a careful inſpection of the ſtate and diſcharge from the bliſters, together with their effects, furniſhes us, in thoſe diſeaſes, with ſome of the moſt certain diagnoſtics of their nature, and prognoſtics of their event.”

Prognoſis. This diſtemper, where it attacks with violence, is generally fatal; the prognoſis therefore muſt be commonly unfavourable, and always uncertain; neither can any thing more be ſaid on this ſubject, than that an abatement of the ſymptoms already enumerated affords a favourable prognoſtic, and an increaſe of them the contrary.

Cure. The cure of this terrible diſeaſe, according to Dr Hillary, is very eaſy and ſimple. His indications are, 1. To moderate the too great and rapid motion of the fluids, and abate the too great heat and violence of the fever in the two firſt days of the diſeaſe, as much and as ſafely as we can. 2. To evacuate and carry out of the body as much of the putrid bile and other humours, and as expeditiouſly and ſafely, as we poſſibly can. 3. To put a ſtop to the putreſcent diſpoſition of the fluids, and to prevent the gangrenes from coming on by ſuitable antiſeptics.

The firſt indication is anſwered by bleeding, which, in the firſt ſtage of this fever, is abſolutely neceſſary in ſome degree: the quantity to be taken away muſt be determined by the age and ſtrength of the patients, the degree of plethora, fulneſs of the pulſe, &c. When called in at the beginning, he orders 12, 14, 16, 18, or 20 ounces of blood to be taken away on the firſt or ſecond day: and if the patient's pulſe riſes after the firſt bleeding, or if the fever ſtill continue high and the pulſe full, he repeats the bleeding once on the days above-mentioned. But bleeding a third time is ſeldom or never required; neither is bleeding on the third day almoſt ever required; and when it is performed on that day, it ought to be done with the greateſt caution and judgment: neither ſhould a vein be opened after the third day in this fever, unleſs ſome very extraordinary ſymptoms and circumſtances require it; which ſeldom or never happen. On that day, indeed, the pulſe generally ſinks, and the blood is in ſuch a diſſolved ſtate, that bleeding muſt be accounted highly pernicious. Nevertheleſs, it is indiſpenſably neceſſary in the beginning of the diſtemper; and if omitted at that time, the violent heat and motion of the blood increaſe the putreſcence of the humours to ſuch a degree as to bring on the fatal conſequences much ſooner than would otherwiſe have happened.

After bleeding, we come to the ſecond indication of cure, namely, to evacuate as much of the bilious and putrid humours as ſoon and as ſafely as we can. The great irritation of the ſtomach, by the putrid bilious humours conſtantly attending this fever, with almoſt continual retchings and violent vomitings, ſeem to indicate the giving of an emetic; but the coats of the ſtomach are always obſerved to be ſo violently ſtimulated and irritated, and moſt commonly inflamed, by the acrimony of the putreſcent bile, that any emetic, even the moſt mild and gentle, given in the ſmalleſt doſe, brings on an inceſſant vomiting, which continues, in ſpite of all remedies, till a mortification and death enſue. Inſtead of this, it is proper to give large draughts of warm water, which, without any additional ſtimulus to the coats of the ſtomach, evacuates its acrid and putrid contents, commonly with great relief to the patient: the warm water alſo acts as an emollient fotus to the inflamed coats of the ſtomach; and thus abates the inflammation, and prevents the gangrene and mortification from coming on.

After the patient has by this means vomited ſeven or eight times or oftener, and diſcharged a great quantity of yellow and blackiſh bilious matter as they often do, a grain or a grain and a half of Thebaic extract is given in order to procure ſome reſpite from the violent reaching, vomiting, and anxiety. The perſon is deſired to take nothing into his ſtomach for two hours after this, by which means it is ſeldom or never rejected; and thus all the ſymptoms are conſiderably abated, the reaching and vomiting either totally ceaſe or are very much leſſened, ſo that medicines may now be exhibited which the ſtomach would not have retained before. Theſe are cooling acid juleps, or other antiſeptic remedies; but neither nitre nor any of its preparations will commonly be found to ſtay on the ſtomach; nor are the nitrous medicines, or even the common anti-emetic draughts, proper to be given in this diſeaſe, even though they ſhould agree with the ſtomach, on account of their attenuating property.

If the patient has not a ſtool or two after drinking the warm water and vomiting, it is neceſſary to give a gentle purging clyſter; and when ſix or eight hours reſt have been obtained, a gentle antiphlogiſtic and antiſeptic purge, in order to evacuate by ſtool as much of the bilious matter as we poſſibly can. Or if the patient has a purging before, which ſometimes though very rarely happens, a doſe of toaſted rhubarb is given, and an antiſeptic anodyne after it has operated to abate and check the too great purging, but not to ſtop it, as this evacuation has been always obſerved to be of ſervice, provided it is not too violent.

After this indication is completely anſwered, the next is to exhibit ſuch proper antiſeptic medicines as may ſtop the putreſcent diſpoſition of the fluids. Here the bark would ſeem to be the moſt proper remedy; but unluckily the ſtomachs of the patients in this diſeaſe are ſo much irritated, and ſo apt to reject every thing, that the bark cannot be retained in any form whatever. In this caſe Dr Percival recommends columbo-root, the infuſion of which is found to be a powerful antiemetic and antiputreſcent medicine, and might perhaps ſo far alter the ſtate of the ſtomach as to make it bear the bark. Our author, however, who was ignorant of the virtues of columbo, ſubſtituted the *radix ſerpentariæ Virginianæ* with ſucceſs. A ſlight infuſion of this root not only ſat eaſily on the ſtomach of the patients, but moderately raiſed the pulſe and fever, both of which are now too low. The following receipt was found the moſt agreeable and efficacious.

℞. Rad. ſerpent. Virginian. ℥ii.
Croc. Ang. ʒſs. M. et infunde vaſe clauſo in aq. bul. q. per horam unam ut col. ℥vi. Adde aq. menth. ſimp. ℥ii. Vin. Maderienſ. ℥iv. Syr. croc. vel ſyr. e mecon. ℥i. Elix. vitriol. acid. q. ſ. ad grat. acidior. ſapor. Exhibe cochlear. duo vel tria ſingulis horis vel bihoris, vel ſæpius pro re nata.

By the uſe of this medicine, and ſoft light nouriſhment taken in ſmall quantities, the pulſe is uſually kept up and the diſtemper goes off. But if, after taking this a little while, we find that the pulſe does not riſe, but on the contrary that a coldneſs of the extreme parts comes on, the medicines muſt be made more warming, by increaſing the quantity of the ſnake-root and ſaffron, or by adding *vinum croceum*, *confectio cardiaca*, or the like, but not by the uſe of volatile ſpirits and ſalts, which hurt by their ſtimulating and diſſolving qualities. Bliſters our author reprobates in the ſtrongeſt terms, and affirms that he has ſeen the place where a bliſter was applied turned perfectly black and ſphacelated; ſo that if the ſpine and end of the ribs had not hindered, a large ſquare paſſage would have been opened into the cavity of the thorax, had the patient lived a few hours after it.

At the ſame time that the ſtrength of the patient is kept up by the medicines above-mentioned, or by others ſimilar, he gave repeated gentle purgatives every ſecond or third day, and ſometimes, when the ſymptoms are very urgent, every day, for four or five days ſucceſſively. But if proper methods be taken in the beginning of the diſeaſe, it is ſeldom that ſuch a repetition of purging is neceſſary; and the Doctor gives the following remarkable inſtance of the efficacy of this method of treating the diſeaſe: “A young man about 24 years of age, ſurgeon to a Guinea ſhip, was brought into a houſe where I was viſiting a patient; he was of a ſanguine robuſt conſtitution, and a lover of ſpirituous liquors, and had been drunk three days and nights ſucceſſively, and in that condition had run ſeveral races on the hot ſea-ſhore, near noon, with the ſailors, in the heat of the ſun; and to complete his folly, lay the laſt night after that exerciſe, in the open air under a tamarind-tree all the night, where he was ſeized in the morning with all the ſymptoms of this fever, in the moſt violent manner that I have ever ſeen any one. In this condition he was brought to the houſe where I was: his retching and vomiting were ſo inceſſant, that he could not get time to ſay yes, or no, to the queſtions which I aſked, without waiting ſome time for it, each time; his eyes were red and inflamed, attended with a burning heat, as uſual in the beginning of this fever; and he had all the other ſymptoms which attend the firſt attack of this fever, in the moſt violent manner, which I need not repeat. I ordered ℥xvi. of blood to be taken from him, which was very florid, thin, and much diſſolved; and then directed him to drink warm water freely, and to vomit eight or ten times; and after that to take *extract. Thebaic.* gr. jſs. and take nothing for two hours after it. But I being gone, and he finding that he vomited with more eaſe, leſs ſickneſs and retching, with the warm water, than he did before, and being much alarmed at his having this fever, he drank three gallons of the water, and brought up great quantities of yellow and blackiſh bilious matter with it, and waſhed his ſtomach effectually. He then took the *extr. thebaic.* and ſlept three or four hours after it; and the vomiting ceaſed: he took ſome panada, and four hours after that the purge of manna and tamarinds, &c. which gave him eight ſtools, and carried a good deal more of the putrid bilious matter off downwards; and got ſome reſt after it: he then took of an antiſeptic julep often, and light nouriſhment, a little acid, at the intervals; and repeated the purge on the third day, as directed. I being called out of the town, I did not ſee him till the fourth morning after; he ſaid that he had followed my directions; and I found him free from the fever and all its ſymptoms, but weak and low, and his ſkin a little yellow, but much leſs ſo than uſual, unleſs when the bilious matter is thus carried off. I ordered him to take *elix. vitrioli acid. gut.* lx. three or four times a-day for a few days, in an infuſion of mint-leaves with a little ſnake-root, made as tea; which he did, and ſoon recovered perfectly well in ſeven or eight days time.

“This patient being ſeized in ſo violent a manner, and recovering in ſo ſhort a time, and ſo near to the rule which the elegant Celſus recommends, *Citò, tutò, et jucundè*, not only confirmed the above manner of reaſoning on the cauſe and nature of this diſeaſe to be right, but made me determine to follow the ſame method as near as I poſſibly could ever ſince, and I muſt add, with the ſame good ſucceſs alſo, when I am called ſo early on in the diſeaſe that I can ſtrictly purſue it: which is too ſeldom the caſe; for in general the phyſician is not called in till the fourth or fifth day, or after, when the putrid acrid bilious matter is a great part of it carried into the blood, which it has ſo diſſolved and brought its whole maſs into a colliquated, putrid, gangreneſcent ſtate, that the beſt of methods, and the moſt efficacious medicines, however judiciouſly timed and applied, are precarious and uncertain; or ſometimes it is ſo far advanced, that the ableſt phyſician can do no more than tell the relations of the ſick that it is too late, and that they can live but a few hours: for I know no diſeaſe in which the recovery of the patient ſo much depends upon the right or wrong method of treating it, at the very firſt attack or beginning of the diſeaſe, as this fever does: for by thus diſcharging and carrying the putrid, acrimonious, bilious matter, out of the body before much of it is carried into the blood, not only moſt of the bad ſymptoms which attend the ſecond ſtate of the fever are prevented from coming, but the hæmorrhages, and the yellowneſs of the ſkin, &c. alſo, and the fever ſoon taken off too; for I have never ſeen any hæmorrhage come on, and but little yellowneſs, or in ſome none, when they were thus treated.

“And when the laſt ſtage of this fever is come on before we are called in, provided that it is not at the very latter end of it, I have always found that this method of gentle purging, whenever the before-mentioned ſymptoms indicate it, and a liberal uſe of the antiſeptic medicines in the intervals, has been ſo ſucceſsful, that I have ſeen but two patients that have died in this fever during the eight years paſt in which I treated it in this manner; and one of them was ſo weak that he could not take a ſpoonful of any thing, and ſo near his end that he died about two hours after without taking any medicine; and the other killed himſelf by drinking a gallon of cold water in leſs than three hours time, (after taking half an ounce of manna in the morning), which ſtruck ſuch a coldneſs into his whole body that he died; though I have viſited ſeveral every year, and in ſome years a great many: therefore I take the liberty of recommending this method to others, and wiſh it to be as ſucceſsful to all.”

To the genus of *typhus* alſo belong all thoſe fevers attended with very profuſe and debilitating ſweats, and which have ſometimes, not without good reaſon, been accounted plagues; ſuch as the Engliſh ſweating-ſickneſs, Miliaris ſudatoria, *Sauv.* ſp. 5. Ephemera ſudatoria, *Sauv.* ſp. 7. Ephemera Britannica, *Caius de ephem. Britan.*

XXX. SYNOCHUS. Genus VI. 279

Synochus *Sauv.* gen. 81. *Lin.* 13.
Lenta *Lin.* 14.
Phrenitis *Vog.* 18.
Febris continua putrida *Boerh.* 730.

THIS is a contagious diſtemper, being a complication

tion of a ſynocha and typhus; for the deſcription and cure of which, we muſt of conſequence refer to what hath been already ſaid concerning theſe diſeaſes.

XXXI. The *Hectic* Fever.

280 Hectica, *Sauv.* gen. 83. *Lin.* 24. *Vog.* 80. *Sag.* 684.

This diſeaſe is reckoned by Dr Cullen to be merely ſymptomatic; as indeed ſeems very probable, ſeeing it always accompanies abſorptions of pus into the blood from internal ſuppurations, or indeed from ſuch as are external, provided they are very large or of a bad kind.

Deſcription. The beſt, indeed the only proper deſcription of this diſorder we have, is that by Dr Heberden. According to him, the appearance of the hectic fever is not unlike that of the genuine intermittent; from which, however, the diſeaſe is very different in its nature, as well as infinitely more dangerous. In the true intermittent, the three ſtages of cold, heat, and ſweat, are far more diſtinctly marked, the whole fit is much longer, the period which it obſerves is more conſtant and regular, and the intermiſſions are more perfect, than in the hectic fever. For in the latter, even in the cleareſt remiſſion, there is uſually a feveriſh quickneſs perceptible in the pulſe, which ſeldom fails to exceed the utmoſt limit of a healthy one by at leaſt ten ſtrokes in a minute.

The chillneſs of the hectic fever is ſometimes ſucceeded by heat, and ſometimes immediately by a ſweat without any intermediate ſtate of heat. The heat will ſometimes come on without any remarkable chillneſs preceding; and the chillneſs has been obſerved to go off without being followed either by heat or ſweat. The duration of theſe ſtages is ſeldom the ſame for three fits together; and as it is not uncommon for one of them to be wanting, the length of the whole fit muſt vary much more than in the true intermittent; but in general it is much ſhorter.

The hectic patient is little or nothing relieved by the coming on of the ſweat; but is often as anxious and reſtleſs under it, as during the chillneſs and heat. When the ſweat is over, the fever will ſometimes continue; and in the middle of the fever the chillneſs will return; which is a moſt certain mark of this diſeaſe.

The hectic fever will return with great exactneſs, like an intermittent, for two or perhaps three fits; but Dr Heberden informs us, that he does not remember ever to have known it keep the ſame period for four fits ſucceſſively. The paroxyſm will now and then keep off for ten or twelve days; and at other times, eſpecially when the patient is very ill, it will return ſo frequently on the ſame day, that the chillneſs of a new fit will follow immediately the ſweat of the former. It is not unuſual to have many threatenings of a ſhivering return in the ſame day; and ſome degree of drowzineſs is apt to attend the ceſſation of a fit.

The urine in a true intermittent is clear in the fits, and turbid in the intervals; but in the hectic fever it is liable to all kinds of irregularity. It will be equally clear or turbid in both ſtages; or turbid in the fits and clear in the intervals; and ſometimes it will be, as in a true intermittent, clear during the fever, and thick at the going off.

Hectic patients often complain of pains like thoſe of the rheumatiſm, which either affect by turns almoſt every part of the body, or elſe return conſtantly to the ſame part; which is often at a great diſtance from the ſeat of the principal diſorder, and, as far as is known, without any peculiar connection with it. Thoſe pains are ſo violent in ſome patients, as to require a large quantity of opium. As far as Dr Heberden has obſerved, they are more common, where the hectic ariſes from ſome ulcer open to the external air, as in cancers of the face, breaſt, &c. Joined with this fever, and ariſing probably from one common cauſe, he has been ſurpriſed to ſee ſwellings of the limbs, neck, or trunk of the body, riſe up almoſt in an inſtant, as if the part was all at once grown fatter. Theſe ſwellings are not painful, hard, or diſcoloured, and they continue for ſeral hours.

Dr Heberden has ſeen this fever attack thoſe who ſeemed in tolerable health, in a ſudden and violent manner, like a common inflammatory one; and like that, alſo, in a very ſhort time bring them into imminent danger of their lives; after which it has begun to abate, and to afford hopes of a perfect recovery. But though the danger might be over for the preſent, and but little of a fever remain; yet that little has ſoon ſhewed, that it was kept up by ſome great miſchief within, and, proving unconquerable by any remedies, has gradually undermined the health of the patient, and never ceaſed except with his life. This manner of its beginning, however, is extraordinary. It much oftener diſſembles its ſtrength at firſt; and creeps on ſo ſlowly, that the ſubjects of it, tho' they be not perfectly well, yet for ſome months hardly think themſelves ill; complaining only of being ſooner tired with exerciſe than uſual, of want of appetite, and of falling away. But gentle as the ſymptoms may ſeem, if the pulſe be quicker than ordinary, ſo as to have the artery to beat 90 times and perhaps 120 times in a minute, there is the greateſt reaſon to be apprehenſive of the event. In no diſorder, perhaps, is the pulſe of more uſe to guide our judgment than in the hectic fever: yet even here we muſt be upon our guard, and not truſt entirely to this criterion; for one in about 20 patients, with all the worſt ſigns of decay from ſome incurable cauſe, which irreſiſtibly goes on to deſtroy his life, will ſhew not the ſmalleſt degree of quickneſs, nor any other irregularity of the pulſe, to the day of his death.

Cauſes, &c. This fever will ſupervene whenever there is a great collection of matter formed in any part of the body; but it more particularly attends upon the inflammation of a ſcirrhous gland, and even upon one that is ſlight and only juſt beginning; the fever growing worſe in proportion as the gland becomes more inflamed, ulcered, or gangrenous. And ſuch is the lingering nature of thoſe glandular diſorders, that the firſt of thoſe ſtages will continue for many months, and the ſecond for ſome years.

If this ſcirrhous inflammation be external, or in the lungs, or ſome of the abdominal viſcera, where the diſturbance of their functions plainly points out the ſeat of the diſorder, no doubt can be entertained concerning the cauſe of the fever. But if the part affected be not obvious to the ſenſes, and its preciſe functions be not known, the hectic, which is there only part of the train of another diſeaſe, may be miſtaken for the primary or only one.

Lying-in women, on account of the violence ſuſtained in delivery, generally die of this fever. Women of the age of near 50 and upwards are particularly liable to it. For, upon the ceſſation of their natural diſcharge, the glands of the breaſts, ovaries, or womb, too commonly begin to grow ſcirrhous, and proceed to be cancerous. Not only theſe, but the glandular parts of all the abdominal viſcera, are diſpoſed to be affected at this particular time, and to become the ſeats of incurable diſorders.

The injuries done to the ſtomach and liver by hard drinking are attended with ſimilar ſymptoms, and terminate in the ſame manner.

Dr Heberden obſerves, that the ſlighteſt wound by a fine pointed inſtrument is known upon ſome occaſions to bring on the greateſt diſturbances, and the moſt alarming ſymptoms, nay even death itſelf. For not only the wounded part will ſwell and be painful, but by turns almoſt every part of the body; and very diſtant parts have been known to come even to ſuppuration. Theſe ſymptoms are conſtantly accompanied with this irregular intermittent, which laſts as long as any of them remain.

Prognoſis. This anomalous fever is never leſs dangerous than when it belongs to a kindly ſuppuration, into which all the diſeaſed parts are melted down, and for which there is a proper outlet.

The ſymptoms and danger from ſome ſmall punctures, with their concomitant fever, moſt frequently give way in a few days; though in ſome perſons they have continued for two or three months, and in others have proved fatal.

The inflammation of internal ſcirrhous glands, or of thoſe in the breaſts, ſometimes goes off, and the fever, which depended upon it, ceaſes; but it much oftener happens, that it proceeds to cancerous and gangrenous ulcers, and terminates only in death.

Cure. The ſame medicines are not likely always to ſuit a fever which, ariſing from very different cauſes, is attended with ſuch a variety of ſymptoms. A mixture of aſafetida and opium has in ſome perſons ſeemed ſingularly ſerviceable in this fever, when brought on by a ſmall wound; but in moſt other caſes the principal if not the ſole attention of the phyſician muſt be employed in relieving the ſymptoms, by tempering the heat, by preventing both coſtiveneſs and purging, by procuring ſleep, and by checking the ſweats. If, at the ſame time, continues Dr Heberden, he put the body into as good general health as may be, by air, exerciſe, and a proper courſe of mild diet, he can perhaps do nothing better than to leave all the reſt to nature. In ſome few fortunate patients, nature appears to have ſuch reſources, as may afford reaſon for entertaining hopes of cure, even in very bad caſes. For ſome have recovered from this fever attended with every ſymptom of an abdominal viſcus incurably diſeaſed, after all probable methods of relief from art had been tried in vain, and after the fleſh and ſtrength were ſo exhauſted as to leave ſcarce any hopes from nature. In thoſe deplorable circumſtances, there has ariſen a ſwelling not far from the probable ſeat of the diſorder, and yet without any diſcoverable communication with it. This ſwelling has come to an abſceſs; in conſequence of which the pulſe has ſoon returned to its natural ſtate, as have alſo the appetite, fleſh, and ſtrength. What nature has performed in thoſe rare caſes, Dr Heberden acquaints us, he has often endeavoured to imitate, by making iſſues or applying bliſters near the ſeat of the diſeaſe; but he cannot ſay with the ſame ſucceſs.

It ſeems at preſent, Dr Heberden obſerves, the opinion of many practitioners, that the gangrenes will be ſtopped, and ſuppuration become more kindly, by the uſe of bark; and therefore this remedy is always either adviſed or permitted in the irregular fever joined with ſuppurations and gangrenes. But he affirms he does not remember ever to have ſeen any good effect from the bark in this fever unattended with an apparent ulcer; and even in gangrenes it ſo often fails, that in ſucceſsful caſes, where it has been adminiſtered, there muſt be room for ſuſpicion that the ſucceſs was owing to another cauſe. Dr Heberden acknowledges at the ſame time, that he never ſaw any harm from the bark, in theſe, or indeed in any other caſes, except a purging or ſickneſs of no conſequence, where it has happened to diſagree with the ſtomach, or where the latter has been loaded by taking the medicine too faſt, eſpecially in dry boluſes wrapped in wafer-paper.

In hectic illneſſes, where all other means have proved ineffectual, a journey to Bath is uſually propoſed by the friends, and wiſhed for by the ſick; but Dr Heberden juſtly obſerves, that, beſides the fatigue and many inconveniencies of a journey to a dying perſon, the Bath waters are peculiarly hurtful in this fever, which they never fail to increaſe, and thereby aggravate the ſufferings and haſten the death of the patient.

ORDER II. PHLEGMASIÆ.

Phlegmaſiæ membranoſæ et parenchymatoſæ, *Sauv.* Claſs III. Ord. I. II. *Sag.* 605.
Morbi febriles phlogiſtici, *Lin.* Claſs III.
Febres continuæ compoſitæ inflammatoriæ, V.
Morbi acuti febriles, *Boerh.* 770.
Febres inflammatoriæ, *Hoffm.* II. 105. *Junck.* 61.

XXXI. PHLOGOSIS. Genus VIII. Sp. I. 281

Phlegmone auctorum, *Sauv.* gen. 15. *Lin.* 39. *Vog.* 351.
Inflammatio, *Lin.* 231. *Boerh.* 370. *Junck.* 20.

This diſeaſe is a ſynocha fever, accompanied with an inflammation of ſome particular part either external or internal, and conſequently varies very much in its form and the degree of danger attending it, according to the ſituation and functions of the part affected with topical inflammation. To this ſpecies, therefore, belong the following diſeaſes.

Furunculus, *Sauv.* gen. 18. *Vog.* 352.
Terminthus, *Vog.* 381.
Pupula, *Lin.* 275. *Sauv.* p. 6.
Varus, *Vog.* 436. *Lin.* 269. *Sauv.* p. 7.
Bacchia, *Lin.* 270.
Gutta roſea, *Sauv.* gen. 4.
Gutta roſacea, *Vog.* 437.
Hordeolum, *Sauv*, gen. 27. *Lin.* 276. *Vog.* 434.
Otalgia, *Sauv.* gen. 197. *Lin.* 44. *Vog.* 148.
  Dolor otalgicus, *Hoffm.* II. 336.
Parulis, *Vog.* 362.

My-

Maſtodynia, *Sauv.* Gen. 210. *Vog.* 153.
Paronychia, *Sauv.* Gen. 21. *Lin.* 258. *Vog.* 345.
Anthrocace, *Sauv.* Gen. 78. *Lin.* 256.
Pædarthrocace, *Vog.* 419.
Spina ventoſa, *Boerh.* 526.
Phimoſis, *Sauv.* Gen. 22. *Lin.* 297. *Vog.* 348.
Paraphimoſis, *Vog.* 349.

For the cure of inflammations, Dr Cullen lays down the following indications. 1. To remove the remote cauſes when they are evident and continue to operate. 2. To take off the phlogiſtic diatheſis affecting the whole ſyſtem, or the particular part. 3. To take off the ſpaſm of the particular part by remedies applied to the whole ſyſtem or to the part itſelf.

The means of removing the remote cauſes will readily occur, from conſidering the particular nature and circumſtances of the different kinds. Acrid matters muſt be removed, or their action muſt be prevented, by the application of demulcents. Compreſſing and overſtretching powers muſt be taken away; and, from their ſeveral circumſtances, the means of doing ſo will be obvious.

The means of taking off the phlogiſtic diatheſis of the ſyſtem are the ſame with thoſe already mentioned under the cure for ſynocha. The means of taking off the ſpaſm alſo from the particular part, are much the ſame with thoſe already mentioned. Only it is to be remembered, that topical bleedings, ſuch as cupping with ſcarification, applying leeches, &c. are in this caſe much more indicated; and that ſome of the other remedies are to be directed more particularly to the part affected, as ſhall be more fully conſidered when we treat of thoſe diſeaſes attended with particular inflammations.

When a tendency to ſuppuration is perceived, the proper indication is to promote the production of perfect pus as much as poſſible. For this purpoſe various remedies, ſuppoſed to poſſeſs a ſpecific power, have been propoſed: but it does not appear that any of them are poſſeſſed of a virtue of this kind; and, in our author's opinion, all that can be done is to favour the ſuppuration by ſuch applications as may ſupport a moderate heat in the part, by ſome tenacity confine the perſpiration, and by an emollient quality may weaken the cohesion of the teguments, and favour their eroſion. As all abſceſſes are occaſioned by the effuſion of fluids, and as in the caſe of certain effuſions a ſuppuration becomes not only unavoidable but deſireable, it may be ſuppoſed that moſt of the means of procuring a reſolution by diminiſhing the force of circulation, &c. ought to be avoided. But as we obſerve on the one hand, that a certain degree of increaſed impetus, or of the original ſymptoms of inflammation, is neceſſary to produce a proper ſuppuration; ſo it is then eſpecially neceſſary to avoid thoſe means of reſolution which may diminiſh too much the force of circulation. And on the other hand, as the impetus of the blood, when violent, is found to prevent the proper ſuppuration; ſo, in ſuch caſes, though a tendency to ſuppuration may have begun, it may be proper to continue thoſe means of reſolution which moderate the force of the circulation. With reſpect to the opening of abſceſſes when completely formed, ſee the article SURGERY.

When an inflammation has taken a tendency to gangrene, that event is to be prevented by every poſſible means; and theſe muſt be different according to the nature of the ſeveral cauſes: but after a gangrene has in ſome degree taken place, it can be cured only by the ſeparation of the dead from the living parts. This in certain circumſtances can be performed, and moſt properly, by the knife. In other caſes it can be done by exciting a ſuppuratory inflammation on the verge of the living part, whereby its coheſion with the dead part may be every where broken off, ſo that the latter may fall off by itſelf. While this is doing it is proper to prevent the further putrefaction of the part, and its ſpreading wider. For this purpoſe various antiſeptic applications have been propoſed: but Dr Cullen is of opinion, that while the teguments are entire, theſe applications can hardly have any effect; and therefore, that the fundamental procedure muſt be to ſcarify the part ſo as to reach the living ſubſtance, and, by the wounds made there, to excite the ſuppuration required. By the ſame inciſions alſo, we give acceſs to antiſeptics, which may both prevent the progreſs of the putrefaction in the dead, and excite the inflammation neceſſary on the verge of the living parts.

When the gangrene proceeds from the loſs of tone, and when this communicated to the neighbouring parts prevents that inflammation which, as we have ſaid, is requiſite to the ſeparation of the dead parts from the living, it will be neceſſary to obviate this loſs of tone by tonic medicines given internally; and for this purpoſe the Peruvian bark has been found to be moſt effectual. But when the gangrene ariſes from the violence of inflammation, the bark may not only fail of proving a remedy, but may do harm: for its power as a tonic is eſpecially ſuited to thoſe caſes of gangrene which proceed from an original loſs of tone, as in the caſe of palſy and œdema; or in thoſe caſes where a loſs of tone takes place while the original inflammatory ſymptoms are removed.

On the other hand, Mr Bell is of opinion, that inciſions made with a view to admit the operation of antiſeptic remedies in gangrenes, as well as the remedies themſelves, muſt be pernicious by reaſon of the irritation they occaſion, and by the danger of wounding blood-veſſels, nerves, tendons, &c. alſo by allowing a free paſſage for the putreſcent fluids into the parts not yet affected. And unleſs they are carried ſo deep as to reach the ſound parts, applications of the antiſeptic kind can never have any effect in anſwering the purpoſe for which they were intended. The ſame author alſo remarks, that all the advantages commonly obſerved from the great number of applications recommended for gangrene, are obtained with more eaſe, and generally too with more certainty, from the uſe of ſome gentle ſtimulating embrocation; which, by exciting a ſlight irritation upon the ſurface, eſpecially when aſſiſted by a free uſe of the bark, produces, for the moſt part, ſuch a degree of inflammation as is wiſhed for. With this view he has frequently known a weak ſolution of ſal ammoniac, a drachm of the ſalt to two ounces of vinegar and ſix of water, form a mixture of a very proper ſtrength for every purpoſe of this kind. But the degree of ſtimulus can eaſily be either increaſed or diminiſhed according to circumſtances, by uſing a larger or ſmaller proportion of the ſalt.

Whenever, either by the means recommended, or by a natural exertion of the ſyſtem, a ſlight inflammation appears between the diſeaſed and ſound parts, we may in general, with tolerable certainty, expect, that in due time the parts will be ſeparated; and when a full ſuppuration is once fairly eſtabliſhed, there can be little doubt that the mortified parts will be ſoon and eaſily removed.

A complete ſeparation being effected, the remaining ſore is to be treated in the manner deſcribed under the article Surgery; with a proper attention, at the ſame time, to the ſupport of the general ſyſtem by the continuance of a nouriſhing diet, the bark, and ſuch quantities of wine as may ſeem neceſſary.

With regard to the bark, however, it is proper to take notice of another caſe of mortification in which it is likewiſe unſucceſsful, as well as in that attended with an high degree of inflammation; and that is, in thoſe mortifications of the toes and feet, common in old people, or which ariſe from any cauſe increaſing the rigidity of the veſſels to ſuch a degree as to prevent the motion of the fluids through them. In this caſe Mr Pott has diſcovered, that all kinds of warm applications are very unſucceſsful; but that by the free uſe of opium, together with ſedatives and relaxants externally applied, he has frequently ſeen the tumefaction of the feet and ancles ſubſide, the ſkin recover its natural colour, and all the mortified parts ſeparate in a very ſhort time, leaving a clean ſore. But as to ſcarifications, or any other attempt to ſeparate artificially the mortified from the ſound parts, he thinks them very prejudicial, by giving pain; which is generally of itſelf violent in this diſeaſe, and which ſeems to have a great ſhare in producing the other evils.

The other terminations of inflammation either do not admit of any treatment, except that of preventing them by reſolution, or properly belong to the article Surgery.

282 XXXII. *Phlogoſis* Erythema. Sp. II.

- Erythema, *Sauv.* gen. 11.
  - Eryſipelas auctorum, *Vog.* 343.
  - Hieropyr. *N.* 344.
- Anthrax, *Sauv.* gen. 19. *Lin.* 272. *Vog.* 353.
  - Carbo et carbunculus auctorum.
  - Erythema gangrænoſum, *Sauv.* ſp. 7.
- Erythema a frigore.
  - Erythema pernio, *Sauv.* ſp. 4.
  - Pernio, *Lin.* 259. *Vog.* 350.
- Erythema ambuſtio, *Sauv.* ſp. 2.
  - Eryſipelas ambuſtio, *Sauv.* ſp. 4.
  - Combuſtura, *Lin.* 245.
  - Combuſtio, *Boerh.* 476.
  - Encauſis, *Vog.* 347.
- Erythema ab acri alieno applicato.
  - Eryſipelas Chinenſe, *Sauv.* ſp. 7.
- Erythema ab acri inquilino.
  - Erythema intertrigo, *Sauv.* ſp. 5.
  - Intertrigo, *Lin.* 247. *Vog.* 502.
- Erythema a compreſſione.
  - Erythema paratrima, *Sauv.* ſp. 6.
- Erythema a punctura, *Sauv.* ſp. 9.
  - Eryſipelas a veſpis, *Sauv.* ſp. 19.
  - Pſydracia a veſpis, *Sauv.* ſp. 2.
- Erythema cum phlegmone.
  - Eryſipelas phlegmonodes auctorum.
- Erythema cum œdemate.
  - Eryſipelas ſymptomaticum, *Sauv.* ſp. 6.

The word *erythema* doth not apply to any primary diſeaſe, but to a great number of thoſe cutaneous inflammations denominated by another general term, *viz.* the *eryſipelas*, or *St Anthony*'s *fire*; and which being commonly ſymptomatic of ſome other inflammation or diſorder, are to be removed only by removing the primary diſeaſe: the erythema is found ſcarcely to bear any kind of warm application to itſelf; and is very apt, if treated as a primary diſeaſe, to terminate in a gangrene of the part affected, or other diſorder ſtill more dangerous. The difference between the *phlegmon* or preceding ſpecies, and *erythema*, according to Dr Cullen, is, that, in the former, the inflammation ſeems particularly to affect the veſſels on the internal ſurface of the ſkin, communicating with the lax adjacent cellular texture; whence a more copious effuſion, and that too of ſerum convertible into pus, takes place. In the erythema the affection is of the veſſels on the external ſurface of the ſkin communicating with the *rete mucoſum*, which does not admit of any effuſion but what ſeparates the cuticle and gives occaſion to the formation of a bliſter, while the ſmaller ſize of the veſſels admits only of the effuſion of a thin fluid very ſeldom convertible into pus. For the cure of the fever attended with erythema, or *eryſipelas*, ſee below; and for the external treatment of erythema, ſee the article Surgery.

XXXIII. OPHTHALMIA, or *Inflammation* of the Eyes. Genus VIII. Sp. I. 1. A. B. 2. Sp. II. 1. 2.

- Ophthalmia, *Sauv.* gen. 196. *Lin.* 43. *Vog.* 341. 283
  Sag. 231. *Junck.* 24.
- Chemoſis, *Vog.* 46.
- Ophthalmites, *Vog.* 47.
- Inflammatio oculorum, *Hoffm.* II. 165.
- Ophthalmia taraxis, *Sauv.* ſp. 1.
- Ophthalmia humida, *Sauv.* ſp. 8.
- Ophthalmia chemoſis, *Sauv.* ſp. 12.
- Ophthalmia eryſipelatoſa, *Sauv.* ſp. 7.
- Ophthalmia puſtuloſa, *Sauv.* ſp. 6.
- Ophthalmia phlyctænodes, *Sauv.* ſp. 21.
- Ophthalmia choroideæ, *Sauv.* ſp. 13.
- Ophthalmia tenebricoſa, *Sauv.* ſp. 10.
- Ophthalmia trachoma, *Sauv.* ſp. 4.
- Ophthalmia ſicca, *Sauv.* ſp. 5.
- Ophthalmia angularis, *Sauv.* ſp. 14.
- Ophthalmia tuberculoſa, *Sauv.* ſp. 3.
- Ophthalmia trichiaſis, *Sauv.* ſp. 2.
- Ophthalmia cancroſa, *Sauv.* ſp. 15.
- Ophthalmia a ſynechia, *Sauv.* ſp. 16.
- Ophthalmia a lagophthalmo, *Sauv.* ſp. 17.
- Ophthalmia ab elcomate, *Sauv.* ſp. 18.
- Ophthalmia ab ungue, *Sauv.* ſp. 19.
- Ophthalmia a corneæ fiſtula, *Sauv.* ſp. 20.
- Ophthalmia uveæ, *Sauv.* ſp. 22.
- Ophthalmia metaſtatica, *Sauv.* ſp. 24.
- Ophthalmia ſcrophuloſa, *Sauv.* ſp. 9.
- Ophthalmia ſyphilitica, *Sauv.* ſp. 11.
- Ophthalmia febricoſa, *Sauv.* ſp. 23.

From reading this long liſt of diſtinctions which authors have invented in the ophthalmia, it is evident, that by far the greateſt part of them are ſymptomatic, or merely the conſequences of other diſorders preſent in the habit; and therefore the remedies muſt be directed towards the removal of theſe primary diſorders; and when they are gone the ophthalmia will be removed of courſe. Dr Cullen obſerves, that the inflammation of the eye may be conſidered as of two kinds; according as it is ſeated in the membranes of the ball of the eye, when it is named *ophthalmia membranarum;* or as it is ſeated in the ſebaceous glands placed in the tarſus, or edges of the eye-lids, in which caſe it may be termed *ophthalmia tarſi* *. Theſe two kinds are very frequently connected together, as the one may excite the other; but they are ſtill to be diſtinguiſhed according as the one or the other may happen to be the primary affection.

* See the
ſology.

1. The inflammation of the *membranes* of the eye affects eſpecially, and moſt frequently, the adnata, and appears in a turgeſcence of its veſſels; ſo that the red veſſels which are naturally there, become not only increaſed in ſize, but many more appear than in a natural ſtate. This turgeſcence of the veſſels is attended with pain, eſpecially upon the motion of the ball of the eye; and this irritation, like every other, applied to the ſurface of the eye, produces an effuſion of tears from the lacrymal gland.

The inflammation commonly, and chiefly, affects the adnata ſpread on the anterior part of the bulb of the eye; but uſually ſpreads alſo along the continuation of the adnata on the inſide of the palpebræ; and as that is extended on the tarſus palpebrarum, the excretories of the ſebaceous glands opening there are alſo frequently affected. When the affection of the adnata is conſiderable, it may be communicated to the ſubjacent membranes of the eye, and even to the retina itſelf, which thereby acquires ſo great ſenſibility, that every impreſſion of light becomes painful. The inflammation of the membranes of the eye is in different degrees, according as the adnata is more or leſs affected, or according as the inflammation is either of the adnata alone, or of the ſubjacent membranes alſo; and upon theſe differences, different ſpecies have been eſtabliſhed; but they ſeem all to differ only in degree, and are to be cured by the ſame remedies more or leſs employed.

The proximate cauſe of ophthalmia is not different from that of inflammation in general; and the different circumſtances of ophthalmia may be explained by the difference of its remote cauſes, and by the different parts of the eye which it happens to affect; as may be underſtood from what has been already ſaid. We ſhall therefore proceed to give an account of the method of cure.

The ophthalmia membranarum requires the remedies proper for inflammation in general; and when the deeper-ſeated membranes are affected, and eſpecially when a pyrexia is preſent, large general bleedings may be neceſſary. But this laſt is ſeldom the caſe; and, for the moſt part, the ophthalmia is an affection purely local, accompanied with little or no pyrexia. General bleedings therefore have little effect upon it, and the cure is chiefly to be obtained by topical bleedings, that is, blood drawn from the veſſels near the inflamed part; and opening the jugular vein, or the temporal artery, may be conſidered as in ſome meaſure of this kind. It is commonly ſufficient to apply a number of leeches round the eye; and it is perhaps ſtill better to draw blood by cupping and ſcarifying upon the temples. In many caſes, the moſt effectual remedy is to ſcarify the internal ſurface of the inferior eye-lid, and to cut the turgid veſſels upon the adnata itſelf.

Beſides blood-letting, purging, as a remedy ſuited to inflammation in general, has been conſidered as peculiarly adapted to inflammation in any part of the head, and therefore to ophthalmia; and it is ſometimes uſeful: but, for the reaſons given before with reſpect to general bleeding, purging in the caſe of ophthalmia does not prove uſeful in any proportion to the evacuation excited.—For relaxing the ſpaſm in the part, and taking off the determination of the fluids to it, bliſtering near the part has commonly been found uſeful.

Ophthalmia, as an external inflammation, admits of topical applications. All thoſe, however, which increaſe the heat and relax the veſſels of the part, prove hurtful; and the admiſſion of cool air to the eye, and the application of cooling and aſtringent medicines, which at the ſame time do not produce irritation, prove uſeful. In the cure of this diſtemper indeed, all irritation muſt carefully be avoided, particularly that of light; and the only certain means of doing this is by keeping the patient in a very dark chamber.

2. In the *ophthalmia tarſi*, the ſame medicines may be neceſſary as are already recommended for the ophthalmia membranarum. However, as the ophthalmia tarſi may often depend upon an acrimony depoſited in the ſebaceous glands of the part, ſo it may require various internal remedies according to the variety of the acrimony in fault; for which we muſt refer to the conſideration of ſcrophula, ſyphilis, or other diſeaſes with which this ophthalmia may be connected; and where theſe ſhall not be evident, certain remedies more generally adapted to the evacuation of acrimony, ſuch as mercury, may be employed. In the ophthalmia tarſi, it almoſt conſtantly happens that ſome ulcerations are formed on the tarſus. Theſe require the application of mercury and copper, which alone may ſometimes cure the whole affection; and they may be uſeful even when the diſeaſe depends upon a fault of the whole ſyſtem.

Both in the ophthalmia membranarum, and in the ophthalmia tarſi, it is neceſſary to obviate that glueing together of the eye-lids which commonly happens in ſleep; and which may be done by inſinuating a little of any mild unctuous medicine between the eye-lids before the patient ſhall go to ſleep.

The ſlighter kinds of inflammations from the duſt or the ſun, may be removed by fomenting with warm milk and water, adding a ſmall portion of brandy; and by anointing the borders of the eye-lids with *unguentum tutiæ*, or the like, at night, eſpecially when thoſe parts are excoriated and ſore. But in bad caſes, after the inflammation has yielded a little to evacuations, the *coagulum aluminoſum* of the London diſpenſatory ſpread on lint, and applied at bed-time, has been found the beſt external remedy. Before the uſe of the latter, the ſolution of white vitriol is preſcribed with advantage; and in violent pains it is of ſervice to foment frequently with a decoction of white poppy-heads.

284 XXXIV. *Phrenitis*, PHRENZY, or Inflammation of the Brain. Genus IX.

Phrenitis, *Sauv.* gen. 101. *Lin.* 25. *Sag.* gen. 301. *Boerh.* 771. *Hoffm.* II. 131. *Junck.* 63.
Phreniſmus, *Vog.* 45.
Cephalitis, *Sauv.* gen. 109. *Sag.* gen. 310.
Sphaceliſmus, *Lin.* 32.
Phrenitis vera, *Sauv.* ſp. 1. *Boerh.* 771.
Phrenitis idiopathica, *Junck.* 63.
Cephalalgia inflammatoria, *Sauv.* ſp. 9.
Cephalitis ſpontanea, *Sauv.* ſp. 3.
Cephalitis ſiriaſis, *Sauv.* ſp. 4.
Siriaſis, *Vog.* 34.
Cephalitis Littriana, *Sauv.* ſp. 5.

Dr Cullen obſerves, that the true phrenitis, or inflammation of the membranes or ſubſtance of the brain, is very rare as an original diſeaſe: but, as a ſymptom of others, much more frequent; of which the following kinds are enumerated by different authors.

Phrenitis ſynochi pleuriticæ, *Sauv.* ſp. 2.
Phrenitis ſynochi ſanguineæ, *Sauv.* ſp. 4.
Phrenitis calentura, *Sauv.* ſp. 11.
Phrenitis Indica, *Sauv.* ſp. 12.
Cephalitis Ægyptiaca, *Sauv.* ſp. 1.
Cephalitis epidemica anno 1510, *Sauv.* ſp. 6.
Cephalitis verminoſa, *Sauv.* ſp. 7.
Cephalitis cerebelli, *Sauv.* ſp. 8.
Phrenitis miliaris, *Sauv.* ſp. 3.
Phrenitis varioloſa, *Sauv.* ſp. 5.
Phrenitis morbilloſa, *Sauv.* ſp. 6.
Phrenitis a plica, *Sauv.* ſp. 8.
Phrenitis aphrodiſiaca, *Sauv.* ſp. 9.
Phrenitis a tarantiſmo, *Sauv.* ſp. 14.
Phrenitis hydrophobica, *Sauv.* ſp. 15.
Phrenitis a dolore, *Sauv.* ſp. 13.
Cephalitis traumatica, *Sauv.* ſp. 2.

Deſcription. The ſigns of an impending phrenzy are, Immoderate and continual watchings; or if any ſleep is obtained, it is diſturbed with dreams and gives no refreſhment; acute and laſting pains, eſpecially in the hind-part of the head and neck; little thirſt; a great and ſlow reſpiration, as if proceeding from the bottom of the breaſt; the pulſe ſometimes ſmall and ſlow, ſometimes quick and frequent; a ſuppreſſion of urine; and forgetfulneſs. The diſtemper when preſent may be known by the following ſigns: The veins of the head ſwell, and the temporal arteries throb much; the eyes are fixed, ſparkle, and have a fierce aſpect; the ſpeech is incoherent, and the patient behaves very roughly to the by-ſtanders, with furious attempts to get out of bed, not indeed continually, but returning as it were by paroxyſms; the tongue is dry, rough, yellow, or black; there is a coldneſs of the external parts; a proneneſs to anger; chattering of the teeth; a trembling of the hands, with which the ſick ſeem to be gathering ſomething, and actually do gather the naps off the bed-clothes.

Cauſes of, and perſons ſubject to, this diſorder. People of a hot and bilious habit of body, and ſuch as are of a paſſionate diſpoſition, are apt to fall into a phrenzy. The ſame danger are thoſe in who uſe much ſpices, or are given to hot and ſpirituous liquors; who have been expoſed more than uſual to the ſun, or obliged to undergo immoderate ſtudies or watchings; who are ſubject to head-achs, or in whom ſome cuſtomary hæmorrhages have been ſtopped; or the diſeaſe may ariſe from ſome injury offered to the head externally. Dr Pringle obſerves, that the phrenitis, when conſidered as an original diſeaſe, is apt to attack ſoldiers in the ſummer-ſeaſon when they are expoſed to the heat of the ſun, and eſpecially when aſleep and in liquor. A ſymptomatic phrenzy is alſo more frequent in the army than elſewhere, on account of the violence done to all fevers when the ſick are carried in waggons from the camp to an hoſpital, where the very noiſe or light alone would be ſufficient, with more delicate natures, to raiſe a phrenzy.

Prognoſis. Every kind of phrenzy, whether idiopathic or ſymptomatic, is attended with a high degree of danger; and, unleſs removed before the fourth day, a gangrene or ſphacelus of the meninges readily takes place, and the patient dies delirious. The following are the moſt fatal ſymptoms: A continual and furious delirium, with watching; thin watery urine, white fæces, the urine and ſtools running off involuntarily, or a total ſuppreſſion of theſe excretions; a ready diſpoſition to become ſtupid, or to faint; trembling, rigor, chattering of the teeth, convulſions, hickup, coldneſs of the extremities, trembling of the tongue, ſhrill voice, a ſudden ceſſation of pain, with apparent tranquillity. The following are favourable: Sweats, apparently critical, breaking out; a ſeeming effort of nature to terminate the diſeaſe by a diarrhœa; a large hæmorrhage from the noſe; ſwellings of the glands behind the ears; hæmorrhoids.

Cure. This is not different from the cure of inflammation in general; but here the moſt powerful remedies are to be immediately employed. Large and repeated bleedings are eſpecially neceſſary; and theſe too taken from veſſels as near as poſſible to the part affected. The opening the temporal artery has been recommended, and with ſome reaſon: but as the practice is attended with ſome inconveniencies, perhaps the opening of the jugular veins may prove more effectual; with which, however, may be joined the drawing of blood from the temples by cupping and ſcarifying. It is alſo probable, that purging may be of more uſe in this than in ſome other inflammatory affections, as it may operate by revulſion. For the ſame purpoſe of revulſion, warm pediluvia are a remedy, but rather ambiguous. The taking off the force of the blood in the veſſels of the head by an erect poſture is generally uſeful. Bliſtering is alſo uſeful, but chiefly when applied near to the part affected. In ſhort, every part of the antiphlogiſtic regimen is here neceſſary, and particularly the admiſſion of cold air. Even cold ſubſtances applied to the head have been found uſeful; and the application of ſuch refrigerants as vinegar is certainly proper. Opiates are hurtful in every inflammatory ſtate of the brain. On the whole, however, it muſt be remarked, that practitioners are very uncertain with regard to the means proper to be uſed in this diſeaſe; and the more ſo, that the ſymptoms by which the diſeaſe is commonly judged to be preſent, appear ſometimes without any internal inflammation; and on the other hand, diſſections have ſhewn that the brain has been inflamed, where few of the peculiar ſymptoms of inflammation had appeared before.

Genus X. CYNANCHE.

Cynanche, *Sauv.* gen. 110. *Lin.* 33. *Sag.* gen. 300.
Angina, *Vog.* 49. *Hoffm.* II. 125. *Junck.* 30.
Angina inflammatoria, *Boerh.* 798.

285 XXXV. The *Inflammatory* Quinsy, or Cynanche *Tonſillaris*. Sp. I.

Cynanche tonſillaris, *Sauv.* ſp. 1.
Anginæ inflammatoriæ ſp. 5. *Boerh.* 805.

Deſcription. This is an inflammation of the mucous membrane of the fauces, affecting principally that congeries of mucous follicles which forms the tonſils; and from thence ſpreading along the velum and uvula, ſo as frequently to affect every part of the mucous membrane. The diſeaſe appears by ſome tumour and redneſs of the parts; is attended with a painful and difficult deglutition; a troubleſome clammineſs of the mouth and throat; a frequent, but difficult, excretion of mucus; and the whole is accompanied with pyrexia. The inflammation and tumour are commonly at firſt moſt conſiderable in one tonſil; and afterwards, abating in that, increaſe in the other. This diſeaſe is not contagious.

Cauſes of, and perſons ſubject to, the diſorder. This diſeaſe is commonly occaſioned by cold externally applied, particularly about the neck. It affects eſpecially the young and ſanguine; and a diſpoſition to it is often acquired by habit. It occurs eſpecially in the ſpring and autumn, when viciſſitudes of heat and cold frequently take place.

Prognoſis. This ſpecies of quinſy terminates frequently by reſolution, ſometimes by ſuppuration, but hardly ever by gangrene; though in ſome caſes ſloughy ſpots appear on the fauces: the prognoſis therefore is generally favourable.

Cure. Here ſome bleeding may be neceſſary; but large and general evacuations are ſeldom beneficial. The opening of the ranular veins ſeems to be an inſignificant remedy, according to Dr Cullen, but is recommended as efficacious by Sir John Pringle; and leeches ſet on the external fauces are ſerviceable. The inflammation may be often relieved by moderate aſtringents, and particularly by acids applied to the parts affected. In many caſes, nothing has been found to give more relief than the vapour of warm water received into the fauces.

Beſides theſe, bliſtering and rubefacient medicines are applied with ſucceſs, as well as antiphlogiſtic purgatives; and every part of the antiphlogiſtic regimen is to be obſerved, except the application of cold. Sir John Pringle recommends a thick piece of flannel moiſtened with two parts of common ſweet oil, and one of ſpirit-of-hartſhorn, (or in a larger proportion, if the ſkin will bear it), applied to the throat, and renewed once every four or five hoors. By this means the neck, and ſometimes the whole body, is put into a ſweat, which, after bleeding, either carries off or leſſens the inflammation. When the diſeaſe takes a tendency to ſuppuration, nothing will be more uſeful than the taking into the fauces the ſteams of warm water. When the abſceſs is attended with much ſwelling, if it break not ſpontaneouſly, it ought to be opened by a lancet; and this does not require much caution, as even the inflammatory ſtate may be relieved by ſome ſcarification of the tonſils. Dr Cullen has never ſeen any caſe requiring bronchotomy.

286 XXXVI. The *malignant, putrid,* or *ulcerous* Sore Throat, Sp. II.

Cynanche maligna, *Sauv.* ſp. 3.
Cynanche ulceroſa, *Sauv.* var. a. Journ. de Med. 1758.
Cynanche gangrænoſa, *Sauv.* var. b. Journ. de Med. 1756.
Ulcera faucium et gutturis anginoſa et lethalia, Hiſpanis *Garrotillo, Lud. Mercat.* conſult. 24.
Angina ulceroſa, *Fothergill*'s Account of the ulcerous ſore throat, edit. 1751. *Huxham* on the malignant ulcerous ſore throat, from 1751 to 1753.
Febris epidemica cum angina ulcuſculoſa, *Douglas*'s Practical Hiſtory, Boſton 1736.
Angina epidemica, *Ruſſel*, Oecon. Natur. p. 105.
Angina gangrænoſa, *Withering*'s Diſſert. Inaug. Edinb. 1766.
Angina ſuffocativa, *Bard's* Inquiry, New-York 1771.
Angina maligna, *Johnſtone* on the malignant Angina, Worceſter 1779.

Hiſtory and deſcription. This diſtemper is not particularly deſcribed by the ancient phyſicians; though perhaps the Syrian and Egyptian ulcers mentioned by Aretæus Cappadox, and the peſtilent ulcerated tonſils we read of in Aëtius Amiderus, were of this nature. Some of the ſcarlet fevers mentioned by Morton ſeem alſo to have approached near to it. In the beginning of the laſt century, a diſeaſe exactly ſimilar to this is deſcribed by the phyſicians of that time, as raging with great violence and mortality in Spain and ſome parts of Italy; but no account of it was publiſhed in this country till the year 1748, when a very accurate one was drawn up by Dr Fothergill, and in 1752 by Dr Huxham. The latter obſerves, that this diſeaſe was preceded by long, cold, and wet ſeaſons; by which probably the bodies of people were debilitated, and more apt to receive contagion, which poſſibly alſo might be produced by the ſtagnant and putrid waters.

The attack of this diſeaſe was very different in different perſons. Sometimes a rigor, with fulneſs and ſoreneſs of the throat, and painful ſtiffneſs of the neck, were the firſt ſymptoms complained of. Sometimes alternate chills and heats, with ſome degree of giddineſs, drowſineſs, or head-ach, uſhered in the diſtemper. It ſeized others with much more feveriſh ſymptoms; great pain of the head, back, and limbs; a vaſt oppreſſion of the præcordia, and continual ſighing. Some grown perſons went about for ſome days in a drooping ſtate, with much uneaſineſs and anxiety, till at laſt they were obliged to take to their beds. —Thus various was the diſeaſe, ſays our author, at the onſet. But it commonly began with chills and heats, load and pain of the head, ſoreneſs of throat, and hoarſeneſs; ſome cough, ſickneſs at ſtomach, frequent vomiting and purging, in children eſpecially, which were ſometimes very ſevere; though a contrary ſtate was more common to the adult. There was in all a very great dejection of ſpirits, very ſudden weakneſs, great heavineſs on the breaſt, and faintneſs, from the very beginning. The pulſe in general was quick, ſmall, and fluttering, though ſometimes heavy and undulating. The urine was commonly pale, thin, and crude; however, in many grown perſons, it was paſſed in ſmall quantities, and high-coloured, or like turbid whey. The eyes were heavy, reddiſh, and as it were weeping; the countenance very often full, fluſhed, and bloated, though ſometimes pale, and ſunk.

How ſlight ſoever the diſorder might appear in the day-time, at night the ſymptoms became greatly aggravated, and the feveriſh habit very much increaſed, nay, ſometimes a delirium came on the very firſt night; and this exacerbation conſtantly returned through the whole courſe of the diſeaſe. Indeed, when it was conſiderably on the decline, our author ſays he has been often pretty much ſurpriſed to find his patient had paſſed the whole night in a phrenzy, whom he had left tolerably cool and ſedate in the day.

Some few hours after the ſeizure, and ſometimes cotemporary with it, a ſwelling and ſoreneſs of the throat was perceived, and the tonſils became very tumid and inflamed, and many times the parotid and maxillary glands ſwelled very much, and very ſuddenly, even at the very beginning; ſometimes ſo much as even to threaten ſtrangulation. The fauces alſo very ſoon appeared of a high florid red, or rather of a bright crimſon, colour, very ſhining and gloſſy; and moſt commonly on the uvula, tonſils, velum palatinum, and back part of the pharynx, ſeveral whitiſh or aſh-coloured ſpots appeared ſcattered up and down, which oftentimes increaſed very faſt, and ſoon covered one or both the tonſils, uvula, &c. thoſe in the event proved ſloughs of ſuperficial ulcers, (which ſometimes, however, eat very deep into the parts). The tongue at this time, though only white and moiſt at the top, was very foul at the root, and covered with a thick yellowiſh or brown coat. The breath alſo now began to be very nauſeous; which offenſive ſmell increaſed hourly, and in ſome became at length intolerable, and that too ſometimes even to the patients themſelves.

The ſecond or third day every ſymptom became much more aggravated, and the fever much more conſiderable; and thoſe that had ſtruggled with it tolerably well for thirty or forty hours, were forced to ſubmit. The reſtleſſneſs and anxiety greatly increaſed, as well as the difficulty in ſwallowing. The head was very giddy, pained, and loaded; there was generally more or leſs of a delirium; ſometimes a pervigilium and perpetual phrenzy, though others lay very ſtupid, but often ſtarting and muttering to themſelves. The ſkin was very hot, dry, and rough; there was very rarely any diſpoſition to ſweat. The urine was pale, thin, crude; often yellowiſh and turbid. Sometimes a vomiting was urgent, and ſometimes a very great looſeneſs, in children particularly. The ſloughs were now much enlarged, and of a darker colour, and the ſurrounding parts tended much more to a livid hue. The breathing became much more difficult; with a kind of a rattling ſtertor, as if the patient was actually ſtrangling, the voice being exceeding hoarſe and hollow, exactly reſembling that from venereal ulcers in the fauces: this noiſe in ſpeaking and breathing was ſo peculiar, that any perſon in the leaſt converſant with the diſeaſe might eaſily know it by this odd noiſe; from whence indeed the Spaniſh phyſicians gave it the name of *garotillo*, expreſſing the noiſe ſuch make as are ſtrangling with a rope. Our author never obſerved in one of them the ſhrill, barking noiſe, that we frequently hear in inflammatory quinſies. The breath of all the diſeaſed was very nauſeous; of ſome inſufferably fetid, eſpecially in the advance of the diſtemper to a criſis; and many about the fourth or fifth day ſpit off a vaſt quantity of ſtinking, purulent mucus, tinged ſometimes with blood; and ſometimes the matter was quite livid, and of an abominable ſmell. The noſtrils likewiſe in many were greatly inflamed and excoriated, continually dripping down a moſt ſharp ichor, or ſanious matter, ſo exceſſively acrid, that it not only corroded the lips, cheeks, and hands of the children that laboured under the diſeaſe, but even the fingers and arms of the very nurſes that attended them; as this ulceration of the noſtrils came on, it commonly cauſed an almoſt inceſſant ſneezing in the children; but few adults were affected with it, at leaſt to any conſiderable degree. It was ſurpriſing what quantities of matter ſome children diſcharged this way, which they would often rub on their face, hands, and arms, and bliſter them all over. A ſudden ſtoppage of this rheum from the mouth and noſtrils actually choaked ſeveral children; and ſome ſwallowed ſuch quantities of it, as occaſioned excoriations of the inteſtines, violent gripings, dyſentery, &c. nay, even excoriations of the anus and buttocks. Not only the noſtrils, fauces, &c. were greatly affected by this extremely ſharp matter, but the wind-pipe itſelf was ſometimes much corroded by it, and pieces of its internal membrane were ſpit up, with much blood and corruption; and the patients lingered on for a conſiderable time, and at length died tabid; though there were more frequent inſtances of its falling ſuddenly and violently on the lungs, and killing in a peripneumonic manner.

The Doctor was aſtoniſhed ſometimes to ſee ſeveral ſwallow with tolerable eaſe, though the tumour of the tonſils and throat, the quantity of thick mucus, and the rattling noiſe in breathing, were very terrible; which he thinks pretty clearly ſhews, that this malignant quinſy was more from the acrimony and abundance of the humors than the violence of the inflammation.

Moſt commonly the angina came on before the exanthemata; but many times the cuticular eruption appeared before the ſore-throat, and was ſometimes very conſiderable, though there was little or no pain in the fauces: on the contrary, a very ſevere angina ſeized ſome patients, that had no manner of eruption; and yet, even in theſe caſes, a very great itching and deſquamation of the ſkin ſometimes enſued; but this was chiefly in grown perſons, very rarely in children. In general, however, a very conſiderable effloreſcence broke out on the ſurface of the body, particularly in children; and it moſt commonly happened the ſecond, third, or fourth day: ſometimes it was partial, ſometimes it covered almoſt the whole body, though very ſeldom the face: ſometimes it was of an eryſipelatous kind; ſometimes more puſtular: the puſtules frequently very eminent, and of a deep, fiery, red colour, particularly on the breaſt and arms; but oftentimes they were very ſmall, and might be better felt than ſeen, and gave a very odd kind of roughneſs to the ſkin. The colour of the effloreſcence was commonly of a crimſon hue, or as if the ſkin had been ſmeared over with juice of raſberries, and this even to the fingers ends; and the ſkin appeared inflamed and ſwoln, as it were; the arms, hands, and fingers, were often evidently ſo, and very ſtiff, and ſomewhat painful. This crimſon colour of the ſkin ſeemed indeed peculiar to this diſeaſe. Though the eruption ſeldom failed of giving ſome manifeſt relief to the patient, as to anxiety, ſickneſs at ſtomach, vomiting, purging, &c. yet there was obſerved an univerſal fiery eruption on ſome perſons, without the leaſt abatement of the ſymptoms, nay, almoſt every ſymptom ſeemed more aggravated, particularly the fever, load at breaſt, anxiety, delirium; and our author knew more than one or two patients die in the moſt raging phrenzy, covered with the moſt univerſal fiery raſh he ever ſaw: ſo that, as in the highly confluent ſmall-pox, it ſeemed only to denote the quantity of the diſeaſe, as he terms it.

He had under his care a young gentleman, about twelve years of age, whoſe tongue, fauces, and tonſils, were as black as ink, and he ſwallowed with extreme difficulty; he continually ſpit off immenſe quantities of a black, ſanious, and very fetid matter, for at leaſt eight or ten days:—about the ſeventh day, his fever being ſomewhat abated, he fell into a bloody dyſentery, though the bloody, ſanious, fetid expectoration ſtill continued, with a moſt violent cough. He at length indeed got over it, to the very great ſurpriſe of every one that ſaw him. Now, in this patient, a ſevere and univerſal a raſh broke out upon him the ſecond and third day; and the itching of his ſkin was ſo intolerable, that he tore it all over his body in a moſt ſhocking manner: yet this very great and timely eruption very little relieved his fever and phrenzy, or prevented the other dreadful ſymptoms mentioned.

An early and kindly eruption, however, was moſt commonly a very good omen; and, when ſucceeded by a very copious deſquamation of the cuticle, one of the moſt favourable ſymptoms that occurred; but when the eruption turned of a duſky or livid colour, or prematurely or ſuddenly receded, every ſymptom grew worſe, and the utmoſt danger impended, eſpecially if purple, or black, ſpots appeared up and down, as ſometimes happened; the urine grew limpid, and convulſions came on, or a fatal ſuffocation ſoon cloſed the tragedy.

The diſeaſe was generally at the height about the fifth or ſixth day in young perſons, in the elder not ſo ſoon; and the criſis many times was not till the eleventh or twelfth, and then very imperfect: ſome adults, however, were carried off in two or three days; the diſtemper either falling on the lungs, and killing in a peripneumonic manner, or on the brain; and the patient either died raving or comatoſe. In ſome, the diſeaſe brought on a very troubleſome cough, purulent expectoration, hæmoptoë, and hectic; in which they lingered on for ſeveral weeks, and then died tabid.

If a gentle eaſy ſweat came on the third or fourth day; if the pulſe became more ſlow, firm, and equal; if the ſloughs of the fauces caſt off in a kindly manner, and appeared at the bottom tolerably clean and florid; if the breathing was more ſoft and free, and ſome degree of vigour and quickneſs returned in the eyes; all was well, and a ſalutary criſis followed ſoon by a continuance of the ſweat, and a turbid, ſubſiding, farinaceous urine, a plentiful expectoration, and a very large deſquamation of the cuticle. But if a rigor come on, and the exanthemata ſuddenly diſappeared or turned livid; if the pulſe grew very ſmall and quick, and the ſkin remained hot and parched as it were, the breathing more difficult, the eyes dead and glaſſy, the urine pale and limpid, a phrenzy or coma ſucceeded, with a coldiſh clammy ſweat on the face or extremities; life was deſpaired of; eſpecially if a ſingultus and choaking or gulping in the throat, attended with ſudden, liquid, involuntary, livid ſtools, intolerably fetid. In ſome few patients our author obſerved, ſome time before the fatal period, not only the face bloated, ſallow, ſhining, and greaſy as it were, but the whole neck vaſtly ſwoln, and of a cadaverous look; and even the whole body became in ſome degree œdematous; and the impreſſion of a finger would remain fixed in a part, the ſkin not riſing again as uſual; an indication that the blood ſtagnated in the capillaries, and that the elaſticity of the fibres was quite loſt.

Prognoſis. This may be eaſily gathered from the above deſcription. The malignant and putrid tendency of the diſeaſe is evident, and an increaſe of the ſymptoms which ariſe from that putreſcent diſpoſition of the body muſt give an unfavourable prognoſtic; as, on the contrary, a decreaſe of theſe, and an apparent increaſe of the *vis vitæ*, are favourable: in general, what is obſerved to be favourable in the nervous and putrid malignant fevers, is alſo favourable in this, and *vice verſa*.

Cure. In this the ſeptic tendency of the diſeaſe is chiefly to be kept in view. The debility with which it is attended renders all evacuations by bleeding and purging improper, except in a few inſtances where the debility is leſs, and the inflammatory ſymptoms more conſiderable. The fauces are to be preſerved from the effects of the acrid matter poured out upon them, and are therefore to be frequently waſhed out by antiſeptic gargles or injections; and the putreſcent ſtate of the whole ſyſtem ſhould be guarded againſt and corrected by internal antiſeptics, eſpecially by the Peruvian bark given in the beginning and continued through the courſe of the diſeaſe. Emetics, both by vomiting and nauſeating, prove uſeful. When any conſiderable tumour occurs, bliſters applied externally will be of ſervice, and in any caſe may be proper to moderate the inflammation.

XXXVII. *Cynanche* TRACHEALIS, commonly called the *Croup*. Sp. III.

Cynanche trachealis, *Sauv.* ſp. 5.
Cynanche laryngea auctorum, *Eller* de cogn. et curand. morb. ſect. 7.
Anginæ inflammatoriæ ſp. 1. *Boerh.* 801.
Angina latens et difficilis, *Dodon.* obſ. 18.
Angina interna, *Tulp.* l. 1. obſ. 51.
Angina pernicioſa, *Greg. Horſt.* Obſ. l. iii. obſ. 1.
Suffocatio ſtridula, *Home* on the Croup.
Aſthma infantum, *Millar* on the Aſthma and Chincough.
Aſthma infantum ſpaſmodicum, *Ruſh*, Diſſertation, Lon-

London 1770.

Cynanche ſtridula, *Crawford* Diſſert. Inaug. Edin. 1771.

Angina epidemica anno 1743. *Molloy* apud *Rutty's* Hiſtory of the weather.

Morbus ſtrangulatorius, *Starr*, Phil. Tranſ. nº 495.

Morbus truculentus infantum, *Francoſ.* ad Viadrum et in vicinia graſſans ann. 1758. C. a Bergen. A nova. N. C. tom. ii. p. 157.

Catarrhus ſuffocativus *Barbadenſis* ann. 1758. *Hillary's* Diſeaſes of Barbadoes.

Angina inflammatoria infantum, *Ruſſel*, Oecon. nat. p. 70.

Angina polypoſa ſive membranacea *Michaelis*, Argentorati 1778, et auctores ab eo allegati.

The beſt deſcription of this diſeaſe we have in Dr Cullen's Practice of Phyſic. He informs us, that it conſiſts in an inflammation of the glottis, larynx, or upper part of the trachea, whether it affect the membranes of theſe parts or the muſcles adjoining. It may ariſe firſt in theſe parts, and continue to ſubſiſt in them alone; or it may come to affect theſe parts from the cynanche tonſillaris, or maligna, ſpreading into them.

In either way it has been a rare occurrence, and few inſtances of it have been marked and recorded by phyſicians. It is to be known by a peculiar croaking ſound of the voice, by difficult reſpiration, with a ſenſe of ſtraitening about the larynx, and by a pyrexia attending it.

From the nature of theſe ſymptoms, and from the diſſection of the bodies of perſons who died of this diſeaſe, there is no doubt of its being of an inflammatory kind. It does not, however, always run the courſe of inflammatory affections; but frequently produces ſuch an obſtruction of the paſſage of the air, as ſuffocates, and thereby proves ſuddenly fatal.

If we judge rightly of the nature of this diſeaſe, it will be obvious, that the cure of it requires the moſt powerful remedies of inflammation to be employed upon the very firſt appearance of the ſymptoms. When a ſuffocation is threatened, whether any remedies can be employed to prevent it, we have not had experience to determine.

The accounts which books have hitherto given us of inflammations of the larynx, and the parts connected with it, amount to what we have now ſaid; and the inſtances recorded have, almoſt all of them, happened in adult perſons: but there is a peculiar affection of this kind happening to infants, which has been little taken notice of till lately. Dr Home is the firſt who has given any diſtinct account of this diſeaſe; but, ſince he wrote, ſeveral other authors have taken notice of it, and have given different opinions concerning it.

This diſeaſe ſeldom attacks infants till after they have been weaned. After this period, the younger they are, the more they are liable to the diſeaſe. The frequency of it becomes leſs as children become more advanced; and there are no inſtances of children above 12 years of age being affected with it. It attacks children of the midland countries, as well as thoſe who live near the ſea. It does not appear to be contagious, and its attacks are frequently repeated in the ſame child. It is often manifeſtly the effect of cold applied to the body; and therefore appears moſt frequently in the winter and ſpring ſeaſons. It very commonly comes on with the ordinary ſymptoms of a catarrh; but ſometimes the peculiar ſymptoms of the diſeaſe ſhew themſelves at the very firſt.

Theſe peculiar ſymptoms are the following: A hoarſeneſs, with ſome ſhrillneſs and ringing ſound, both in ſpeaking and coughing, as if the noiſe came from a brazen tube. At the ſame time, there is a ſenſe of pain about the larynx, ſome difficulty of reſpiration, with a whizzing ſound in inſpiration, as if the paſſage of the air were ſtraitened. The cough which attends it, is commonly dry; and if any thing be ſpit up, it is a matter of a purulent appearance, and ſometimes films reſembling portions of a membrane. With all theſe ſymptoms, there is a frequency of pulſe, a reſtleſſneſs, and an uneaſy ſenſe of heat. When the internal fauces are viewed, they are ſometimes without any appearance of inflammation; but frequently a redneſs, and even ſwelling, appears; and ſometimes there is an appearance of matter like to that rejected by coughing, together with the ſymptoms now deſcribed, and particularly with great difficulty of breathing, and a ſenſe of ſtrangling in the fauces, by which the patient is ſometimes ſuddenly taken off.

Many diſſections have been made of infants who had died of this diſeaſe, and almoſt conſtantly there has appeared a preternatural membrane lining the whole internal ſurface of the upper part of the trachea, and extending in the ſame manner downwards into ſome of its ramifications. This preternatural membrane may be eaſily ſeparated, and ſometimes has been found ſeparated in part, from the ſubjacent proper membrane of the trachea. This laſt is commonly found entire, that is, without any appearance of eroſion or ulceration; but it frequently ſhows the veſtiges of inflammation, and is covered by a matter reſembling pus, like to that rejected by coughing; and very often a matter of the ſame kind is found in the bronchiæ, ſometimes in conſiderable quantity.

From the remote cauſes of this diſeaſe; from the catarrhal ſymptoms commonly attending it; from the pyrexia conſtantly preſent with it; from the ſame kind of preternatural membrane being found in the trachea when the cynanche maligna is communicated to it; and from the veſtiges of inflammation on the trachea diſcovered upon diſſection; we muſt conclude, that this diſeaſe conſiſts in an inflammatory affection of the mucous membrane of the larynx and trachea, producing an exudation analogous to that found on the ſurface of inflamed viſcera, and appearing partly in a membranous cruſt, and partly in a fluid reſembling pus.

Though this diſeaſe conſiſts in an inflammatory affection, it does not commonly end either in ſuppuration or gangrene. The troubleſome circumſtance of it ſeems to conſiſt in a ſpaſm of the muſcles of the glottis, threatening ſuffocation.

When this diſeaſe terminates in health, it is by reſolution of the inflammation, by a ceaſing of the ſpaſm of the glottis, by an expectoration of the matter exuding from the trachea, and of the cruſts formed there, and frequently it ends without any expectoration, or at leaſt with ſuch only as attends an ordinary catarrh.

When the diſeaſe ends fatally, it is by a ſuffocation ſeemingly depending upon a ſpaſm affecting the glottis; but ſometimes, probably, depending upon a quantity of matter filling the bronchiæ.

As we ſuppoſe the diſeaſe to be an inflammatory affection, ſo we attempt the cure of it by the uſual remedies of inflammation, and which for the moſt part we have found effectual. Bleeding, both general and topical, has often given immediate relief, and, by being repeated, has entirely cured the diſeaſe. Bliſtering alſo, near to the part affected, has been found uſeful. Upon the firſt attack of the diſeaſe, vomiting, immediately after bleeding, ſeems to be of conſiderable uſe, and ſometimes ſuddenly removes the diſeaſe. In every ſtage of the diſeaſe, the antiphlogiſtic regimen is neceſſary, and particularly the frequent uſe of laxative glyſters. Tho' we ſuppoſe that a ſpaſm affecting the glottis is often fatal in this diſeaſe, we have not found antiſpaſmodic medicines to be of any uſe.

287 XXXVIII. *Cynanche* PHARYNGEA. Sp. IV.

Cynanche pharyngea, *Sauv.* ſp. 6. *Eller* de cogn. et cur. ſect. 7.
Anginæ inflammatoriæ ſp. 4. *Boerh.* 804.

This is not materially different from the cynanche tonſillaris; only that the inflammation is ſaid to begin in the pharynx, though Dr Cullen ſays he never knew an inſtance of it. The ſymptoms are almoſt the ſame, and the cure is preciſely ſo with that of the cynanche tonſillaris.

288 XXXIX. *Cynanche* PAROTIDÆA. Sp. V.

Cynanche parotidæa, *Sauv.* ſp. 14. *Gallis* OREILLONS et OURLES, *Tiſſot* Avis au peuple, n° 116. *Encyclopedie*, au mot *Oreillons*.
Angina externa, *Anglis* the MUMPS, *Ruſſel* œcon. natur. p. 114. *Scotis* the BRANKS.
Catarrhus bellinſulanus, *Sauv.* ſp. 4.
Oſſervazioni di *Girol. Gaſpari*, Venez. 1731.
Oſſervazioni di *Targ. Tozetti*, Racolta 1ma, p. 176.

This is a diſeaſe well known to the vulgar, but little taken notice of by medical writers. It is often epidemic, and manifeſtly contagious. It comes on with the uſual ſymptoms of pyrexia, which is ſoon after attended with a conſiderable tumour of the external fauces and neck. The ſwelling appears firſt as a glandular moveable tumour at the corner of the lower jaw; but it ſoon becomes uniformly diffuſed over a great part of the neck, ſometimes on one ſide only, but more commonly on both. The ſwelling continues to increaſe till the fourth day; but from that period it declines, and in a few days more goes off entirely. As the ſwelling of the fauces recedes, ſome tumour affects the teſticles in the male ſex, or the breaſts in the female. Theſe tumours are ſometimes large, hard, and ſomewhat painful; but are ſeldom either very painful, or of long continuance. The pyrexia attending this diſeaſe is commonly ſlight, and goes off with the ſwelling of the fauces; but ſometimes, when the ſwelling of the teſticles does not ſucceed to that of the fauces, or when the one or the other has been ſuddenly repreſſed, the pyrexia becomes more conſiderable, is often attended with delirium, and has ſometimes proved fatal.

As this diſeaſe commonly runs its courſe without either dangerous or troubleſome ſymptoms, ſo it hardly requires any remedies. An antiphlogiſtic regimen, and avoiding cold, are all that will be commonly neceſſary. But when, upon the receding of the ſwellings, the pyrexia comes to be conſiderable, and threatens an affection of the brain, it will be proper, by warm fomentations, to bring back the ſwelling; and by vomiting, bleeding, or bliſtering, to obviate the conſequences of its abſence.

GENUS XL. PNEUMONIA.

Febris pneumonica, *Hoffm.* II. 136.

XLI. PERIPNEUMONIA, *Peripneumony*, or Inflammation of the Lungs. Sp. I. 289

Peripneumonia, *Sauv.* gen. 112. *Lin.* 34. *Vog.* 51. *Sag.* gen. 311. *Boerh.* 820. *Juncker* 67.
Peripneumonia pura ſive vera Auctorum, *Sauv.* ſp. 1.
Peripneumonia gaſtrica, *Sauv.* ſp. 11. *Morgagn.* de cauſ. et ſed. Epiſt. xx. art. 30, 31.
Peripneumonia catarrhalis, *Sauv.* ſp. 6.
Peripneumonia notha, *Sydenh.* ſect. 6. cap. 4. *Boerh.* 867. *Morgagni* de cauſ. et ſed. Epiſt. xxi. 11.—15.
Peripneumonia putrida, *Sauv.* ſp. 2.
Peripneumonia ardens, *Sauv.* ſp. 3.
Peripneumonia maligna, *Sauv.* ſp. 4.
Peripneumonia typhodes, *Sauv.* ſp. 5.
Amphimerina peripneumonia, *Sauv.* ſp. 15.

XLI. PLEURITIS, the *Pleuriſy*, or Inflammation of the Pleura. Sp. II. 290

Pleuritis, *Sauv.* gen. 103. *Lin.* 27. *Vog.* 56. *Sag.* gen. 303. *Boerh.* 875. *Junck.* 67.
Paraphreneſis, *Sauv.* gen. 102. *Lin.* 26.
Paraphrenitis, *Vog.* 55. *Boerh.* 907.
Diaphragmitis, *Sag.* gen. 304.
Pleuritis vera, *Sauv.* ſp. 1. *Boerh.* 875. *Verna* princeps morb. acut. pleuritis, l. 1. cap. 2. 3. *Zeviani* della parapleuritide, cap. 3. *Morgag.* de ſed. et cauſ. morb. Epiſt. xx. art. 56. xxi. 45. *Wendt* de pleuritide, apud *Sandifort*, theſ. ii.
Pleuritis pulmonis, *Sauv.* ſp. 2. *Zevian.* dell. parapleur. iii. 28, &c.
Pleuripneumonia, pleuro-peripneumonia, peripneumo-pleuritis Auctorum. *Baronius* de pleuri-pneumonia. Ill. *Halleri* opuſcul. patholog. obſ. 13. *Morgagn.* de ſed. et cauſ. Epiſt. xx. and xxi. paſſim. *Cleghorn*, Minorca, p. 247. *Triller* de pleuritide, aph. 1, 2, 3. cap. i. 8. *Huxham*, Diſſert. on pleuriſies, &c. chap. i. Ill. *Pringle*, Diſ. of the army.
Pleuritis convulſiv. *Sauv.* ſp. 13. *Bianch.* Hiſt. hep. vol. i. p. 234.
Pleuritis hydrothoracica, *Sauv.* ſp. 15. *Morgag.* de cauſ. et ſed. xx. 34.
Pleuritis dorſalis, *Sauv.* ſp. 3. *Verna*, p. iii. cap. 8.
Pleuritis mediaſtini, *Sauv.* ſp. 3. *P. Sal. Div.* de affect. part. cap. 6. *Friend*, Hiſt. med. de Avenzoare.
Pleuritis mediaſtina, *Vog.* 52.
Pleuritis pericardii, *Sauv.* ſp. 5. *Verna*, p. iii. cap. 9.
Parapleuritis, *Zeviani* della parapleuritide.
Pleurodyne parapleuritis, *Sauv.* ſp. 19.
Paraphreneſis diaphragmatica, *Sauv.* ſp. 1. *De Haen.* Rat. med. i. 7. iii. p. 31.

Paraphreneſis pleuritica, *Sauv.* ſp. 2.
Paraphreneſis hepatica, *Sauv.* ſp. 3.

Under the general head of *Pneumonia*, Dr Cullen comprehends all inflammations of the thoracic viſcera, or membrane lining the inſide of that cavity; as the ſymptoms do not ſufficiently diſtinguiſh the ſeat of the affection, nor does a difference in the ſituation of the affected place make any difference in the cure.

Deſcription. Pneumonic inflammation, however various in the ſeat, always diſcovers itſelf by pyrexia, difficult breathing, cough, and pain in ſome part of the thorax. It almoſt always comes on with a cold ſtage, and is accompanied with the other ſymptoms of pyrexia; though in ſome few inſtances the pulſe may not be more frequent, nor the heat of the body increaſed beyond what is natural. Sometimes the pyrexia is from the beginning accompanied with the other ſymptoms; but frequently is formed ſome hours before them, and particularly before the pain is felt. The pulſe for the moſt part is frequent, full, ſtrong, hard, and quick; but in a few inſtances, eſpecially in the advanced ſtate of the diſeaſe, it is weak, ſoft, and at the ſame time irregular. The difficulty of breathing is moſt conſiderable in inſpiration, both becauſe the lungs do not eaſily admit of a full dilatation, and becauſe the dilatation increaſes the pain attending the diſeaſe. The difficulty of breathing is alſo greater when the patient is in one poſture of the body rather than another. It is generally greater when he lies on the ſide affected; though ſometimes the contrary happens. Very often the patient cannot lie eaſy upon either ſide, and can find eaſe only when lying on the back; and ſometimes he cannot breathe eaſily, except when in ſomewhat of an erect poſture. The cough, in different caſes, is more or leſs urgent or painful. It is ſometimes dry, or without any expectoration, eſpecially in the beginning of the diſeaſe; but more commonly it is, even from the firſt, moiſt, and the matter ſpit up various both in conſiſtence and colour, and frequently it is ſtreaked with blood. The pain is alſo different in different caſes, and felt in different parts of the thorax, but moſt frequently in one ſide. It has been ſaid to affect the right ſide more frequently than the left; but this is uncertain, and we are ſure that the left ſide has been very often affected. Sometimes it is felt as if it was under the ſternum; ſometimes in the back between the ſhoulders; and when in the ſides, its place has been higher or lower, more forward or backward; but the place of all others moſt frequently affected is about the ſixth or ſeventh rib, near the middle of its length, or a little more forward. The pain is often ſevere and pungent; but ſometimes more dull and obtuſe, with a ſenſe of weight rather than of pain. It is moſt eſpecially ſevere and pungent, when occupying the place laſt mentioned. For the moſt part it continues fixed in one part, but ſometimes ſhoots from the ſide to the ſcapula on one hand, or to the ſternum and clavicle of the other.

Dr Cullen ſuppoſes that the diſeaſe is always ſeated, or at leaſt begins, in ſome part of the pleura, taking that membrane in its greateſt extent, as now commonly underſtood; that is, as covering not only the internal ſurface of the cavity of the thorax, but alſo as forming the mediaſtinum, and as extended over the pericardium, and over the whole ſurface of the lungs. But as the ſymptoms never clearly indicate where the ſeat of the diſeaſe is, there is but little foundation for the different names by which it hath been diſtinguiſhed. The term *pleuriſy* is improperly limited to that inflammation which begins in and chiefly affects the pleura coſtalis. This our author thinks is a rare occurrence; and that the pneumonia much more frequently begins in the pleura inveſting the lungs, producing all the ſymptoms which belong to what hath been called the *pleuritis vera.* The word *peripneumony* hath been applied to an inflammation beginning in the parenchyma, or cellular texture of the lungs, and having its ſeat chiefly there. But to our author it ſeems very doubtful if any acute inflammation of the lungs, or any diſeaſe which hath been called *peripneumony*, be of that kind. It ſeems probable, that every acute inflammation begins in membranous parts; and in every diſſection of perſons dead of peripneumony, the external membrane of the lungs, or ſome part of the pleura, has appeared to have been conſiderably affected. An inflammation of the pleura covering the upper ſurface of the diaphragm, has been diſtinguiſhed by the appellation of *paraphrenitis*, as ſuppoſed to be attended with the peculiar ſymptoms of delirium, *riſus ſardonicus*, and other convulſive motions: but it is certain, that an inflammation of that portion of the pleura, and affecting alſo even the muſcular ſubſtance of the diaphragm, has often taken place without any of the ſymptoms abovementioned; and neither the diſſections which have fallen under our author's obſervation, nor any accounts of diſſections, ſupport the opinion that an inflammation of the pleura covering the diaphragm is attended with delirium more commonly than any other pneumonic inflammation. It is to be obſerved, however, that though the inflammation may begin in one particular part of the pleura, the morbid affection is commonly communicated to the whole extent of the membrane.

The pneumonic inflammation, like others, may terminate by reſolution, ſuppuration, or gangrene: but it has alſo a termination peculiar to itſelf; namely, when it is attended with an effuſion of blood into the cellular texture of the lungs, which, ſoon interrupting the circulation of the blood through the viſcus, produces a fatal ſuffocation. This indeed appears to be the moſt common termination of pneumonic inflammation when it ends fatally; for upon the diſſection of almoſt every perſon dead of this diſeaſe, it appears that ſuch an effuſion had happened. From the ſame diſſections we learn, that pneumonic inflammation commonly produces an exſudation from the internal ſurface of the pleura, which appears partly as a ſoft viſcid cruſt, often of a compact membranous form covering every where the ſurface of the pleura, and particularly thoſe parts where the lungs adhere to the pleura coſtalis, or mediaſtinum; and this cruſt ſeems always to be the cement of ſuch adheſion. The ſame exſudation ſhews itſelf alſo by a quantity of a ſerous fluid commonly found in the cavity of the thorax; and ſome exſudation or effuſion is uſually found to have been made into the cavity of the pericardium. It ſeems likewiſe probable, that an effuſion of this kind is ſometimes made into the cavity of the bronchiæ; for, in ſome perſons who have died after labouring under a pneumonic inflammation for a few days only, the bronchiæ have been found filled with a conſiderable quantity of ſerous and thickiſh fluid, which muſt be conſidered rather as the effuſion abovementioned, having had its thinner parts taken off by reſpiration, than as a pus ſo ſuddenly formed in the inflamed part. It is, however, not improbable, that this effuſion, as well as that made into the cavities of the thorax and pericardium, may be a matter of the ſame kind with that which in other inflammations is poured into the cellular texture of the parts inflamed, and there converted into pus; but in the thorax and pericardium it does not always put on this appearance, becauſe the cruſt covering the ſurface prevents the abſorption of the thinner part. This abſorption, however, may be compenſated in the bronchiæ, by the drying power of the air; and therefore the effuſion into them may aſſume a more purulent appearance. In many caſes of pneumonic inflammation, when the expectoration is very copious, it is difficult to ſuppoſe that the whole proceeds from the mucous follicles of the bronchiæ, and it ſeems probable that a great part of it may come from the effuſed ſerous fluid juſt mentioned; and this too will account for the appearance of the expectoration being ſo often purulent. Perhaps the ſame thing will account for that purulent matter found in the bronchiæ, which Mr de Haen ſays he had often obſerved when there was no ulceration in the lungs, and which he accounts for in a very ſtrange manner, namely, by ſuppoſing a pus formed in the circulating blood.

Dr Cullen is of opinion, that the effuſion into the bronchiæ above-mentioned often concurs with the effuſion of red blood into the cellular ſubſtance of the lungs to occaſion the fatal ſuffocation which frequently terminates peripneumony: that the effuſion of ſerum alone may have this effect: and that the ſerum poured out in a certain quantity, rather than any debility in the powers of expectoration, is the cauſe of that ceſſation of ſpitting which precedes the fatal event; for in many caſes the expectoration has ceaſed, when no other ſymptoms of debility have appeared, and when, upon diſſection, the bronchiæ have been full of liquid matter. Nay, it is even probable, that in ſome caſes ſuch an effuſion may take place without any ſymptoms of violent inflammation; and in other caſes the effuſion taking place may ſeem to remove the ſymptoms of inflammation which had appeared before, and thus account for thoſe unexpected fatal terminations which have ſometimes happened.

Pneumonic inflammation ſeldom terminates by reſolution, without being attended with ſome evident evacuation. An hæmorrhage from the noſe happening on ſome of the firſt days of the diſeaſe has ſometimes put an end to it; and it is ſaid, that an evacuation from the hæmorrhoidal veins, a bilious evacuation by ſtool, and an evacuation of urine with a copious ſediment, have ſeverally had the ſame effect; but ſuch occurrences have been rare. The evacuation moſt frequently attending, and ſeeming to have the greateſt effect in promoting reſolution, is an expectoration of a thick, white, or yellowiſh matter, a little ſtreaked with blood, copious, and brought up without much or violent coughing. Very frequently the reſolution of this diſeaſe is attended with, and perhaps produced by, a ſweat which is warm, fluid, copious, over the whole body, and attended with an abatement of the frequency of the pulſe, heat of the body, and other febrile ſymptoms.

Cauſes of, and perſons ſubject to, the diſorder. The remote cauſe of pneumonic inflammation is commonly cold applied to the body, obſtructing perſpiration, and determining to the lungs, while at the ſame time the lungs themſelves are expoſed to the action of cold. Theſe circumſtances operate chiefly when an inflammatory diatheſis prevails in the ſyſtem; and therefore upon perſons of the greateſt vigour, in cold climates, in the winter ſeaſon, and particularly in the ſpring, when viciſſitudes of heat and cold are frequent. This diſeaſe, however, may ariſe in any ſeaſon when ſuch varieties take place. Other remote cauſes alſo may have a ſhare in producing this diſtemper; ſuch as every means of obſtructing, ſtraining, or otherwiſe injuring, the pneumonic organs. The pneumonic inflammation has ſometimes been ſo much an epidemic, that it hath been ſuſpected of depending on a ſpecific contagion; but Dr Cullen never met with an inſtance of its being contagious.

Prognoſis. In pneumonic inflammations, a violent pyrexia is always dangerous. The danger, however, is chiefly denoted by the difficulty of breathing. When the patient can lie on one ſide only; when he can lie on neither ſide, but only on his back; when he cannot breathe with tolerable eaſe, except when the trunk of his body is erect; when even in this poſture the breathing is very difficult, and attended with a turgeſcence and fluſhing of the face, with partial ſweats about the head and neck, and an irregular pulſe, theſe circumſtances mark the difficulty of breathing in different degrees; and conſequently, in proportion, the danger of the diſeaſe. A frequent violent cough, aggravating the pain, is always the ſymptom of an obſtinate diſeaſe; and as the diſeaſe is ſeldom or never reſolved without ſome expectoration, ſo a dry cough muſt always be an unfavourable ſymptom.

The proper characteriſtics of the expectoration have been already laid down; and though an expectoration which hath not theſe marks muſt indicate a doubtful ſtate of the diſeaſe, yet the colour alone can give no certain prognoſtic. An acute pain, very much interrupting inſpiration, is always the mark of a violent diſeaſe; but not of a more dangerous diſeaſe than an obtuſe pain attended with very difficult reſpiration.

When the pains, which had at firſt affected one ſide only, ſhall afterwards ſpread into the other; or when, leaving the ſide firſt affected, they paſs entirely into the other; theſe are always marks of a dangerous diſeaſe. A delirium coming on during a pneumonic inflammation is always a ſymptom denoting much danger.

When pneumonic diſorders terminate fatally, it is on one or other of the days of the firſt week, from the third to the ſeventh. This is the moſt common caſe; but, in a few inſtances, death has happened at a later period. When the diſeaſe is violent, but admitting of reſolution, this alſo happens frequently in the courſe of the firſt week; but in a more moderate diſeaſe the reſolution is often put off to the ſecond week. The diſeaſe generally ſuffers a remiſſion on ſome of the days from the third to the ſeventh: which, however, may be often fallacious, as the diſeaſe ſometimes returns again with as much violence as before; and in ſuch a caſe with great danger. Sometimes it diſappears on the third day, while an eryſipelas makes its appearance on ſome external part; and if this continues fixed, the pneumonic inflammation does not recur. If the diſeaſe continues beyond the 14th day, it will terminate in a ſuppuration, or PHTHISIS. The termination by gangrene is much more rare than has been imagined: and when it does occur, it is uſually joined with the termination by effuſion; the ſymptoms of the one being hardly diſtinguiſhable from thoſe of the other.

Cure. This muſt proceed upon the general plan mentioned under SYNOCHA; but, on account of the importance of the part affected, the remedies muſt be employed early, and as fully as poſſible. Veneſection is chiefly to be depended on; and may be done in either arm, as the ſurgeon finds moſt convenient; and the quantity taken away ought in general to be as large as the patient's ſtrength will allow. The remiſſion of pain, and the relief of reſpiration, during the flowing of the blood, may limit the quantity to be then drawn; but if theſe ſymptoms of relief do not appear, the bleeding ſhould be continued till the ſymptoms of a beginning ſyncope come on. It is ſeldom that one bleeding, however large, will cure this diſeaſe; and though the pain and difficulty of breathing may be much relieved by the firſt bleeding, theſe ſymptoms commonly and after no long interval recur, often with as much violence as before. In this caſe the bleeding is to be repeated even on the ſame day, and perhaps to the ſame quantity as before. Sometimes the ſecond bleeding may be larger than the firſt. There are perſons who, by their conſtitution, are ready to faint even upon a ſmall bleeding; and in ſuch perſons this may prevent the drawing ſo much blood at firſt as a pneumonic inflammation may require: but as the ſame perſons are found to bear after-bleedings better than the firſt, this allows the ſecond and ſubſequent bleedings to be larger, and to ſuch a quantity as the ſymptoms of the diſeaſe may ſeem to require.

Bleedings are to be repeated according to the ſtate of the ſymptoms, and they will be more effectual when practiſed in the courſe of the firſt three days than afterwards; but they are not to be omitted though four days of the diſeaſe may already have elapſed. If the phyſician has not been called in time, or the firſt bleedings have not been ſufficiently large, or even though they ſhould have procured ſome remiſſion, yet upon the return of the urgent ſymptoms, bleeding may be repeated at any time within the firſt fortnight, or even after that period, if a ſuppuration be not evident, or if after a ſeeming ſolution the diſeaſe ſhall have returned.

With reſpect to the quantity of blood which may be taken away with ſafety, no general rules can be given; as it muſt be very different according to the ſtate of the diſeaſe, and the conſtitution of the patient. In an adult male of tolerable ſtrength, a pound avoirdupois of blood is a full bleeding. Any quantity above 20 ounces is a large, and any quantity below 12 is a ſmall, bleeding. An evacuation of four or five pounds, in the courſe of two or three days, is generally as much as ſuch patients will bear; but if the intervals between the bleedings, and the whole of the time during which the bleedings have been employed, have been long, the quantity taken upon the whole may be greater.

When a large quantity of blood hath been taken from the arm, and it is doubtful if more can be taken in that manner with ſafety, ſome blood may ſtill be taken by cupping and ſcarifying. This will eſpecially be proper, when the recurrence of the pain, rather than the difficulty of breathing, becomes the urgent ſymptom; and then the cupping and ſcarification ſhould be made as near as poſſible to the pained part.

An expectoration ſometimes takes place very early in this diſeaſe; but if the ſymptoms continue urgent, the bleedings muſt be repeated notwithſtanding the expectoration: but in a more advanced ſtate, and when the ſymptoms have ſuffered a conſiderable remiſſion, we may then truſt the cure to the expectoration alone. It is not obſerved that bleeding, during the firſt days of the diſeaſe, ſtops expectoration; on the contrary, it hath been often found to promote it; and it is only in a more advanced ſtate of the diſeaſe, when the patient has been already exhauſted by large evacuations and a continuance of his illneſs, that bleeding ſeems to put a ſtop to expectoration; and even then, this ſtoppage ſeems not to take place ſo much from the powers of expectoration being weakened by bleeding, as by its favouring the ſerous effuſion in the bronchiæ, already taken notice of.

Beſides bleeding, every part of the antiphlogiſtic regimen ought here to be carefully employed: the patient muſt keep out of bed as much as he can bear; muſt have plenty of warm diluting drinks, impregnated with vegetable acids, accompanied with nitre or ſome other cooling neutral ſalt; and the belly alſo ought to be kept open by emollient glyſters or cooling laxative medicines. Vomiting is dangerous; but it hath been found uſeful to exhibit emetics in nauſeating doſes, and in a ſomewhat advanced ſtate of the diſeaſe theſe doſes have been found the beſt means of promoting expectoration. Fomentations and poultices to the pained part have been found uſeful; but bliſtering is found to be much more effectual. A bliſter, however, ought not to be applied till at leaſt one bleeding hath been premiſed, as veneſection is leſs effectual when the irritation of a bliſter is preſent. If the diſeaſe is moderate, a bliſter may be applied immediately after the firſt bleeding; but in violent caſes, where it may be preſumed that a ſecond bleeding may ſoon be neceſſary after the firſt, it will be proper to delay the bliſter till after the ſecond bleeding, when it may be ſuppoſed that the irritation occaſioned by the bliſter will be over before another bleeding becomes neceſſary. It may frequently be of uſe in this diſeaſe to repeat the bliſtering; and in that caſe the plaſters ſhould always be applied ſomewhere on the thorax, for when applied to more diſtant parts they have little effect. The keeping the bliſtered parts open, and making what is called a *perpetual bliſter*, has much leſs effect than a freſh bliſtering.

Many methods have been propoſed for promoting expectoration, but none appear to be ſufficiently effectual; and ſome of them, being acrid ſtimulant ſubſtances, are not very ſafe. The gums uſually employed ſeem to be too heating: the ſquills leſs ſo; but they are not very powerful, and ſometimes inconvenient, by the conſtant nauſea they occaſion. The volatile alkali may be of ſervice as an expectorant, but it ought to be reſerved for an advanced ſtate of the diſeaſe. Mucilaginous and oily demulcents appear to be uſeful, by allaying that acrimony of the mucus which occaſions too frequent coughing; and which coughing prevents the ſtagnation and thickening of the mucus, and thereby its becoming mild. The receiving the ſteams of warm water into the lungs, impregnated with vinegar, has often proved uſeful in promoting expectoration; and, for this purpoſe, the machine called the **INHALER**, lately invented by Mr Mudge ſurgeon at Plymouth, promiſes to be of great ſervice *. But of all others, the antimonial emetics, given in nauſeating doſes, promiſe to be the moſt powerful for promoting expectoration. The kermes mineral hath been greatly recommended; but doth not ſeem to be more efficacious than emetic tartar or antimonial wine; and the doſe of the kermes is much more uncertain than that of the others.

* See Inhaler.

Though this diſeaſe often terminates by a ſpontaneous ſweating, this evacuation ought not to be excited by art, unleſs with much caution. When, after ſome remiſſion of the ſymptoms, ſpontaneous ſweats ariſe, they may be encouraged; but it ought to be without much heat, and without ſtimulant medicines. If, however, the ſweats be partial and clammy only, and a great difficulty of breathing ſtill remain, it will be very dangerous to encourage them.

Phyſicians have differed much with regard to the uſe of opiates in pneumonic affections. It appears, however, that, in the beginning of the diſeaſe, and before bleeding and bliſtering have produced ſome remiſſion of the pain and of the difficulty of breathing, opiates have a very bad tendency, by their increaſing the difficulty of breathing and other inflammatory ſymptoms. But in a more advanced ſtate of the diſeaſe, when the difficulty of breathing has abated, and when the urgent ſymptom is a cough, proving the chief cauſe of the continuance of pain and want of reſt, opiates may be employed with great advantage and ſafety. The interruption of the expectoration which they ſeem to occaſion, is for a ſhort time only; and they ſeem often to promote it, as they occaſion a ſtagnation of what was by frequent coughing diſſipated inſenſibly: and therefore give the appearance of what phyſicians have called *concocted matter*.

291 XLII. Vomica, or *Abſceſs* of the *Lungs*.

Vomica, *Boerh.* 835. *Junck.* 35.
Pleurodyne vomica, *Sauv.* ſp. 21.

This ſometimes follows pneumonia, though the caſe is not frequent. The ſymptoms of it ſo much reſemble the phthiſis, that it can moſt properly be treated of under that head.

292 XLIII. Empyema.

This is another conſequence of a pneumonia terminating unfavourably, and is occaſioned by the effuſion of a quantity of purulent matter into the cavity of the thorax, occaſioning a lingering and painful diſorder, very often incurable.

Deſcription. The firſt ſign of an empyema is a ceſſation of the pain in the breaſt, which before was continual: this is followed by a ſenſation of weight on the diaphragm; and a fluctuation of matter, ſometimes making a noiſe that may be heard by the byſtanders: the acute fever is changed into a hectic, with an exacerbation at night: a continual and troubleſome dry cough remains. The reſpiration is exceedingly difficult, becauſe the lungs are prevented by the matter from fully expanding themſelves. The patient can lie eaſily on that ſide where the matter is effuſed, but not on the other, becauſe then the weight of the matter on the mediaſtinum produces uneaſineſs. The more the hectic heat is augmented, the more is the body emaciated, and its ſtrength decayed. In ſome there is danger of ſuffocation when they ſtoop down, which goes off when they alter that poſture of the body; and in ſome there is a purulent ſpitting.—Theſe ſymptoms are accompanied with great anxiety, palpitations of the heart, and faintings. Sometimes the patients have a ſenſation like a hot vapour aſcending from the cavity of the thorax to their mouth. Others, in a more advanced ſtate of the diſeaſe, have a putrid taſte in the mouth. At the ſame time, profuſe night-ſweats waſte the body, and greatly weaken the patients. The face at firſt grows red on that ſide where the matter lies, though ſometimes there are only phlogoſes; at laſt the Hippocratic face comes on, and the eyes become hollow. The pulſe, eſpecially on the affected ſide, is quick, but more frequently intermitting. Sometimes the nails are crooked, and puſtules appear on the thorax; and frequently, according to the teſtimony of Hippocrates, the feet ſwell, and, on the affected ſide of the breaſt, there is an inflation and ſwelling of the ſkin.

Cauſes, &c. An empyema may ariſe either from the burſting of a vomica of the lungs, or from a ſuppuration taking place after the inflammatory ſtage of the pneumonia; or ſometimes from a ſuppuration in the caſe of a quinſy, when the inflammation had extended to the aſpera arteria, from whence ariſes a kind of bloody ſpittle, and the patients are afflicted with an empyema, unleſs they die on the 7th day of the diſeaſe, according to the obſervation of Hippocrates. It may ariſe alſo from external violence, as wounds of the thorax, &c. blood extravaſated, corrupted, or changed with pus. Like the vomica, it is a rare diſtemper, but may attack all thoſe ſubject to pneumonia.

Prognoſis. Very few recover after an empyema hath been once formed, eſpecially if the operation of paracenteſis hath been neglected. After this operation is performed, if a great quantity of bloody fetid pus is diſcharged, if the fever continues, and if the patient ſpits up a purulent, pale, frothy, livid, or green matter, with a decay of ſtrength, there is no hope. But when a ſmall quantity of pus, of a white colour, not very fetid, is diſcharged; when the fever and thirſt preſently ceaſe, the appetite returns, and fæces of a good conſiſtence are diſcharged, the ſtrength alſo returning in ſome degree; there is then hope of a perfect recovery. If the matter is not dried up in ſeven weeks time, the diſeaſe readily changes to a fiſtulous ulcer, which is very difficult to cure. An empyema affecting both ſides of the thorax, is more dangerous than that which affects only one.

Cure. This conſiſts in evacuating the purulent matter contained in the cavity of the thorax, which is beſt done by the operation of paracenteſis. See the article **SURGERY**. Afterwards the ulcer is to be treated with abſtergent and conſolidating medicines, and the ſame internal ones are to be given as in a **PHTHISIS**.

293 XLIV. CARDITIS, or *Inflammation of the* Heart. Gen. XIII.

Carditis, *Sauv.* gen. 111. *Vog.* 54.
Pericarditis, *Vog.* 53.
Carditis ſpontanea, *Sauv.* ſp. 1. *Senac.* Traité de Cœur, lib. iv. chap. 7. *Meckel*, Mem. de Berlin, 1756.
Eryſipelas pulmonis, *Lomm.* Obſerv. lib. ii.

Deſcription. This diſeaſe is attended with all the ſymptoms of pneumonia, but in a higher degree; it is beſides ſaid to be accompanied with hydrophobic ſymptoms, fainting, palpitation of the heart, a ſeeming madneſs, ſunk and irregular pulſe, watery eyes, and a dejected countenance, with a dry and black tongue. On diſſection, the heart and pericardium are found very much inflamed, and even ulcerated, with many polypous concretions.

Cauſes, &c. The ſame as in the pneumonia.

Prognoſis. In the carditis the prognoſis is more unfavourable than in the pneumonia; and indeed, unleſs the diſeaſe very quickly terminates, it muſt prove fatal, on account of the conſtant and violent motion of the heart, which exaſperates the inflammation, and increaſes all the ſymptoms.

Cure. Here bleeding is neceſſary in as great a degree as the patient can poſſibly bear, together with bliſtering, and the antiphlogiſtic regimen likewiſe carried to a greater height than in the pneumonia; but the general method is the ſame as in other inflammatory diſeaſes.

Genus XIV. PERITONITIS, or *Inflammation of the* Peritonæum.

294 XLV. *Inflammation of the* Peritonæum properly ſo called. Sp. I.

Peritonitis, *Vog.* 62. *Lieutad.* Hiſt. anat. med. lib. i. obſ. 3. *Raygerus* apud eund. lib. i. obſ. 341. *Morgagn.* de ſed. LVII. 20.

295 XLVI. *Inflammation of the* Peritonæum extended over the *Omentum.* Sp. II.

Epiploitis, *Sauv.* gen. 106. *Sag.* gen. 308.
Omentitis, *Vog.* 61.
Omenti inflammatio, *Boerh.* 958. et Ill. *Van Swieten*, Comm. *Stork.* An. Med. I. 132. *Hulme* on the puerperal fever.

296 XLVII. *Inflammation of the* Peritonæum ſtretched over the *meſentery.* Sp. III.

Meſenteritis, *Vog.* 60.
Enteritis meſenterica, *Sauv.* ſp. 4.

Genus XV. GASTRITIS, or *Inflammation of the* Stomach.

297 XLVIII. The *genuine* Gastritis. A.

Gaſtritis legitima, *Sauv.* ſp. 1. *Eller.* de cogn. et cur. morb. ſect. xii. *Haller*, obſ. 14. hiſt. 3. *Lieut.* Hiſt. anat. Med. lib. i. 74.
Gaſtritis eryſipelatoſa, *Sauv.* ſp. 4.
Cardialgia inflammatoria, *Sauv.* ſp. 13. *Tralles*, de opio, ſect. ii. p. 231.

These diſeaſes Dr Cullen hath thought proper to conſider all under the general head of Gastritis, as there are no certain ſigns by which they may be diſtinguiſhed from each other, and the method of cure muſt be the ſame in all.

Deſcription. The inflammation of the ſtomach is attended with great heat and pain in the epigaſtric region, extreme anxiety, an almoſt continual and painful hickup, with a moſt painful vomiting of every thing taken into the ſtomach. Sometimes a temporary madneſs enſues; and there is an inſtance in the Edinburgh Medical Eſſays of the diſorder being attended with an hydrophobia. The pulſe is generally more ſunk than in other inflammations, and the fever inclines to the nature of a typhus. The diſorder is commonly of the remitting kind, and during the remiſſions the pulſe frequently intermits. During the height of the diſeaſe, a mortal phrenzy frequently ſupervenes. The diſeaſe terminates on the fourth, ſeventh, ninth day, or from the eleventh to the fifteenth; and is more apt to end in a gangrene than pneumonic inflammations, and more frequently in a ſcirrhus than in an abſceſs.

Cauſes, &c. The inflammation of the ſtomach may ariſe from any acrid ſubſtance taken into it; from a vehement paſſion; too large draughts of cold liquor, eſpecially when the perſon is very hot; from a ſurfeit; a ſtoppage of perſpiration; repulſion of the gout; opiates; inflammations of the neighbouring viſcera; or from external injuries, ſuch as wounds, contuſions, &c.—It affects chiefly thoſe of a plethoric habit, and hot bilious conſtitution.

Prognoſis. This diſeaſe is always very dangerous, and the prognoſis doubtful, which alſo muſt always be in proportion to the ſeverity of the ſymptoms. A ceſſation of pain, coldneſs about the præcordia, great debility, with a languid and intermitting pulſe, with an abatement of the hickup, denote a gangrene and ſpeedy death. From the ſenſibility of the ſtomach alſo, and its great connection with the reſt of the ſyſtem, it muſt be obvious, that an inflammation of it, by whatever cauſes produced, may be attended with fatal conſequences; particularly by the great debility it produces it may prove ſuddenly fatal, without running through the uſual courſe of inflammations.—Its tendency to admit of reſolution may be known by its having ariſen from no violent cauſe, by the moderate ſtate of the ſymptoms, and by a gradual remiſſion of theſe ſymptoms in the courſe of the firſt or at moſt of the ſecond week of the diſeaſe. The tendency to gangrene may be ſuſpected from the ſymptoms continuing with unremitting violence notwithſtanding the uſe of proper remedies, and a gangrene already begun may be known by the ſymptoms above-mentioned. The tendency to ſuppuration may be known by the ſymptoms continuing but in a moderate degree for more than one or two weeks, and by a conſiderable remiſſion of the pain while a ſenſe of weight and an anxiety ſtill remain. When an abſceſs has been formed, the frequency of the pulſe is at firſt abated: but ſoon after it increaſes with frequent cold ſhiverings, and an exacerbation in the afternoon and evening; followed by night-ſweats, and other ſymptoms of hectic fever. Theſe at length prove fatal, unleſs the abſceſs open into the cavity of the ſtomach, the pus be evacuated by vomiting, and the ulcer ſoon healed.

Cure. It appears from diſſections, that the ſtomach may very often be inflamed when the characteriſtic marks of it have not appeared; and therefore we cannot lay down any general rules for the cure of this diſeaſe. When the ſymptoms appear in the manner above deſcribed, the cure is to be attempted by large and repeated bleedings employed early in the diſeaſe; and from theſe we are not to be deterred by the weakneſs of the pulſe, for it has commonly become fuller and ſofter after the operation. A bliſter ought alſo to be applied to the region of the ſtomach; and the cure will be aſſiſted by fomentations of the whole abdomen, and by frequent emollient and laxative glyſters. The irritability of the ſtomach in this diſeaſe will admit of no medicines being thrown into it; and if any can be ſuppoſed neceſſary, they muſt be exhibited in glyſters. Diluting drinks may be tried; but they muſt be of the very mildeſt kind, and given in very ſmall quantities at a time. Opiates, in whatever manner exhibited, are very hurtful during the firſt days of the diſeaſe; but when the violence of the diſeaſe ſhall have abated, and when the pain and vomiting recur at intervals only, opiates given in glyſters may frequently be imployed with advantage. A tendency to gangrene in this diſeaſe is to be obviated only by the means juſt now mentioned; and when it does actually ſupervene, it admits of no remedy. A tendency to ſuppuration is to be obviated by the ſame means employed early in the diſeaſe. After a certain period it cannot be prevented by any means whatever; and, when actually begun, muſt be left to nature; the only thing that can be done by art being to avoid all irritation.

298 XLIX. The *Eryſipelatous* GASTRITIS. B.

Deſcription. This ſpecies of inflammation takes place in the ſtomach much more frequently than the former. From diſſections it appears that the ſtomach has been often affected with inflammation, when neither pain nor fever had given any notice of it; and ſuch is juſtly looked upon to have been of the eryſipelatous kind. This kind of inflammation alſo is eſpecially to be expected from acrimony of any kind applied to the ſtomach; and would certainly occur much more frequently, were not the interior ſurface of this organ commonly defended by mucus exſuding in large quantity from the numerous follicles placed immediately under the villous coat. On many occaſions, however, the exſudation of mucus is prevented, or the liquid poured out is of a leſs viſcid kind, ſo as to be leſs fitted to defend the ſubjacent nerves; and it is in ſuch caſes that acrid matters may readily produce an eryſipelatous affection of the ſtomach.

In many caſes, however, this kind of inflammation cannot be diſcovered, as it takes place without pain, pyrexia, or vomiting: but in ſome caſes it may; namely, when it ſpreads into the œſophagus, and appears on the pharynx and on the whole internal ſurface of the mouth. When therefore an eryſipelatous inflammation affects the mouth and fauces, and there ſhall be at the ſame time in the ſtomach an unuſual ſenſibility to all acrids, and alſo a frequent vomiting, there can be little doubt of the ſtomach's being affected in the ſame manner. Even when no inflammation appears in the fauces, if ſome degree of pain be felt in the ſtomach, if there be a want of appetite, an anxiety and frequent vomiting, an unuſual ſenſibility with regard to acrids, ſome thirſt, and frequency of pulſe, there will then be room to ſuſpect an inflammation in the ſtomach; and ſuch ſymptoms, after ſome time, have been known to diſcover their cauſe by the inflammation ariſing in the fauces or mouth. Inflammation of this kind is often diſpoſed to paſs from one place to another on the ſame ſurface, and, in doing ſo, to leave the place it had at firſt occupied. Such an inflammation hath been known to ſpread ſucceſſively along the whole length of the alimentary canal; occaſioning, when in the inteſtines, diarrhœa, and in the ſtomach vomitings; the diarrhœa ceaſing when the vomitings came on, and the vomitings on the coming on of the diarrhœa.

Cauſes, &c. An eryſipelatous inflammation may ariſe from acrid matters taken into the ſtomach; or from ſome internal cauſes not yet well known. It frequently occurs in putrid diſeaſes, and in thoſe recovering from fevers.

Cure. When the diſeaſe is occaſioned by acrid matters taken internally, and theſe may be ſuppoſed ſtill preſent in the ſtomach, they are to be waſhed out by drinking a large quantity of warm and mild medicines, and exciting vomiting. At the ſame time, if the nature of the acrimony, and its proper corrector be known, this ſhould be thrown in; or if a ſpecific corrector be not known, ſome general demulcents ſhould be employed.

Theſe meaſures, however, are more ſuited to prevent, than to cure inflammation after it has taken place. When this laſt may be ſuppoſed to have happened, if it be attended with a ſenſe of heat, with pain and pyrexia, according to the degree of theſe ſymptoms, the meaſures propoſed for the cure of the other kind are to be more or leſs employed. When an eryſipelatous inflammation of the ſtomach hath ariſen from internal cauſes, if pain and pyrexia occur, bleeding may be employed in perſons not otherwiſe weakened; but in caſe of its occurring in putrid diſeaſes, or where the patients are already debilitated, bleeding is inadmiſſible; all that can be done being to avoid irritation, and only throwing into the ſtomach what quantity of acids and aceſcent aliments it ſhall be found able to bear. In ſome conditions of the body in which this diſeaſe is apt to occur, the Peruvian bark and bitters may ſeem to be indicated; but an eryſipelatous ſtate of the ſtomach will ſeldom allow them to be uſed.

GENUS XIV. ENTERITIS, or *Inflammation* of the INTESTINES.

Enteritis, *Sauv.* gen. 105. *Lin.* 29. *Vog.* 57. *Sag.* gen. 307.
Inteſtinorum inflammatio, *Boerh.* 959.
Febris inteſtinorum inflammatoria ex meſenterio, *Hoffm.* II. 170.

L. The *Acute* ENTERITIS. 299

Enteritis iliaca, *Sauv.* ſp. 1.
Enteritis colica, *Sauv.* ſp. 2. *Boerh.* 963.

Deſcription. This diſeaſe ſhews itſelf by a fixed pain in the abdomen, attended with fever, vomiting, and coſtiveneſs. The pain is often felt in different parts of the abdomen, but more frequently ſpreads over the whole, and is particularly violent about the navel.

Cauſes, &c. Inflammations of the inteſtines may ariſe from the ſame cauſes as thoſe of the ſtomach; though commonly the former will more readily occur from cold applied to the lower extremities, or to the belly itſelf. It is alſo found ſupervening on the ſpaſmodic colic, incarcerated hernia, and volvulus.

Prognoſis. Inflammations of the inteſtines have the ſame terminations with thoſe of the ſtomach, and the prognoſis in both caſes is much the ſame.

Cure. The cure of enteritis is in general the ſame with that of gaſtritis: but in the former there is commonly more acceſs to the introduction of liquids, of acid, aceſcent, and other cooling remedies, and even of laxatives; but as a vomiting frequently attends the enteritis, care muſt be taken not to excite that vomiting by the quantity or quality of any thing thrown into the ſtomach. With regard to the ſuppuration and gangrene of the inteſtines following the enteritis, the ſame thing is to be underſtood as is mentioned under the Gastritis.

300 LI. *Eryſipetalous* Enteritis.

Concerning this nothing farther can be ſaid, than what hath been already delivered concerning the gaſtritis.

301 LII. HEPATITIS, or *Inflammation* of the Liver.

Genus XVII.

Hepatitis, *Sauv.* gen. 113. *Lin.* 35. *Vog.* 58. *Sag.* gen. 312. *Boerh.* 914. *Hoffm.* II. 14. *Junck.* 66.

Deſcription. The inflammation of the liver is thought to be of two kinds, acute and chronic: but the latter very often does not diſcover itſelf except by an abſceſs found in the liver after death, and which is ſuppoſed to have been occaſioned by ſome degree of inflammation; for this reaſon the chronic inflammation cannot be deſcribed, and we ſhall here only treat of the acute hepatitis.

The acute hepatitis is attended with conſiderable fever; a frequent, ſtrong, and hard pulſe; high coloured urine; an acute pain in the right hypochondrium, increaſed by preſſing upon the part. The pain is very often in ſuch a part of the ſide as to make it appear like a pleuriſy; and frequently, like that, is increaſed on inſpiration. The diſeaſe is alſo commonly attended with a cough, which is generally dry, but ſometimes moiſt; and when the pain thus reſembles a pleuriſy, the patient cannot lie eaſily except upon the ſide affected. The pain is frequently extended to the clavicle, and to the top of the ſhoulder; and is attended ſometimes with hickup, and ſometimes with vomiting. Some have added jaundice, or a yellowneſs of the eyes, to the ſymptoms of this diſtemper; but experience ſhews that it hath often occurred without any ſuch ſymptom.

Cauſes, &c. The remote cauſes of hepatitis are not always to be diſcerned, and many have been aſſigned on a very uncertain foundation. It has been ſuppoſed that the diſeaſe may be an affection either of the extremities of the hepatic artery, or thoſe of the vena portarum; but of the laſt there is no proof, nor is the ſuppoſition at all probable. The acute hepatitis ſeems rather to be an affection of the external membrane of the liver, and the chronic kind to be an affection of the parenchyma of that viſcus. The acute diſeaſe may be ſeated either on the convex or concave ſurface of the liver; and in the former caſe a more pungent pain and hickup may be produced, and the reſpiration is more conſiderably affected. In the latter there occurs leſs pain; and a vomiting is produced, commonly by ſome inflammation communicated to the ſtomach. The inflammation on the concave ſurface of the liver, may be readily communicated to the gall-bladder and biliary ducts: and this, perhaps, is the only caſe of idiopathic hepatitis attended with jaundice.

Prognoſis. The inflammation of the liver, like others, may end by reſolution, ſuppuration, or gangrene; and the tendency to the one or to the other of thoſe events may be known from what has been already mentioned concerning the prognoſis in gaſtritis. The reſolution of hepatitis is often the conſequence of, or is attended with, evacuations of different kinds. A hæmorrhage, ſometimes from the noſe, and ſometimes from the hæmorrhoidal veſſels, gives a ſolution of the diſeaſe. Sometimes the ſame thing is accompliſhed by a bilious diarrhœa; and ſometimes the reſolution is attended with ſweating, and an evacuation of urine depoſiting a copious ſediment. Sometimes it may be cured by an eryſipelas appearing in ſome external part. When the diſeaſe hath ended in ſuppuration, the pus collected may be diſcharged by the biliary ducts; or, if the ſuppurated part does not adhere any where cloſely to the neighbouring parts, into the cavity of the abdomen: but if, during the firſt ſtate of inflammation, the affected part of the liver ſhall have formed a cloſe adheſion to ſome of the neighbouring parts, the diſcharge after ſuppuration may be various, according to the different ſeat of the abſceſs. When ſeated on the convex part of the liver, if the adheſion be to the peritonæum lining the common teguments, the pus may make its way through theſe, and be diſcharged outwardly: or if the adheſion ſhall have been to the diaphragm, the pus may penetrate through this, and into the cavity of the lungs; from whence it may be diſcharged by coughing. When the abſceſs is ſeated on the concave part of the liver, in conſequence of adheſions, the pus may be diſcharged into the ſtomach or inteſtines; and into theſe laſt, either directly, or by the intervention of the biliary ducts. Upon a conſideration of all theſe different circumſtances therefore, together with the general principles of inflammation, muſt the prognoſis of this diſeaſe be eſtabliſhed.

Cure. For the cure of hepatitis, we muſt have recourſe to the general means of removing other inflammatory diſorders. Bleeding is to be uſed according to the degree of fever and pain. Bliſters are to be applied: fomentations of the external parts, emollient glyſters, gentle laxatives, diluents and refrigerants, are alſo uſeful. But when a ſuppuration has been formed, and the abſceſs points outwardly, the part muſt be opened, the pus evacuated, and the ulcer healed according to the ordinary methods in uſe for healing abſceſſes and ulcers in other parts.

LII. SPLENITIS, or *Inflammation* of the *Spleen*.
Genus XVIII.

303 Splenitis, *Sauv.* gen. 114. *Lin.* 36. *Vog.* 59. *Junck.* 67. *Sag.* gen. 313.
Lienis inflammatio, *Boerh.* 958. & Ill. *Van Swieten* Comm.
Splenitis phlegmonodæa, *Sauv.* ſp. 1. *Foreſt*, l. xx. obſ. 5. 6. *De Haen*, apud *Van Swieten*, p. 958.
Pleuritis ſplenica, *Sauv.* ſp. 19.
Splenalgia ſuppuratio, *Sauv.* ſp. 3.

Deſcription. This diſeaſe, according to *Juncker*, comes on with a remarkable ſhivering, ſucceeded by a moſt intenſe heat and very great thirſt; a pain and tumour are perceived in the left hypochondrium, and the paroxyſms for the moſt part aſſume a quartan form. When the patients expoſe themſelves for a little to the free air, their extremities immediately grow very cold. If an hæmorrhage happens, the blood flows out of the left noſtril. The other ſymptoms are the ſame with thoſe of the hepatitis. Like the liver, it is alſo ſubject to a chronic inflammation, which often happens after agues, and is commonly called the *ague cake*.

Cauſes, &c. The cauſes of this diſtemper are in general the ſame with thoſe of other inflammatory diſorders; but thoſe which determine the inflammation to that particular part more than another, are very much unknown. It attacks perſons of a very plethoric and ſanguine habit of body rather than others.

Prognoſis. What hath been ſaid of the inflammation of the liver applies alſo to that of the ſpleen, tho' the latter is leſs dangerous than the former. Here alſo a vomiting of black matter, which in other acute diſeaſes is ſuch a fatal omen, ſometimes proves critical, according to the teſtimony of Juncker. Sometimes the hæmorrhoids prove critical; but very often the inflammation terminates by ſcirrhus.

Cure. This is not at all different from what hath been already laid down concerning the hepatitis.

GENUS XIX. NEPHRITIS, or *Inflammation* of the KIDNEYS.

4 Nephritis, *Sauv.* gen. 115. *Lin.* 37. *Vog.* 65. *Sag.* gen. 314.

LIII. The *Genuine* NEPHRITIS.

Nephritis vera, *Sauv.* ſp. 1.

Deſcription. The nephritis has the ſame ſymptoms in common with other inflammations; but its diſtinguiſhing mark is the pain in the region of the kidney, which is ſometimes obtuſe, but ſometimes pungent. The pain is not increaſed by the motion of the trunk of the body ſo much as a pain of the rheumatic kind affecting the ſame region. It may alſo frequently be diſtinguiſhed by its ſhooting along the courſe of the ureter, and is frequently attended with a drawing up of the teſticle, and a numbneſs of the limb on the ſide affected; though indeed theſe ſymptoms moſt commonly attend the inflammation ariſing from a calculus in the kidney or ureter. The diſeaſe is alſo attended with frequent vomiting, and often with coſtiveneſs and colic pains. The urine is moſt commonly of a deep red colour, and is voided frequently and in a ſmall quantity at a time. In more violent caſes the urine is commonly colourleſs.

Cauſes, &c. The remote cauſes of this diſeaſe may be various; as external contuſion, violent or long-continued riding; ſtrains of the muſcles of the back incumbent on the kidneys; various acrids in the courſe of circulation conveyed to the kidney; and perhaps ſome other internal cauſes not yet well known: the moſt frequent is that of calculous matter obſtructing the *tubuli uriniferi*, or calculi formed in the pelvis of the kidneys, and either ſticking ther or fallen into the ureter.

Prognoſis. This is not different from that of other inflammatory diſeaſes.

Cure. This is to be attempted by bleeding, external fomentation, frequent emollient glyſters, antiphlogiſtic purgatives, and by the free uſe of mild and demulcent liquids. The uſe of bliſters is ſcarce admiſſible, or at leaſt will require great care to avoid any conſiderable abſorption of the cantharides.

The other ſpecies of nephritis enumerated by authors are only ſymptomatic.

GENUS XX. CYSTITIS, or *Inflammation* of the BLADDER.

Cyſtitis, *Sauv.* gen. 108. *Lin.* 31. *Vog.* 66. *Sag.* gen. 309.
Inflammatio veſicæ, *Hoffm.* II. 157.

LIV. The CYSTITIS from *Internal Cauſes*. 305

Cyſtitis ſpontanea, *Sauv.* ſp. 1.

LV. The CYSTITIS from *External Cauſes*. 306

Cyſtitis a cantharidibus, *Sauv.* ſp. 2.
Cyſtitis traumatica, *Sauv.* ſp. 3.

The inflammation of the bladder from internal cauſes is a very rare diſtemper; and when it does at any time occur, is to be cured in the ſame manner with other inflammations, avoiding only the uſe of cantharides. When the diſeaſe ariſes from the internal uſe of theſe flies, camphire is recommended, beſides other cooling medicines, and particularly cooling and emollient glyſters.

LVI. HYSTERITIS, or *Inflammation* of the *Uterus*. 307
Genus XXI.

Hyſteritis, *Lin.* 38. *Vog.* 63.
Metritis, *Sauv.* gen. 107. *Sag.* gen. 315.
Inflammatio et febris uterina, *Hoffm.* II. 156.

Deſcription. This diſeaſe is often confounded with that called the *puerperal* or *child-bed fever*; but is very eſſentially diſtinct from it, as will be ſhown in its proper place. The inflammation of the uterus is often apt to terminate by gangrene: there is a pain in the head, with delirium; and the uterine region is ſo exceedingly tender, that it cannot bear the moſt gentle preſſure without intolerable pain. When the *fundus uteri* is inflamed, there is great heat, throbbing, and pain, above the pubes; if its poſterior part, the pain is more confined to the loins and rectum, with a teneſmus; if its anterior part, it ſhoots from thence towards the neck of the bladder, and is attended with a frequent irritation to make water, which is voided with difficulty; and if its ſides or the ovaria are affected, the pains will then dart into the inſide of the thighs.

Cauſes, &c. Inflammations of the uterus, and indeed of the reſt of the abdominal viſcera, are very apt to take place in lying-in women; the reaſon of which ſeems to be the ſudden change produced in the habit, and an alteration in the courſe of the circulating blood by the contraction of the uterus after delivery. The preſſure of the gravid uterus being ſuddenly taken off from the *aorta deſcendens* after delivery, the reſiſtance to the impulſe of the blood paſſing through all the veſſels derived from it, and diſtributed to the contiguous viſcera, will be conſiderably leſſened: it will therefore ruſh into thoſe veſſels with a force ſuperior to their reſiſtance; and, by putting them violently on the ſtretch, may occaſion pain, inflammation, and fever. This contraction of the uterus alſo renders its veſſels impervious to the blood which had freely paſſed through them for the ſervice of the child during pregnancy; and conſequently a much larger quantity will be thrown upon the contiguous parts, which will ſtill add to their diſtenſion, and increaſe their tendency to inflammation.

Prognoſis. An inflammation of the uterus generally may be expected to produce an obſtruction of the lochia; but the fever produced ſeldom proves mortal, unleſs the inflammation is violent and ends in a gangrene.

Cure. This is to be attempted by the ſame general means already recommended, and the management of this diſorder entirely coincides with that of the puerperal fever.

308 GENUS XXII. RHEUMATISMUS; the RHEUMATISM.

Rheumatiſmus, *Sauv.* gen. 185. *Lin.* 62. *Vog.* 138. *Boerh.* 1400. *Junck.* 19.
Dolores rheumatici et arthritici, *Hoffm.* II. 317.
Myoſitis, *Sag.* gen. 301.

309 LVII. The *Acute* RHEUMATISM. Sp. I.

Rheumatiſmus acutus, *Sauv.* ſp. 1.
Rheumatiſmus vulgaris, *Sauv.* ſp. 2.

310 LVIII. The LUMBAGO, or *Rheumatiſm in the Loins.* Var. A.

Lumbago rheumatica, *Sauv.* gen. 212. *Sag.* p. 1.
Nephralgia rheumatica, *Sauv.* ſp. 4.

311 LIX. The SCIATICA, *Iſchias*, or *Hip-Gout.* Var. B.

Iſchias rheumaticum, *Sauv.* 213. ſp. 10.

312 LX. The *Baſtard* PLEURISY. Var. C.

Pleurodyne rheumatica, *Sauv.* gen. 148. ſp. 3.
Pleuritis ſpuria, *Boerh.* 878.

The other ſpecies, which are very numerous, are all ſymptomatic; as,
Lumbago plethorica, *Sauv.* ſp. 3.
Iſchias ſanguineum, *Sauv.* ſp. 2.
Pleurodyne plethorica, *Sauv.* ſp. 1.
Rheumatiſmus hyſtericus, *Sauv.* ſp. 7.
Iſchias hyſtericum, *Sauv.* ſp. 3.
Pleurodyne hyſterica, *Sauv.* ſp. 6.
Rheumatiſmus ſaltatorius, *Sauv.* ſp. 8.
Pleurodyne flatulenta, *Sauv.* ſp. 4.
Pleurodyne à ſpaſmate, *Sauv.* ſp. 9.
Rheumatiſmus ſcorbuticus, *Sauv.* ſp. 4.
Lumbago ſcorbutica, *Sauv.* ſp. 5.
Pleurodyne ſcorbutica, *Sauv.* ſp. 11.
Iſchias ſyphiliticum, *Sauv.* ſp. 7.
Pleurodyne venerea, *Sauv.* ſp. 5.
Lumbago ſympathica, *Sauv.* ſp. 13.
a meſenterii glandulis induratis
a pancreate tumido, purulento, ſcirrhoſo, putri
ab induratis pyloro, vena cava, pancreate
a rene ſcirrhoſo, putrefacto
ab abſceſſu circa venæ cavæ biſurcationem
a vermibus intra renes.
Lumbago a ſaburra, *Sauv.* ſp. 8.
Pleurodyne a cacochylia, *Sauv.* ſp. 7.
Rheumatiſmus ſaltatorius verminoſus, *Sauv.* ſp. 8.
Iſchias verminoſum, *Sauv.* ſp. 8.
Pleurodyne verminoſa, *Sauv.* ſp. 2.
Rheumatiſmus metallicus, *Sauv.* ſp. 10.
Lumbago a hydrothorace, *Sauv.* ſp. 14.
Lumbago pſeudoiſchuria, *Sauv.* ſp. 16.
Pleurodyne a rupto œſophago, *Sauv.* ſp. 20.
Pleurodyne rachitica, *Sauv.* ſp. 13.
Iſchias a ſparganoſi, *Sauv.* ſp. 5.
Pleurodyne catarrhalis, *Sauv.* ſp. 14.
Rheumatiſmus necroſeos, *Sauv.* ſp. 14.
Rheumatiſmus dorſalis, *Sauv.* ſp. 11.
Lumbago a ſatyriaſi, *Sauv.* ſp. 15.
Rheumatiſmus febricoſus, *Sauv.* ſp. 9.
Lumbago febrilis, *Sauv.* ſp. 4.
&c. &c.

Deſcription. The rheumatiſm is particularly diſtinguiſhed by pains affecting the joints, and for the moſt part the joints alone; but ſometimes alſo the muſcular parts. Very often they ſhoot along the courſe of the muſcles from one joint to another, and are always much increaſed by the action of the muſcles belonging to the joint or joints affected. The larger joints are thoſe moſt frequently affected, ſuch as the hip-joint and knees of the lower extremities, and the ſhoulders and elbows of the upper ones. The ancles and wriſts are alſo frequently affected; but the ſmaller joints, ſuch as thoſe of the toes or fingers, ſeldom ſuffer. Sometimes the diſeaſe is confined to one part of the body, yet very frequently affects many parts of it; and then it begins with a cold ſtage, which is immediately ſucceeded by the other ſymptoms of pyrexia, and particularly by a frequent, full, and hard pulſe. Sometimes the pyrexia is formed before any pains are perceived; but more commonly pains are felt in particular parts before any ſymptoms of pyrexia occur. When no pyrexia is preſent, the pain may be confined to one joint only; but when any conſiderable pyrexia takes place, though the pain may chiefly be felt in one joint, yet it ſeldom happens but that the pains affect ſeveral joints, often at the very ſame time, but for the moſt part ſhifting their place, and having abated in one joint become more violent in another. They do not commonly remain long in the ſame joint, but frequently ſhift from one to another, and ſometimes return to joints formerly affected; and in this manner the diſeaſe often continues for a long time. The pyrexia hath an exacerbation every evening, and is moſt conſiderable during the night, when the pains alſo become more violent; and it is at the ſame time that the pains ſhift their place from one joint to another. Theſe ſeem to be alſo increaſed during the night by the body dy being covered more cloſely, and kept warmer.

A joint, after having been for ſome time affected with pain, commonly becomes alſo affected with ſome ſwelling and redneſs, which is painful to the touch. It ſeldom happens that a ſwelling coming on does not take off the pain entirely, or ſecure the joint againſt a return of it. This diſeaſe is commonly attended with more or leſs ſweating, which occurs early, but is ſeldom free or copious, and ſeldom either relieves from the pains or proves critical. The urine is high-coloured, and in the beginning without ſediment. This, however, does not prove entirely critical, for the diſeaſe often continues long after ſuch a ſediment has appeared in the urine. The blood is always ſizy. The acute rheumatiſm differs from all other inflammatory diſeaſes in not being liable to terminate in ſuppuration: this almoſt never happens; but the diſeaſe ſometimes produces effuſions of a tranſparent gelatinous fluid into the ſheaths of the tendons: but if theſe effuſions are frequent, it is certain that the liquor muſt very frequently be abſorbed; for it very ſeldom happens, that conſiderable or permanent tumours have been produced, or ſuch as required to be opened and to have the contained fluid evacuated. Such tumours, however, have ſometimes occurred, and the opening made in them has produced ulcers very difficult to heal.

Sometimes the rheumatiſm will continue for ſeveral weeks; however, it ſeldom proves fatal, and it is rare that the pyrexia continues to be conſiderable for more than two or three weeks. While the pyrexia abates in its violence, if the pains of the joints continue, they are leſs violent; more limited in their place, being confined commonly to one or a few joints only; and are leſs ready to change their place.

Cauſes, &c. This diſeaſe is frequent in cold, and more uncommon in warm, climates. It appears moſt frequently in autumn and ſpring; leſs frequently in winter, while the froſt is conſtant; and very ſeldom during the heat of ſummer. It may, however, occur at any ſeaſon, if viciſſitudes of heat and cold be for the time frequent. For the moſt part, the acute rheumatiſm ariſes from the application of cold to the body when unuſually warm; or when the cold is applied to one part of the body, whilſt the other parts are kept warm; or laſtly, when the application of the cold is long continued, as when moiſt or wet clothes are applied to any part of the body.—Theſe cauſes may affect perſons of all ages; but the rheumatiſm ſeldom appears either in very young or in elderly perſons, and moſt commonly occurs from the age of puberty to that of 35. Theſe cauſes may alſo affect perſons of any conſtitution, but they moſt commonly affect thoſe of a ſanguine temperament.

With reſpect to the proximate cauſe of rheumatiſm, there have been various opinions. It has been imputed to a peculiar acrimony: of which, however, there is no evidence; and the conſideration of the remote cauſes, the ſymptoms, and cure, render it very improbable. A diſeaſe of a rheumatic nature, however, may be occaſioned by an acrid matter applied to the nerves, as is evident from the tooth-ach, a rheumatic affection generally ariſing from a carious tooth. Pains ariſing from deep-ſeated ſuppurations may alſo reſemble the rheumatiſm; and many caſes have occurred in which ſuch ſuppurations occaſioned pains reſembling the lumbago and iſchia; but from what hath been already ſaid, it ſeems improbable that ever any rheumatic caſe ſhould end in ſuppuration.

The proximate cauſe of rheumatiſm hath by many been ſuppoſed to be a lentor in the fluids obſtructing the veſſels of the part; but in the former part of this treatiſe, ſufficient reaſons have been already laid down for rejecting the doctrine of lentor. While we cannot therefore find either evidence or reaſon for ſuppoſing that the rheumatiſm depends on any change in the ſtate of the fluids, we muſt conclude that the proximate cauſe of it is the ſame with that of other inflammations not depending upon a direct ſtimulus.

In the caſe of rheumatiſm, it is ſuppoſed that the moſt common remote cauſe of it, that is, cold applied, operates eſpecially on the veſſels of the joints, theſe being leſs covered by a cellular texture than thoſe of the intermediate parts of the limbs. It is farther ſuppoſed, that the application of cold produces a conſtriction of the extreme veſſels, and at the ſame time an increaſe of tone or phlogiſtic diatheſis in the courſe of them, from which ariſes an increaſed impetus of the blood, and at the ſame time a reſiſtance to the free paſſage of it, and conſequently inflammation and pain. It is alſo ſuppoſed, that the reſiſtance formed excites the *vis medicatrix* to a further increaſe of the impetus of the blood; and to ſupport this, a cold ſtage ariſes, a ſpaſm is formed, and a pyrexia and phlogiſtic diatheſis are produced in the whole ſyſtem.

Hence the cauſe of rheumatiſm appears to be exactly analogous to that of inflammations depending on an increaſed afflux of blood to a part while it is expoſed to the action of cold. But there ſeems to be further in this diſeaſe ſome peculiar affection of the muſcular fibres. Theſe ſeem to be under ſome degree of rigidity; and therefore leſs eaſily admit of motion, and are pained upon the exertions of it. This alſo ſeems to be the affection which gives opportunity to the propagation of pains from one joint to another, and which are moſt ſeverely felt in the extremities terminating in the joints, becauſe beyond theſe the oſcillations are not propagated. This affection of the muſcular fibres explains the manner in which ſtrains and ſpaſms produce rheumatic affections; and, on the whole, ſhews, that with an inflammatory affection of the ſanguiferous ſyſtem, there is alſo in rheumatiſm a peculiar affection of the muſcular fibres, which has a conſiderable ſhare in producing the phænomena of the diſeaſe.

Cure. Here we muſt remember, that in the acute rheumatiſm there is an inflammatory affection of the parts, and a phlogiſtic diatheſis of the whole ſyſtem. The cure therefore requires, in the firſt place, an antiphlogiſtic regimen, and particularly a total abſtinence from animal-food, and from all fermented or ſpirituous liquors; ſubſtituting a mild vegetable or milk diet, and the plentiful uſe of ſoft diluting liquors. On this principle, blood-letting is the chief remedy of acute rheumatiſm. The blood is to be drawn in large quantity; and the bleeding is to be repeated in proportion to the frequency, fulneſs, and hardneſs of the pulſe, and the violence of the pain. For the moſt part, large and repeated bleedings during the firſt days of the diſeaſe ſeem to be neceſſary, and accordingly have been very much employed: but to this ſome bounds are to be ſet; for very profuſe bleedings occaſion a ſlow recovery, and, if not abſolutely effectual, are ready to produce a chronic rheumatiſm.

To avoid that debility of the ſyſtem which general bleedings are apt to occaſion, the urgent ſymptom of pain may be often relieved by topical bleedings; and when any ſwelling or redneſs have come upon a joint, the pain may very certainly be relieved by topical bleedings: but as the pain and continuance of the diſeaſe ſeem to depend more upon the phlogiſtic diatheſis of the whole ſyſtem than upon the affection of particular parts, ſo topical bleedings will not ſupply the place of the general bleedings propoſed above.

To take off the phlogiſtic diatheſis prevailing in this diſeaſe, purging may be uſeful, if procured by medicines which do not ſtimulate the whole ſyſtem, as neutral ſalts, and other medicines which have a refrigerant power. Purging, however, is not ſo uſeful as bleeding in removing phlogiſtic diatheſis; and when the diſeaſe has become general and violent, frequent ſtools are inconvenient, and even hurtful, by the motion and pain which they occaſion.

In this diſeaſe, external applications are of little ſervice. Fomentations in the beginning of the diſeaſe rather aggravate than relieve the pains. The rubefacients and camphire are more effectual; but they generally only ſhift them from one part to another, and do not prove any cure of the general affection. Bliſtering may alſo be very effectual in removing the pain from a particular part; but will be of little uſe, except where the pains are much confined to a particular place.

The ſeveral remedies above-mentioned moderate the violence of the diſeaſe, and ſometimes remove it entirely; but they ſometimes fail, and leave the cure imperfect. The attempting a cure by large and repeated bleedings is attended with many inconveniencies; and the moſt effectual and ſafe method of cure is, after ſome general bleedings for taking off, or at leaſt diminiſhing, the phlogiſtic diatheſis, to employ ſweating conducted by the rules laid down when ſpeaking of the cure of ſynocha. Opiates, except where they are directed to procure ſweat, always prove hurtful in in every ſtage of this diſeaſe. The Peruvian bark has been ſuppoſed a remedy in ſome caſes; but it is ſeldom found uſeful, and is frequently hurtful. It ſeems only fit for thoſe caſes in which the phlogiſtic diatheſis is much abated, and at the ſame time the exacerbations of the diſeaſe are manifeſtly periodical, with conſiderable remiſſions interpoſed. Calomel, and other preparations of mercury, have been recommended in ſome caſes of the acute rheumatiſm; but Dr Cullen is of opinion that they are only uſeful in caſes approaching to the nature of the chronic kind.

313 LXI. ARTHRODYNIA, or *Chronic* RHEUMATISM.

Rheumatiſmus chronicus Auctorum.

Deſcription. When the pyrexia attending the acute rheumatiſm hath ceaſed; when the ſwelling and redneſs of the joints are entirely gone, but pains ſtill continue to affect certain joints, which remain ſtiff, feel uneaſy upon motion, changes of weather, or in the night-time only; the diſeaſe is then called the *chronic rheumatiſm*, as it often continues for a very long time.

The limits between the acute and chronic rheumatiſms are not always exactly marked. When the pains are ſtill ready to ſhift their place; when they are eſpecially ſevere in the night-time; when, at the ſame time, they are attended with ſome degree of pyrexia, and with ſome ſwelling, and eſpecially ſome redneſs, of the joints; the diſeaſe is to be conſidered as partaking of the nature of the acute rheumatiſm. But when there is no longer any degree of pyrexia remaining; when the pained joints are without redneſs; when they are cold and ſtiff; when they cannot eaſily be made to ſweat; or when, while a free and warm ſweat is brought out on the reſt of the body, it is only clammy and cold on the pained joints; and when further, the pains of theſe are increaſed by cold, and relieved by heat, applied to them; the caſe is to be conſidered as that of a purely chronic rheumatiſm.

The chronic rheumatiſm may affect different joints; but is eſpecially apt to affect thoſe which are ſurrounded with many muſcles, and thoſe of which the muſcles are employed in the moſt conſtant and vigorous exertions. Such is the caſe of the vertebræ of the loins, the affection of which is named *lumbago*; or of the hip joint, when the diſeaſe is named *iſchias*, or *ſciatica*.

Violent ſtrains and ſpaſms occurring on ſudden and ſomewhat violent exertions, bring on rheumatic affections, which at firſt partake of the acute, but very ſoon change into the nature of the chronic rheumatiſm.—Such are frequently the lumbago, and other affections, which ſeem to be more ſeated in the muſcles than in the joints. The diſtinction of the rheumatic pains from thoſe reſembling them which occur in the ſiphylis and ſcurvy muſt be obvious, either from the ſeat of the pains, or from the concomitant ſymptoms peculiar to thoſe diſeaſes. The diſtinction of the rheumatiſm from the gout will be more fully underſtood from what is laid down in the following genus.

Cauſes, &c. The phænomena of the purely chronic rheumatiſm lead us to conclude, that its proximate cauſe is an atony both of the blood-veſſels and of the muſcular fibres of the part affected, together with ſuch a degree of rigidity and contraction in the latter as frequently attend them in a ſtate of atony.

Cure. From the view juſt now given of the proximate cauſe of chronic rheumatiſm, the indication of cure muſt be, to reſtore the activity and vigour of the vital principle in the part.—The remedies are either external or internal.

The external are, the ſupporting the heat of the part, by keeping it conſtantly covered with flannel; the increaſing the heat of the part by external heat, applied either in a dry or humid form; the diligent uſe of the fleſh-bruſh, or other means of friction; the application of electricity in ſparks or ſhocks; the application of cold water by affuſion or immerſion; the application of eſſential oils of the moſt warm and penetrating kind; the application of ſalt brine; and laſtly, the employment either of exerciſe, of the part itſelf as far as it can eaſily bear, or by riding or other mode of geſtation.

The internal remedies are, 1. Large doſes of eſſential oils drawn from reſinous ſubſtances, ſuch as turpentine. 2. Subſtances containing ſuch oils, as guaiac. 3. Volatile alkaline ſalts. 4. Theſe or other medicines directed to procure ſweat; and, 5. Calomel, or ſome other preparation of mercury, in ſmall doſes, continued for ſome time. Beſides theſe, there are ſeveral others recommended; as bleeding, general and topical; burning, bliſtering, and iſſues: but theſe, to Dr Cullen, ſeem only uſeful when the diſeaſe ſtill partakes of the nature of the acute rheumatiſm.

314 LXII. ODONTALGIA, the TOOTH-ACH. G. XXIV.

Odontalgia, *Sauv.* gen. 198. *Lin.* 45. *Vog.* 145. *Sag.* gen. 157. *Junck.* 25.
Odontalgia ſive rheumatiſmus odontalgicus, *Hoffm.* II. 330.
Odontalgia carioſa, *Sauv.* ſp. 1.
Odontalgia ſcorbutica, *Sauv.* ſp. 4.
Odontalgia catarrhalis, *Sauv.* ſp. 3.
Odontalgia arthritica, *Sauv.* ſp. 6.
Odontalgia gravidarum, *Sauv.* ſp. 2.
Odontalgia hyſterica, *Sauv.* ſp. 3.
Odontalgia ſtomachica, *Sauv.* ſp. 9.

Deſcription. This well-known diſeaſe makes its attack by a moſt violent pain in the teeth, moſt frequently in the *molares*, but more rarely in the *inciſorii*, reaching ſometimes up to the eyes, and ſometimes backward into the cavity of the ear. At the ſame time there is a manifeſt determination to the head, and a remarkable tenſion and inflation of the veſſels takes place, not only in the parts next to that where the pain is ſeated, but over the whole head.

Cauſes, &c. The toothach is ſometimes merely a rheumatic affection ariſing from cold, but more frequently from a carious tooth. It is alſo a ſymptom of pregnancy, and takes place in ſome nervous diſorders; it may attack perſons at any time of life, tho' it is moſt frequent in the young and plethoric.

Cure. Many empirical remedies have been propoſed for the cure of the tooth-ach, but none have in any degree anſwered the purpoſe. When the affection is purely rheumatic, bliſtering behind the ear will almoſt always remove it; but when it proceeds from a carious tooth, the pain is much more obſtinate. In this caſe it hath been recommended to touch the pained part with a hot iron, or with oil of vitriol, in order to deſtroy the aching nerve; to hold ſtrong ſpirits in the mouth; to put a drop of oil of cloves into the hollow of the tooth, or a pill of equal parts of opium and camphire. The Peruvian bark hath alſo been recommended, and perhaps with more juſtice, on account of its tonic and antiſeptic powers; but very often all theſe remedies will fail, and the only infallible cure is to draw the tooth. See SURGERY.

315 GENUS XXIV. PODAGRA, the GOUT.

Podagra, *Vog.* 175. *Boerh.* 1254.
Febris podagrica, *Vog.* 69.
Arthritis, *Sauv.* gen. 183. *Lin.* 60. *Vog.* 139 *Sag.* gen. 142.
Dolor podagricus et arthriticus verus, *Hoffm.* II. 339.
Dolores arthritici, *Hoffm.* II. 317.
Affectus ſpaſtico-arthritici, *Junck.* 46.

LXIII. The *Regular* GOUT. Sp. II. 316

Arthritis podagra, *Sauv.* ſp. 1.
Arthritis rachialgica, *Sauv.* ſp. 11.
Arthritis æſtiva, *Sauv.* ſp. 4.

LXIV. The *Atonic* GOUT. Sp. II. 317

Arthritis melancholica, *Sauv.* ſp. 6.
Arthritis hiemalis, *Sauv.* ſp. 2.
Arthritis chlorotica, *Sauv.* ſp. 5.
Arthritis aſthmatica, *Sauv.* ſp. 9.

LXV. The *Retrocedent* GOUT. 318

LXVI. The *Miſplaced* GOUT. 319

Deſcription. What we call a *paroxyſm of the gout* is principally conſtituted by an inflammatory affection of ſome of the joints. This ſometimes comes on ſuddenly, without any warning, but is generally preceded by ſeveral ſymptoms; ſuch as the ceaſing of a ſweating which the feet had been commonly affected with before; an unuſual coldneſs of the feet and legs; a frequent numbneſs, alternating with a ſenſe of prickling along the whole of the lower extremities; frequent cramps of the muſcles of the legs; and an unuſual turgeſcence of the veins.

While theſe ſymptoms take place in the lower extremities, the body is affected with ſome degree of torpor and languor, and the functions of the ſtomach in particular are more or leſs diſturbed. The appetite is diminiſhed; and flatulency, or other ſymptoms of indigeſtion, are felt. Theſe ſymptoms take place for ſeveral days, ſometimes for a week or two, before a paroxyſm comes on; but commonly, upon the day immediately preceding it, the appetite becomes greater than uſual.

The circumſtances of paroxyſms are the following. They come on moſt commonly in the ſpring; and ſooner or later, according as the vernal heat ſucceeds ſooner or later to the winter's cold; and, perhaps, ſooner or later alſo, according as the body may happen to be more or leſs expoſed to viciſſitudes of heat and cold.

The attacks are ſometimes felt firſt in the evening, but more commonly about two or three o'clock of the morning. The paroxyſm begins with a pain affecting one foot, moſt commonly in the ball or firſt joint of the great toe, but ſometimes in other parts of the foot. With the coming on of this pain, there is commonly more or leſs of a cold ſhivering; which, as the pain increaſes, gradually ceaſes; and is ſucceeded by a hot ſtage of pyrexia, which continues for the ſame time with the pain itſelf. From the firſt attack, the pain becomes, by degrees, more violent, and continues in this ſtate with great reſtleſſneſs of the whole body till next midnight, after which it gradually remits; and, after it has continued for 24 hours from the commencement of the firſt attack, it commonly ceaſes very entirely; and, with the coming on of a gentle ſweat, allows the patient to fall aſleep. The patient, upon coming out of this ſleep in the morning, finds the pained part affected with ſome redneſs and ſwelling, which, after having continued for ſome days, gradually abate.

When a paroxyſm has thus come on, although the violent pain after 24 hours be conſiderably abated, the patient is not entirely relieved from it. For ſome
days;

days he has every evening a return of more conſiderable pain and pyrexia, and which continue with more or leſs violence till morning. After continuing in this manner for ſeveral days, the diſeaſe ſometimes goes entirely off, not to return till after a long interval.

When the diſeaſe, after having thus remained for ſome time in a joint, ceaſes entirely, it generally leaves the perſon in very perfect health, enjoying greater eaſe and alacrity in the functions of both body and mind than he had for a long time before experienced.

At the beginning of the diſeaſe, the returns of it are ſometimes only once in three or four years: but as it advances, the intervals become ſhorter, and at length the attacks are annual; afterwards they come twice each year; and at length recur ſeveral times during the whole courſe of autumn, winter, and ſpring; and as, when the fits are frequent, the paroxyſms become alſo longer, ſo, in the advanced ſtate of the diſeaſe, the patient is hardly ever tolerably free from it, except perhaps for two or three months in ſummer.

The progreſs of the diſeaſe is alſo marked by the parts which it affects. At firſt, it commonly affects one foot only; afterwards every paroxyſm affects both feet, the one after the other; and as the diſeaſe proceeds, it not only affects both feet at once, but, after having ceaſed in the foot which was ſecondly attacked, returns again into the firſt, and perhaps a ſecond time alſo into the other. Its changes of place are not only from one foot to another, but from the feet into other joints, eſpecially thoſe of the upper and lower extremities; ſo that there is hardly a joint of the body that, on one occaſion or other, is not affected. It ſometimes affects two different joints at the very ſame time; but more commonly is at any one time ſevere in a ſingle joint only, and paſſes ſucceſſively from one joint to another; ſo that the patient's affliction is often protracted for a long time.

When the diſeaſe has often returned, and the paroxyſms have become very frequent, the pains are commonly leſs violent than they were at firſt; but the patient is more affected with ſickneſs, and the other ſymptoms of the atonic gout, which ſhall be hereafter mentioned.

After the firſt paroxyſm of the diſeaſe, the joints which have been affected are entirely reſtored to their former ſuppleneſs and ſtrength: but, after the diſeaſe has recurred very often, the joints affected do neither ſo ſuddenly nor entirely recover their former ſtate, but continue weak and ſtiff; and theſe effects at length proceed to ſuch a degree, that the joints loſe their motion entirely.

In many perſons, but not in all, after the diſeaſe has frequently recurred, concretions of a chalky nature are formed upon the outſide of the joints, and for the moſt part immediately under the ſkin. The matter ſeems to be depoſited at firſt in a fluid form, afterwards becoming dry and firm. In their firm ſtate, theſe concretions are a friable earthy ſubſtance, very entirely ſoluble in acids. After they have been formed, they contribute, with other circumſtances, to deſtroy the motion of the joint.

In moſt perſons who have laboured under the gout for many years, a nephritic affection comes on, and diſcovers itſelf by all the ſymptoms which uſually attend calculous concretions in the kidneys, and which we ſhall have occaſion to deſcribe in another place. All that is neceſſary to be obſerved here is, that the nephritic affection alternates with paroxyſms of the gout; and that the two affections, the nephritic and the gouty, are hardly ever preſent at the ſame time. This alſo may be obſerved, that children of gouty or nephritic parents commonly inherit one or other of theſe diſeaſes; but whichever may have been the principal diſeaſe of the parent, ſome of the children have the one, and ſome the other. In ſome of them, the nephritic affection occurs alone, without any gout ſupervening; and this happens to be frequently the caſe of the female children of gouty parents.

In the whole of the hiſtory already given, we have deſcribed the moſt common form of the diſeaſe, and which therefore, however diverſified in the progreſs of it, may be ſtill called the regular ſtate of the gout. Upon occaſion, however, the diſeaſe aſſumes different appearances: but as we ſuppoſe the diſeaſe to depend always upon a certain diatheſis, or diſpoſition of the ſyſtem; ſo every appearance which we can perceive to depend upon that ſame diſpoſition, we ſtill conſider as a ſymptom and caſe of the gout. The principal circumſtance, in what we term the *regular gout*, is the inflammatory affection of the joints; and whatever ſymptoms we can perceive to be connected with, or to depend upon, the diſpoſition which produces that inflammatory affection, but without its taking place or being preſent at the ſame time, we name the *irregular gout*.

Of ſuch irregular gout there are three different ſtates, which we name the *atonic*, the *retrocedent*, and the *miſplaced* gout.

The firſt is, when the gouty diatheſis prevails in the ſyſtem; but, from certain cauſes, does not produce the inflammatory affection of the joints. In this caſe, the morbid ſymptoms which appear, are chiefly affections of the ſtomach, ſuch as loſs of appetite, indigeſtion, and its various circumſtances of ſickneſs, nauſea, vomiting, flatulency, acid eructations, and pains in the region of the ſtomach. Theſe ſymptoms are frequently accompanied with pains and cramps in ſeveral parts of the trunk, and the upper extremities of the body, which are relieved by the diſcharge of wind from the ſtomach. Together with theſe affections of the ſtomach, there commonly occurs a coſtiveneſs; but ſometimes a looſeneſs, with colic pains. Theſe affections of the alimentary canal are often attended with all the ſymptoms of hypochondriaſis, as dejection of mind, a conſtant and anxious attention to the ſlighteſt feelings, an imaginary aggravation of theſe, and an apprehenſion of danger from them.

In the ſame atonic gout, the viſcera of the thorax alſo are ſometimes affected; and palpitations, faintings, and aſthma, occur.

In the head alſo, occur headachs, giddineſs, apoplectic and paralytic affections.

When the ſeveral ſymptoms now mentioned occur in habits having the marks of a gouty diſpoſition, this may be ſuſpected to have laid the foundation of them; and eſpecially when either, in ſuch habits, a manifeſt tendency to the inflammatory affection has formerly appeared, or when the ſymptoms mentioned are intermixed with and are relieved by ſome degree of the inflammatory gout. In ſuch caſes there can be no dout of conſidering the whole as a ſtate of the gout.

Another ſtate of the diſeaſe we name the *retrocedent* gout. This occurs when an inflammatory ſtate of the joints has, in the uſual manner, come on, but without ariſing to the ordinary degree of pain and inflammation; or at leaſt without theſe continuing for the uſual time, or without their receding gradually in the uſual manner; theſe affections of the joints ſuddenly and entirely ceaſe, while ſome internal part becomes affected. The internal part moſt commonly affected is the ſtomach; which then is affected with anxiety, ſickneſs, vomiting, or violent pain: but ſometimes the internal part is the heart, which gives occaſion to a ſyncope; ſometimes it is the lungs, which are affected with aſthma; and ſometimes it is the head, giving occaſion to apoplexy or palſy. In all theſe caſes there can be no doubt of the ſymptoms being all a part of the ſame diſeaſe, however different the affection may ſeem to be in the parts which it attacks.

The third ſtate of irregular gout, which we name the *miſplaced*, is when the gouty diatheſis, inſtead of producing the inflammatory affection of the joints, produces an inflammatory affection of ſome internal part, and which appears from the ſame ſymptoms that attend the inflammations of thoſe parts ariſing from other cauſes.

Whether the gouty diatheſis does ever produce ſuch inflammation of the internal parts without having firſt produced it in the joints, or if the inflammation of the internal part be always a tranſlation from the joints previouſly affected, we dare not determine; but, even ſuppoſing the latter to be always the caſe, we think the difference of the affection of the internal part muſt ſtill diſtinguiſh the *miſplaced* from what we have named the *retrocedent gout*.

With regard to the miſplaced gout, Dr Cullen, whom we here follow, tells us, that he never met with any caſes of it in his practice, nor does he find any diſtinctly marked by practical writers, except that of a pneumonic inflammation.

There are two caſes of a tranſlated gout; the one of which is an affection of the neck of the bladder, producing pain, ſtrangury, and a *catarrhus veſicæ*: the other is an affection of the rectum, ſometimes by pain alone in that part, and ſometimes by hæmorrhoidal ſymptoms. In gouty perſons ſuch affections have been known to alternate with inflammatory affections of the joints; but whether theſe belong to the retrocedent or to the miſplaced gout, our author pretends not to determine.

It is commouly ſuppoſed, that there are ſome caſes of rheumatiſm which are ſcarcely to be diſtinguiſhed from the gout: but theſe, our author thinks, are but few; and that the two diſeaſes may be for the moſt part diſtinguiſhed with great certainty, by obſerving the prediſpoſition, the antecedents, the parts affected, the recurrences of the diſeaſe, and its connection with the ſyſtem; which circumſtances, for the moſt part, appear very differently in the two diſeaſes.

Cauſes, &c. The gout is generally an hereditary diſeaſe: but ſome perſons, without any hereditary diſpoſition, ſeem to acquire it; and in ſome an hereditary diſpoſition may be counteracted from various cauſes. It attacks the male ſex eſpecially; but it ſometimes, tho' more rarely, attacks alſo the female. The females liable to it are thoſe of the more robuſt and full habits; and it very often happens to thoſe before the menſtrual evacuation hath ceaſed. Dr Cullen hath alſo found it occurring in ſeveral females whoſe menſtrual evacuations were more abundant than uſual.

The gout ſeldom attacks eunuchs; and when it does, ſeems to fall upon thoſe who happen to be of a robuſt habit, to lead an indolent life, and to live very full. It attacks eſpecially men of robuſt and large bodies, who have large heads, are of full and corpulent habits, and whoſe ſkins are covered with a thicker *rete mucoſum*, which gives a coarſer ſurface. To ſpeak in the ſtyle of the ancient phyſicians, the gout will ſeldom be found to attack theſe of a ſanguine, or ſuch as are of a purely melancholic temperament; but very readily thoſe of a *cholerico-ſanguine* temperament. It is, however, very difficult to treat this matter with preciſion. The gout ſeldom attacks perſons employed in conſtant bodily labour, or thoſe who live much upon vegetable aliment. It does not commonly attack men till after the age of 35; and generally not till a ſtill later period. There are indeed inſtances of the gout appearing more early; but theſe are few in compariſon of the others. When the diſeaſe does appear early in life, it ſeems to be in thoſe who have the hereditary diſpotion very ſtrong, and to whom the remote cauſes hereafter mentioned have been applied in a very conſiderable degree.

As the gout is an hereditary diſeaſe, and affects men particularly of a certain habit, its *remote* cauſes may be conſidered as prediſponent and occaſional. The prediſponent cauſe, as far as expreſſed by external appearances, hath been already marked; and phyſicians have been very confident in aſſigning the occaſional cauſes: but in a diſeaſe depending ſo much upon a prediſpoſition, the aſſigning occaſional cauſes muſt be uncertain; as in the prediſpoſed the occaſional cauſes may not always appear, and in perſons not prediſpoſed they may appear without effect; and this uncertainty muſt particularly affect the caſe of the gout.

The occaſional cauſes of the diſeaſe ſeem to be of two kinds. Firſt, thoſe which induce a plethoric ſtate of the body. Secondly, thoſe which, in plethoric habits, induce a ſtate of debility. Of the firſt kind are a ſedentary, indolent manner of life, and a full diet of animal-food. Of the ſecond kind of occaſional cauſes which induce debility are exceſs in venery; intemperance in the uſe of intoxicating liquors; indigeſtion, produced either by the quantity or quality of the aliments; much application to ſtudy or buſineſs, night-watching, exceſſive evacuations; the ceaſing of uſual labour; a ſudden change from a very full to a very ſpare diet; the large uſe of acids and aceſcents; and laſtly, cold applied to the lower extremities. The former ſeem to act by increaſing the prediſpoſition; the latter are commonly the exciting cauſes, both of the firſt attacks, and of the repetitions of the diſeaſe.

With reſpect to the *proximate* cauſe of the gout, it hath generally been thought that it depends on a certain morbific matter always preſent in the body; and that this matter, by certain cauſes, thrown upon the joints or other parts, produces the ſeveral phenomena of the diſeaſe.

This doctrine, however ancient and general, appears to Dr Cullen very doubtful. For,

Firſt, there is no direct evidence of any morbific matter being preſent in perſons diſpoſed to the gout. There are no experiments or obſervations which ſhew that the blood or other humours of gouty perſons are in any reſpect different from thoſe of others. Previous to attacks of the gout, there appear no marks of any morbid ſtate of the fluids; for the diſeaſe generally attacks thoſe perſons who have enjoyed the moſt perfect health, and appear to be in that ſtate when the diſeaſe comes on. At a certain period of the diſeaſe, a peculiar matter indeed appears in gouty perſons; but this, which does not appear in every inſtance, and which appears only after the diſeaſe has ſubſiſted for a long time, ſeems manifeſtly to be the effect, not the cauſe, of the diſeaſe. Further, tho' there be certain acrids which, taken into the body, ſeem to excite the gout, it is probable that theſe acrids operate otherwiſe in exciting the diſeaſe, than by affording the material cauſe of it. In general, therefore, there is no proof of any morbific matter being the cauſe of the gout.

Secondly, the ſuppoſitions concerning the particular nature of the matter producing the gout, have been ſo various, and ſo contradictory to each other, as to allow us to conclude, that there is truly no proof of the exiſtence of any of them. With reſpect to many of theſe ſuppoſitions, they are ſo inconſiſtent with chemical philoſophy, and with the laws of the animal œconomy, that they muſt be entirely rejected.

Thirdly, the ſuppoſition of a morbific matter as the cauſe, is not conſiſtent with the phenomena of the diſeaſe, particularly with its frequent and ſudden tranſlations from one part to another.

Fourthly, The ſuppoſition is further rendered improbable by this, that, if a morbific matter did exiſt, its operation ſhould be ſimilar in the ſeveral parts which it attacks: whereas it ſeems to be very different, being ſtimulant, and exciting inflammation, in the joints; but ſedative, and deſtroying the tone, in the ſtomach: which, upon the ſuppoſition of particular matter acting in both caſes, is not to be explained by any difference in the part affected.

Fifthly, Some facts alleged in proof of a morbific matter, are not ſufficiently confirmed; ſuch as thoſe which would prove the diſeaſe to be contagious. There is, however, no proper evidence of this, the facts given being not only few, but exceptionable, and the negative obſervations innumerable.

Sixthly, Some arguments brought in favour of a morbific matter are founded upon a miſtaken explanation. The diſeaſe has been ſuppoſed to depend upon a morbific matter, becauſe it is hereditary. But the inference is not juſt: for moſt hereditary diſeaſes do not depend upon any morbific matter, but upon a particular conformation of the ſtructure of the body tranſmitted from the parent to the offspring; and this laſt appears to be particularly the caſe in the gout. It may be alſo obſerved, that hereditary diſeaſes depending upon a morbific matter, appear always much more early in life than the gout commonly does.

Seventhly, The ſuppoſition of a morbific matter being the cauſe of the gout, has been hitherto uſeleſs, as it has not ſuggeſted any ſucceſsful method of cure. Particular ſuppoſitions have often corrupted the practice, and have frequently led from thoſe views which might have been uſeful, and from that practice which experience had approved. Further, though the ſuppoſition of a morbific matter has been generally received, it has been as generally neglected in practice. When the gout has affected the ſtomach, nobody thinks of correcting the matter ſuppoſed to be preſent there, but merely of reſtoring the tone of the moving fibres.

Eighthly, The ſuppoſition of a morbific matter is quite ſuperfluous: for it explains nothing, without ſuppoſing that matter to produce a change in the ſtate of the moving powers; and a change in the ſtate of the moving powers, produced by other cauſes, explains every circumſtance without the ſuppoſition of a morbific matter; and, to this purpoſe, it may be obſerved, that many of the cauſes exciting the gout, do not operate upon the ſtate of the fluids, but directly and ſolely upon that of the moving powers.

Laſtly, The ſuppoſition of a morbific matter is ſuperfluous; becauſe, without that, the diſeaſe can be explained in a manner more conſiſtent with its phenomena, with the laws of the animal œconomy, and with the method of cure which experience has approved. We now proceed to give this explanation; but, before entering upon it, we muſt premiſe ſome general obſervations.

The firſt obſervation is, That the gout is a diſeaſe of the whole ſyſtem, or depends upon a certain general conformation and ſtate of the body, which manifeſtly appears from the facts above mentioned. But the general ſtate of the ſyſtem depends chiefly upon the ſtate of its primary moving powers; and therefore the gout may be ſuppoſed to be an affection of theſe chiefly.

The ſecond obſervation is, That the gout is manifeſtly an affection of the nervous ſyſtem; in which the primary moving powers of the whole ſyſtem are lodged. The occaſional or exciting cauſes are almoſt all ſuch as act directly upon the nerves and nervous ſyſtem; and the greater part of the ſymptoms of the atonic or retrocedent gout are manifeſtly affections of the ſame ſyſtem. This leads us to ſeek for an explanation of the whole of the diſeaſe in the laws of the nervous ſyſtem, and particularly in the changes which may happen in the balance of its ſeveral parts.

The third obſervation is, That the ſtomach, which has ſo univerſal a conſent with the reſt of the ſyſtem, is the internal part that is the moſt frequently, and often very conſiderably, affected by the gout. The paroxyſms of the diſeaſe are commonly preceded by an affection of the ſtomach; many of the exciting cauſes act firſt upon the ſtomach, and the ſymptoms of the atonic and retrocedent gout are moſt commonly and chiefly affections of the ſame organ. This obſervation leads us to remark, that there is a balance ſubſiſting between the ſtate of the internal and that of the external parts; and, in particular, that the ſtate of the ſtomach is connected with that of the external parts, ſo that the ſtate of tone in the one may be communicated to the other.

Theſe obſervations being premiſed, we ſhall now offer the following pathology of the gout.

In ſome perſons there is a certain vigorous and plethoric ſtate of the ſyſtem, which at a certain period of life is liable to a loſs of tone in the extremities. This is in ſome meaſure communicated to the whole ſyſtem, but appears more eſpecially in the functions of the ſtomach. When this loſs of tone occurs while the energy of the brain ſtill retains its vigour, the *vis medicatrix naturæ* is excited to reſtore the tone of the parts; and accompliſhes it, by exciting an inflammatory affection in ſome part of the extremities. When this has ſubſiſted for ſome days, the tone of the extremities and of the whole ſyſtem is reſtored, and the patient returns to his ordinary ſtate of health.

This is the courſe of things in the ordinary form of the diſeaſe, which we name the *regular gout;* but there are circumſtances of the body, in which this courſe is interrupted or varied. Thus, when the atony has taken place, if the reaction do not ſucceed, the atony continues in the ſtomach, or perhaps in other internal parts; and produces that ſtate which we have, for reaſons now obvious, named the *atonic gout*.

A ſecond caſe of variation in the courſe of the gout is, when to the atony the reaction and inflammation have to a certain degree ſucceeded, but from cauſes either internal or external the tone of the extremities and perhaps of the whole ſyſtem is weakened; ſo that the inflammatory ſtate, before it had either proceeded to the degree, or continued for the time, requiſite for reſtoring the tone of the ſyſtem, ſuddenly and entirely ceaſes: whence the ſtomach, and other internal parts, relapſe into the ſtate of atony; and perhaps have that increaſed by the atony communicated from the extremities: all which appears in what we have termed the *retrocedent ſtate of the gout*.

A third caſe of variation from the ordinary courſe of the gout, is, when to the atony, uſually preceding, an inflammatory reaction fully ſucceeds, but has its uſual determination to the joints by ſome circumſtances prevented; and is therefore directed to ſome internal part, where it produces an inflammatory affection, and that ſtate of things which we have named the *miſplaced gout*.

Cure. In entering upon this, we muſt obſerve, in the firſt place, that a cure has been commonly thought impoſſible; and we acknowledge it to be very probable, that the gout, as a diſeaſe of the whole habit, and very often depending upon original conformation, cannot be cured by medicines, the effects of which are always very tranſitory, and ſeldom extend to the producing any conſiderable change of the whole habit.

It would perhaps have been happy for gouty perſons if this opinion had been implicitly received by them; as it would have prevented their having been ſo often the dupes of ſelf-intereſted pretenders, who have either amuſed them with inert medicines, or have raſhly employed thoſe of the moſt pernicious tendency. Our author is much diſpoſed to believe the impoſſibility of a cure of the gout by medicines; and more certainly ſtill inclined to think, that, whatever may be the poſſible power of medicines, yet no medicine for curing the gout has hitherto been found. Although almoſt every age has preſented a new remedy, all hitherto offered have, very ſoon after, been either neglected as uſeleſs, or condemned as pernicious.

But, though unwilling to admit the power of medicines, yet he contends, that a great deal can be done towards the cure of the gout by a regimen: and from what has been already obſerved, he is firmly perſuaded, that any man who, early in life, will enter upon the conſtant practice of bodily labour, and of abſtinence from animal-food, will be preſerved entirely from the diſeaſe.

Whether there be any other means of radically curing the gout, the Doctor is not ready to determine. There are hiſtories of caſes of the gout, in which it is ſaid, that by great emotions of mind, by wounds, and by other accidents, the ſymptoms have been ſuddenly relieved, and never again returned; but how far theſe accidental cures might be imitated by art, or would ſucceed in other caſes, is at leaſt extremely uncertain.

The practices proper and neceſſary in the treatment of the gout, are to be conſidered under two heads: *Firſt*, As they are to be employed in the intervals of paroxyſms; or, *ſecondly*, As during the time of theſe. In the intervals of paroxyſms, the indications are, to prevent altogether the return of paroxyſms; or at leaſt to render them leſs frequent, and more moderate. During the time of paroxyſms, the indications are, to moderate the violence and ſhorten the duration of them as much as can be done with ſafety.

1. It has been already obſerved, that the gout may be entirely prevented by conſtant bodily exerciſe, and by a low diet; and Dr Cullen is of opinion, that this prevention may take place even in perſons who have a hereditary diſpoſition to the diſeaſe. Even when the diſpoſition has diſcovered itſelf by ſeveral paroxyſms of inflammatory gout, he is perſuaded that labour and abſtinence will abſolutely prevent any returns of it for the reſt of life. Theſe, therefore, are the means of anſwering the firſt indication to be purſued in the intervals of paroxyſms.

Exerciſe in perſons diſpoſed to the gout, is directed to two purpoſes. One of theſe is the ſtrengthening of the tone of the extreme veſſels; and the other, the guarding againſt a plethoric ſtate. For the former, if exerciſe be employed early in life, and before intemperance has weakened the body, a very moderate degree of it will anſwer the purpoſe; and, for the latter, if abſtinence be at the ſame time obſerved, little exerciſe will be neceſſary.

With reſpect to exerciſe, this in general is to be obſerved, that it ſhould never be violent; for, if violent, it cannot be long continued, and muſt always endanger the bringing on an atony in proportion to the violence of the preceding exerciſe.

It is alſo to be obſerved, that the exerciſe of geſtation, though conſiderable and conſtant, will not, if it be entirely without bodily exerciſe, anſwer the purpoſe in preventing the gout. For this end, therefore, the exerciſe muſt be in ſome meaſure that of the body; and muſt be moderate, but at the ſame time conſtant and continued through life.

In every caſe and circumſtance of the gout in which the patient retains the uſe of his limbs, bodily exerciſe, in the intervals of paroxyſms, will be always uſeful; and, in the beginnings of the diſeaſe, when the diſpoſition to it is not yet ſtrong, exerciſe may prevent a paroxyſm which otherwiſe might have come on. In more advanced ſtates of the diſeaſe, however, when there is ſome diſpoſition to a paroxyſm, much walking will bring it on; either as it weakens the tone of the lower extremities, or as it excites an inflammatory diſpoſition in them; and thus it ſeems to be, that ſtrains or contuſions often bring on a paroxyſm of the gout.

Abſtinence, the other part of our regimen for preventing the gout, is of more difficult application. If an abſtinence from animal food be entered upon early in life, while the vigour of the ſyſtem is yet entire, our author has no doubt of its being both ſafe and effectual; but, if the motive for this diet ſhall not have occurred till the conſtitution hath been broken by intemperance, or by the decline of life, a low diet may then endanger the bringing on an atonic ſtate.

Further, if a low diet be entered upon only in the decline of life, and be at the ſame time a very great change in the former manner of living, the withdrawing of an accuſtomed ſtimulus of the ſyſtem may readily throw this into an atonic ſtate.

The ſafety of an abſtemious courſe may be greater or leſs according to the management of it. It is animal food which eſpecially diſpoſes to the plethoric and inflammatory ſtate, and that food is to be therefore eſpecially avoided; but, on the other hand, it is vegetable aliment of the loweſt quality that is in danger of weakening the ſyſtem too much by not affording ſufficient nouriſhment, and more particularly of weakening the tone of the ſtomach by its aceſcency. It is therefore a diet of a middle nature that is to be choſen; and milk is preciſely of this kind, as containing both animal and vegetable matter.

As approaching to the nature of milk, and as being a vegetable matter containing the greateſt portion of nouriſhment, the farinaceous ſeeds are next to be choſen, and are the food moſt proper to be joined with milk.

With reſpect to drink, fermented liquors are uſeful only when they are joined with animal food, and that by their aceſcency; and their ſtimulus is only neceſſary from cuſtom. When, therefore, animal food is to be avoided, fermented liquors are unneceſſary; and by increaſing the aceſcency of vegetables, theſe liquors may be hurtful. The ſtimulus of fermented, or ſpirituous liquors, is not neceſſary to the young and vigorous, and, when much employed, impairs the tone of the ſyſtem. Theſe liquors, therefore, are to be avoided, except ſo far as cuſtom and the declining ſtate of the ſyſtem may have rendered them neceſſary. For preventing or moderating the regular gout, water is the only proper drink.

With reſpect to an abſtemious courſe, it has been ſuppoſed, that an abſtinence from animal-food and fermented liquors, or the living upon milk and farinacea alone for the ſpace of one year, might be ſufficient for a radical cure of the gout: and it is poſſible that, at a certain period of life, in certain circumſtances of the conſtitution, ſuch a meaſure might anſwer the purpoſe. But this is very doubtful; and it is more probable, that the abſtinence muſt, in a great meaſure, be continued, and the milk-diet be perſiſted in, for the reſt of life. It is well known, that ſeveral perſons who had entered on an abſtemious courſe, and had been thereby delivered from the gout, have however, upon returning to their former manner of full living, had the diſeaſe return upon them with as much violence as before, or in a more irregular and more dangerous form.

It has been alleged, that, for preventing the return of the gout, blood-letting, or ſcarifications of the feet, frequently repeated, and at ſtated times, may be practiſed with advantage; but of this the Doctor has had no experience.

Exerciſe and abſtinence are the means of avoiding the plethoric ſtate which gives the diſpoſition to the gout; and are therefore the means propoſed for preventing the paroxyſms, or at leaſt for rendering them leſs frequent and more moderate. But many circumſtances prevent the ſteadineſs neceſſary in purſuing theſe meaſures: and therefore, in ſuch caſes, unleſs great care be taken to avoid the exciting cauſes, the diſeaſe may frequently return; and, in many caſes, the preventing of paroxyſms is chiefly to be obtained by avoiding thoſe exciting cauſes already enumerated.

A due attention in avoiding thoſe ſeveral cauſes, will certainly prevent fits of the gout; and the taking care that thoſe exciting cauſes be never applied in a great degree, will certainly render fits more moderate when they do come on. But, upon the whole, it will appear, that a ſtrict attention to the whole conduct of life, is in this matter neceſſary; and therefore, when the prediſpoſition has taken place, it will be extremely difficult to avoid the diſeaſe.

Dr Cullen is firmly perſuaded, that, by obviating the prediſpoſition, and by avoiding the exciting cauſes, the gout may be entirely prevented: but, as the meaſures neceſſary for this purpoſe will, in moſt caſes, be purſued with difficulty, and even with reluctance, men have been very deſirous to find a medicine which might anſwer the purpoſe, without any reſtraint on their manner of living. To gratify this deſire, phyſicians have propoſed, and, to take advantage of it, empirics have feigned, many remedies, as we have already obſerved. Of what nature ſeveral of theſe remedies have been, it is difficult to ſay: but of thoſe which are unknown, we conclude, from their having been only of temporary fame, and from their having ſoon fallen into neglect, that they have been either inert or pernicious, and therefore ſhall make no inquiry after them; and ſhall now remark only upon one or two known remedies for the gout which have been lately in vogue.

One of theſe is what has been named in England the *Portland powder*. This is not a new medicine, but is mentioned by Galen, and, with ſome little variation in its compoſition, has been mentioned by the writers of almoſt every age ſince that time. It appears to have been at times in faſhion, and to have again fallen into neglect; and our author thinks that this laſt has been owing to its having been found to be, in many inſtances, pernicious. In every inſtance which the Doctor has known of its exhibition for the length of time preſcribed, the perſons who had taken it were indeed afterwards free from any inflammatory affection of the joints; but they were affected with many ſymptoms of the atonic gout; and all, ſoon after finiſhing their courſe of the medicine, have been attacked with apoplexy, aſthma, or dropſy, which proved fatal.

Another remedy which has had the appearance of preventing the gout, is an alkali in various forms; ſuch as the fixed alkali, both mild and cauſtic, lime-water, ſoap, and abſorbent earths. Since it became common to exhibit theſe medicines in nephritic and calculous caſes, it has often happened that they were given to thoſe who were at the ſame time ſubject to the gout; and it has been obſerved, that under the uſe of theſe medicines, gouty perſons have been longer free from the fits of their diſeaſe. That, however, the uſe of theſe medicines has entirely prevented the returns of gout, Dr Cullen does not know; becauſe he never puſhed the uſe of thoſe medicines for a long time, being apprehenſive that the long-continued uſe of them might produce a hurtful change in the ſtate of the fluids.

As the preventing the gout depends very much on ſupporting the tone of the ſtomach, and avoiding indigeſtion; ſo coſtiveneſs, by occaſioning this, is very hurtful to gouty perſons. It is therefore neceſſary for ſuch perſons to prevent or remove coſtiveneſs, and by a laxative medicine, when needful; but it is at the ſame time proper, that the medicine employed ſhould be ſuch as may keep the belly regular, without much purging. Aloetics, rhubarb, magneſia alba, or flowers of ſulphur, may be employed, as the one or the other may happen to be beſt ſuited to particular perſons.

2. Theſe are the ſeveral meaſures to be purſued in the intervals of the paroxyſms; and we are next to mention the meaſures proper during the time of them.

As during the time of paroxyſms the body is in a feveriſh ſtate, no irritation ſhould then be added to it; and every part, therefore, of the antiplogiſtic regimen, except the application of cold, ought to be ſtrictly obſerved.

Another exception to the general rule may occur when the tone of the ſtomach is weak, and when the patient has been before much accuſtomed to the uſe of ſtrong drink; for then it may be allowable, and even neceſſary, to give ſome animal-food, and a little wine.

That no irritation is to be added to the ſyſtem during the paroxyſms of gout, except in the caſes mentioned, is entirely agreed upon among phyſicians: but it is a more difficult matter to determine, whether, during the time of paroxyſms, any meaſures may be purſued to moderate the violence of reaction and of inflammation. Dr Sydenham has given it as his opinion, that the more violent the inflammation and pain, the paroxyſms will be the ſhorter, as well as the interval between the preſent and the next paroxyſm longer: and, if this opinion be admitted as juſt, it will forbid the uſe of any remedies which might moderate the inflammation; which is, to a certain degree, undoubtedly neceſſary for the health of the body. On the other hand, acute pain preſſes for relief; and, although a certain degree of inflammation may ſeem abſolutely neceſſary, it is not certain but that a moderate degree of it may anſwer the purpoſe: and it is even probable, that, in many caſes, the violence of inflammation may weaken the tone of the parts, and thereby invite a return of paroxyſms. It ſeems to be in this way, that, as the diſeaſe advances, the paroxyſms become more frequent.

From theſe laſt conſiderations, it ſeems probable, that, during the time of paroxyſms, ſome meaſures may be taken to moderate the violence of the inflammation and pain, and particularly, that in firſt paroxyſms, and in the young and vigorous, blood-letting at the arm may be practiſed with advantage: but this practice cannot be repeated often with ſafety; becauſe blood-letting not only weakens the tone of the ſyſtem, but may alſo contribute to produce plethora. However, bleeding by leeches on the foot, and upon the inflamed part, may be practiſed and repeated with greater ſafety; and inſtances have been known of its having been practiſed with ſafety to moderate and ſhorten paroxyſms; but how far it may be carried, we have not had experience enough to determine.

Beſides blood-letting and the antiphlogiſtic regimen, it has been propoſed to employ remedies for moderating the inflammatory ſpaſm of the part affected, ſuch as warm bathing and emollient poultices. Theſe have ſometimes been employed with advantage and ſafety; but, at other times, have been found to give occaſion to a retroceſſion of the gout.

Bliſtering is a very effectual means of relieving and diſcuſſing a paroxyſm of the gout; but has alſo frequently had the effect of rendering it retrocedent. The ſtinging with nettles is analogous to bliſtering; and probably would be attended with the ſame danger. The burning with moxa, or other ſubſtances, is a remedy of the ſame kind; but, though not found hurtful, there are no ſufficient evidences of its proving a radical cure.

Camphire, and ſome aromatic oils, have the power of allaying the pain, and of removing the inflammation from the part affected: but theſe remedies commonly make the inflammation only ſhift from one part to another, and therefore with the hazard of its falling upon a part where it may be more dangerous; and they have ſometimes rendered the gout retrocedent.

From theſe reflections it will appear, that ſome danger muſt attend every external application to the parts affected during a paroxyſm; and that therefore the common practice of committing the perſon to patience and flannel alone, is eſtabliſhed upon the beſt foundation. Opiates give the moſt certain relief from pain; but, when given in the beginning of gouty paroxyſms, occaſion theſe to return with greater violence. When, however, the paroxyſms ſhall have abated in their violence, but ſtill continue to return, ſo as to occaſion painful and reſtleſs nights, opiates may be then given with ſafety and advantage; eſpecially in the caſe of perſons advanced in life, and who have been often affected with the diſeaſe. When, after paroxyſms have ceaſed, ſome ſwelling and ſtiffneſs ſhall remain in the joints, theſe ſymptoms are to be diſcuſſed by the diligent uſe of the fleſh-bruſh. Purging immediately after a paroxyſm, will be always employed with the hazard of bringing it on again.

Thus far of the REGULAR gout. We now proceed to conſider the management of the diſeaſe when it has become IRREGULAR.

1. In the *atonic* gout, the cure is to be accompliſhed by carefully avoiding all debilitating cauſes; and by employing, at the ſame time, the means of ſtrengthening the ſyſtem in general, and the ſtomach in particular.

For ſtrengthening the ſyſtem in general, Dr Cullen recommends frequent exerciſe on horſeback, and moderate walking. Cold bathing alſo may anſwer the purpoſe; and may be ſafely employed, if it appear to be powerful in ſtimulating the ſyſtem, and be not applied when the extremities are threatened with any pain.

For ſupporting the tone of the ſyſtem in general, when threatened with atonic gout, ſome animal food ought to be employed, and the more aceſcent vegetables ought to be avoided. In the ſame caſe, ſome wine alſo may be neceſſary: but it ſhould be in moderate quantity, and of the leaſt aceſcent kinds; and if every kind of wine ſhall be found to increaſe the acidity of the ſtomach, ardent ſpirits and water muſt be employed.

For ſtrengthening the ſtomach, bitters and the Peruvian bark may be employed; but care muſt be taken that they be not conſtantly employed for any great length of time.

The moſt effectual medicine for ſtrengthening the ſtomach is iron, which may be employed under various preparations; but the beſt appears to be the ruſt in fine powder, which may be given in very large doſes.

For ſupporting the tone of the ſtomach, aromatics may be employed; but ſhould be uſed with caution, as the frequent and large uſe of them have an oppoſite effect; and they ſhould therefore be given only in compliance with former habits, or for palliating preſent ſymptoms.

When the ſtomach happens to be liable to indigeſtion, gentle vomits may be frequently given, and proper laxatives ſhould be always employed to obviate or to remove coſtiveneſs.

In the atonic gout, or in perſons liable to it, to guard againſt cold is eſpecially neceſſary; and the moſt certain means of doing this, is by repairing to a warm climate during the winter-ſeaſon. In the more violent caſes, bliſtering the lower extremities may be uſeful; but that remedy ſhould be avoided when any pain threatens the extremities. In perſons liable to the atonic gout, iſſues may be eſtabliſhed in the extremities, as in ſome meaſure a ſupplement to the diſeaſe.

2. A ſecond caſe of the irregular gout, is the *retrocedent*.

When this affects the ſtomach and inteſtines, relief is to be inſtantly attempted by the free uſe of ſtrong wines, joined with aromatics, and given warm; or, if theſe ſhall not prove powerful enough, ardent ſpirits muſt be employed, and are to be given in a large doſe. In moderate attacks, ardent ſpirits, impregnated with garlic or with aſa fœtida, may be employed; or, even without the ardent ſpirits, a ſolution of aſa fœtida, with the volatile alkali, may anſwer the purpoſe. Opiates are often an effectual remedy; and may be joined with aromatics, as in the electuarium thebaicum; or they may be uſefully joined with volatile alkali and camphire. Muſk has likewiſe proved uſeful in this diſeaſe.

When the affection of the ſtomach is accompanied with vomiting, this may be encouraged, by taking draughts of warm wine, at firſt with water, and afterwards without it; having at length recourſe, if neceſſary, to ſome of the remedies abovementioned, and particularly the opiates.

In like manner, if the inteſtines be affected with diarrhœa, this is to be at firſt encouraged by taking plentifully of weak broth; and when this ſhall have been done ſufficiently, the tumult is to be quieted by opiates.

When the retrocedent gout ſhall affect the lungs, and produce aſthma, this is to be cured by opiates, by antiſpaſmodics, and perhaps by bliſtering on the back or breaſt.

When the gout, leaving the extremities, ſhall affect the head, and produce pain, vertigo, apoplexy, or palſy, our reſources are very precarious. The moſt probable means of relief is, bliſtering the head; and, if the gout ſhall have receded very entirely from the extremities, bliſters may be applied to theſe alſo. Together with theſe bliſterings, aromatics, and the volatile alkali, may be thrown into the ſtomach.

3. The third caſe of the irregular gout is the *miſplaced;* that is, when the inflammatory affection of the gout, inſtead of falling upon the extremities, falls upon ſome internal part. In this caſe, the diſeaſe is to be treated by blood-letting, and by ſuch other remedies as would be proper in an idiopathic inflammation of the ſame parts.

Whether the tranſlation ſo frequently made from the extremities to the kidneys, is to be conſidered as an inſtance of the miſplaced gout, ſeems, as we have ſaid before, uncertain: but our author is diſpoſed to think it ſomething different; and therefore is of opinion, that, in the *nephralgia calculoſa* produced upon this occaſion, the remedies of inflammation are to be employed no farther than they may be otherwiſe ſometimes neceſſary in that diſeaſe, ariſing from other cauſes than the gout.

To this diſſertation on the gout, taken from the works of our learned profeſſor, we cannot help ſubjoining a very uncommon caſe publiſhed by Dr Samuel Pye in the London Medical Tranſactions, where the gout would ſeem to have been occaſioned by a morbific matter, and to have been cured by the evacuation of it.

"Mr Major Rook, ſurgeon and apothecary in Uppear Shadwell, of about 45 years of age, a ſober, temperate man, of a good habit of body, accuſtomed to no diſeaſe but the gout; the returns of the fits whereof had never been more frequent than once in 12 or 14 months. About the month of June 1752, he was ſeized with a very ſevere paroxyſm of the gout. As I had known ſome extraordinary effects, proceeding from a vegetable diet, in that diſtemper; particularly in one gentleman, who, by a total abſtinence from all manner of food, except cow's milk, and that without bread, had cured himſelf of this diſeaſe; and who, at the time I mentioned the caſe to my friend, was in the 13th year of his milk-diet; I perſuaded Mr Rook to try what vegetables would do for him: he readily complied, and entered upon it immediately, with a reſolution, that, if it anſwered his expectoration, he would renounce fiſh and fleſh for ever.

"But after the moſt religious abſtinence from animal food, of every kind, for eleven weeks, being viſited by a gentle attack in both feet, he returned immediately to his animal-food. This paroxyſm continued but 48 hours; but in March 1753, was ſucceeded by a very ſevere one in both feet.

"The pain in his feet, heels, and ankles, increaſed with great violence, for about 10 or 12 days; till at length he was in the moſt extreme agonies; ſuch as he had never felt before, and ſuch as almoſt made him mad. In the height of this extremity, the pains (it is his own expreſſion) from the feet, heels, and ankles, flew as quick as lightning directly to the calves of his legs; but remaining there not half a minute, and not in the leaſt abating of their extreme violence, (though the feet, heels, and ankles, were left entirely free from pain), from the calves, after a ſhort ſtay of about half a minute, the pains aſcended with the ſame velocity as before to both the thighs, at the ſame time leaving the calves of the legs free from pain: from the thighs, in leſs than the ſpace of one minute, and as quick as before, they arrived at the abdomen; and after giving the patient one moſt ſevere twitch in the bowels, they reached the ſtomach: here the pains and here the fit ended, upon the patient's vomiting up about a pint and a half of a green aqueous liquor, but ſo extremely corroſive, that he compared it to the ſtrongeſt mineral acid.

"This extraordinary criſis happened at about two in the morning: immediately after this diſcharge he fell aſleep, and ſlept till ſeven or eight, and waked perfectly eaſy in every part, no ſigns of the diſtemper remaining, but the ſwelling and tenderneſs of his feet; both of which went off gradually, ſo that in two days he was able to walk about his buſineſs.

"The next fit ſeized him in February 1754, in the common way; but was leſs violent than the former, and continued for about ſix weeks; during which time he had three increaſed paroxyſms, or diſtinct ſmart fits, which held him about two hours each; in the laſt of which he had the ſame critical diſcharge, by vomiting of the ſame corroſive matter, preceded by the ſame uncommon ſymptoms as in the fit of 1753. But mending every hour, he was able the very next day to walk, and attend his patients, with more eaſe than after the firſt-mentioned fit; for the ſwelling abated much ſooner, and in three days diſappeared.

"I have ſaid, that this laſt fit was attended with three diſtinct paroxyſms, the laſt of which ended as above: yet to ſhew the diſpoſition of nature, in this caſe, to throw off the offending humour in this her new way, it is remarkable, that, in the two firſt of theſe increaſed paroxyſms of pain, the patient declared to me that he never had the leaſt eaſe till he had vomited; but as there was no tranſlation of the pain before theſe vomitings, there was none of that corroſive matter to be diſcharged; nothing but the common contents of the ſtomach was to be ſeen. Theſe vomitings, however, procured the patient ſome eaſe; but the fit of the gout went on till the third paroxyſm was over, which ended as has been related.

"As the criſis in this caſe is uncommon, I muſt take notice of a ſymptom or two, which were no leſs extraordinary, in both theſe fits of the gout.

"A moſt profuſe ſweat attended the patient every morning, during the whole courſe of the fits; which was ſo very offenſive, and at the ſame time his breath ſo uncommonly ſtinking, that neither the patient himſelf, nor thoſe who waited on him, were ever ſenſible of the like.

"His linen was tinged as with ſaffron; and his urine very high coloured, of almoſt as deep a red as claret: but, upon the critical vomitings, every one of theſe ſymptoms diſappeared with the diſeaſe.

"On the ninth of December 1755, he was attacked again in one foot. The ſymptoms, however, were ſo very mild, that he took no notice of them to his family, till the 12th: from that day the pain was aggravated, and the ſwelling greatly increaſed, by walking, and riding in a coach. On the 17th it became extremely violent, particularly in the heel; when it inſtantaneouſly left the parts affected, and in the ſame manner and with equal velocity, (as in the two former fits,) it flew into the calves of his legs, thighs, and abdomen; and when it had reached the ſtomach, it cauſed him to vomit the ſame kind of corroſive acid as in the two former fits; and though the quantity was no more than a tea-ſpoonful, he became perfectly well in two days.

"The ſame ſymptoms of fetid urine, and offenſive ſweats, attended the patient in this ſhort paroxyſm, as in thoſe of 1753 and 1754; the ſweat continued but two nights, and the urine fetid only 48 hours.

"As Mr Rook had experienced ſo great and happy effects from the former critical vomitings, he was greatly diſappointed upon finding the quantity evacuated ſo very ſmall; for which reaſon he immediately attempted to increaſe it, by drinking three pints of warm water (which was at hand), but in vain; for neither that, nor the uſe of his finger, could provoke to an evacuation, which was begun and finiſhed by nature: for though the quantity evacuated was ſo very ſmall, yet as it was equally corroſive, and produced the ſame effect, the diſcharge muſt be accounted as truly critical as the others were.

"During the firſt of theſe fits, in the year 1752, a hard tumour had appeared on the ſide of the metatarſus near the middle of the right foot, which continued till after the third critical vomiting; when it was reſolved, and totally diſappeared, upon the diſcharge of a viſcid matter, like the white of an egg, with a few ſmall chalk-ſtones from the end of the middle toe of the ſame foot. This diſcharge happened about four or five days before the patient was ſeized with a regular fit in April 1755. But it is to be remarked, that this laſt fit continued three or four weeks, and went off in the common way, without any of the critical diſcharges of vomiting, urine, or ſweat; but left on one hand three, and on the other two, fingers loaded with chalk-ſtones; with this peculiar ſymptom, that when the weather was cold thoſe fingers were affected with a moſt exquiſite pain, which was always removed by heat.

"But not long after this laſt-mentioned fit, a large quantity of chalk-ſtones were extracted from the bottom of the left foot, near the ball of the great toe, and that from time to time for about three or four months. On the 19th of January 1756, (the wound occaſioned by the chalk-ſtones being ſtill open) he was ſeized with a fever, without any ſymptom of the gout: the fever went off on the third day, with the ſame kind of critical ſweat and urine as always accompanied the acid vomitings in the forementioned fits. On the fourth day from the attack of the fever, a fit of the gout came on, with the common ſymptoms, in both feet; which continued with violence for about a week, with frequent retching and vomiting, but without bringing up more than the common contents of the ſtomach. At this time an uncommon itching in the bottom of the foot and ball of the great toe from whence the chalk-ſtones had been extracted, tormented the patient for five or ſix hours; upon his gently rubbing the part, he was very ſenſible of a fluctuation of ſome matter, which ſoon appeared to flow at firſt in ſmall quantities from the open orifice in the ball of the toe: upon preſſing the part, about a tea-cup full of a liquid chalky matter was collected. The next morning the patient made a large opening with an impoſthume knife, which produced more than half a pint of a bloody ſerous matter, full of chalk ſtones, which proved as truly critical as the vomitings of the corroſive acid did in the caſes above-mentioned; for the orifice from whence the chalk-ſtones firſt iſſued, was very ſoon healed, and the gentleman continues in perfect health."

320 LXIV. ARTHUOPROSIS, Genus XXV.

Lumbago pſoadica, *Sauv.* ſp. 6. *Fordyce*, Practice of Phyſic, P. II. p. 70.
Lumbago apoſtematoſa, *Sauv.* ſp. 12.
Lumbago ab arthrocace, *Sauv.* ſp 17.
Iſchias ex abſceſſu, *Sauv.* ſp. 6.
Morbus coxarius, *De Haen*, Rat. Med. Vol. I. c. xxxii.

THIS is a diſeaſe very much reſembling the rheumatiſm; but differing both from it and the gout, in that it occaſions ſuppurations, which they ſeldom or never do. It frequently, according to Sauvages, attacks the muſcle pſoas; and occaſions excruciating pains, and then collections of matter.

The only cure is, if ſuppuration cannot be prevented, to lay open the part where the matter is contained, which would otherwiſe be abſorbed, and occaſion a fatal hectic.

321 ORDER III. EXANTHEMATA.

Exanthemata, *Sag.* Claſs X.
Phlegmaſiæ exanthematicæ, *Sauv.* Claſs III. Ord. I.
Morbi exanthematici, *Lin.* Claſs I. Ord. II.
Febres exanthematicæ, *Vog.* Claſs I. Ord. II.

322 GENUS XXVI. ERYSIPELAS, or ST ANTHONY'S FIRE.

Eryſipelas *Sauv.* gen. 97. *Lin.* 10. *Sag.* gen. 296.
Febris eryſipelacea, *Vog.* 68. *Hoffm.* II. 98.

LXV. ERYSIPELAS with *Bliſters*. Sp. I.

323 Eryſipelas roſa, *Sauv.* ſp 1. *Sennert de febr.* lib. ii. c. 15.
  Febris eryſipelatoſa, *Sydenham*, ſect. vi. cap. 5.
  Eryſipelas typhodes, *Sauv.* ſp. 2.
Eryſipelas peſtilens, *Sauv.* ſp. 5.
Eryſipelas contagioſum, *Sauv.* ſp. 9.

Deſcription. The eryſipelas of the face, where this affection very frequently appears, comes on with a cold ſhivering, and other ſymptoms of pyrexia. The hot ſtage of this is frequently attended with a confuſion of the head, and ſome degree of delirium; and almoſt always with drowſineſs, and perhaps coma. The pulſe is always frequent, and commonly full and hard.—When theſe ſymptoms have continued for one, two, or at moſt three days, an *erythema* appears on ſome part of the face. This at firſt is of no great extent; but gradually ſpreads from the part it firſt occupied to the other parts of the face, till it has affected the whole; and frequently from the face it ſpreads over the hairy ſcalp, or deſcends on ſome part of the cheek. As the redneſs ſpreads, it commonly leaves, or at leaſt is abated in the parts it had before occupied. All the parts which the redneſs affects are at the ſame time affected with ſome ſwelling, which continues for ſome time after the redneſs has abated. The whole face becomes conſiderably turgid; and the eye-lids are often ſo much ſwelled as entirely to ſhut up the eyes. When the redneſs and ſwelling have continued for ſome time, there commonly ariſe, ſooner or later, bliſters of a larger or ſmaller ſize on ſeveral parts of the face. Theſe contain a thin colourleſs liquor, which ſooner or later runs out. The ſurface of the ſkin, in the bliſtered places, ſometimes becomes livid and blackiſh; but this ſeldom goes deeper, or diſcovers any degree of gangrene affecting the ſkin. On the parts of the face not affected with bliſters, the cuticle ſuffers, towards the end of the diſeaſe, a conſiderable deſquamation. Sometimes the tumour of the eye-lids ends in a ſuppuration.

The inflammation coming upon the face does not produce any remiſſion of the fever which had before prevailed; and ſometimes the fever increaſes with the ſpreading and increaſing inflammation. The inflammation commonly continues for eight or ten days; and, for the ſame time, the fever and ſymptoms attending it alſo continue. In the progreſs of the diſeaſe, the delirium and coma attending it ſometimes go on increaſing, and the patient dies apoplectic on the ſeventh, ninth, or eleventh day of the diſeaſe. In ſuch caſes it has been commonly ſuppoſed, that the diſeaſe is tranſlated from the external to the internal parts. But Dr Cullen apprehends that the affection of the brain is merely a communication from the external affection, as this continues increaſing at the ſame time with the internal. When the fatal event does not take place, the inflammation, after having affected the whole face, and perhaps the other external parts of the head, ceaſes, and with that the fever alſo; and, without any other criſis, the patient returns to his ordinary health. This diſeaſe is not commonly contagious; but as it may ariſe from an acrid matter externally applied, ſo it is poſſible that the diſeaſe may ſometimes be communicated from one perſon to another. Perſons who have once laboured under this diſeaſe are liable to returns of it.

Prognoſis. The event of this diſeaſe may be foreſeen from the ſtate of the ſymptoms which denote more or leſs the affection of the brain. If neither delirium nor coma come on, the diſeaſe is ſeldom attended with any danger; but when theſe ſymptoms appear early in the diſeaſe, and are in a conſiderable degree, the utmoſt danger is to be apprehended.

Cure. The eryſipelas of the face is to be cured much in the ſame manner as phlegmonic inflammations; by blood-letting, cooling purgatives, and by employing every part of the antiphlogiſtic regimen. The evacuations of blood-letting and purging are to be employed more or leſs, according to the urgency of ſymptoms; particularly thoſe of the pyrexia, and of thoſe which mark an affection of the brain. As the pyrexia continues, and often increaſes with the inflammation of the face, ſo the evacuations abovementioned are to be employed at any time of the diſeaſe.

In this, as in other diſeaſes of the head, it is proper to put the patient, as often as he can eaſily bear it, into ſomewhat of an erect poſture; and as in this diſeaſe there is always an external affection, ſo various external applications have been propoſed to be made to the part affected; but almoſt all of them are of doubtful effect.

An eryſipelas frequently appears on other parts of the body beſides the face, and ſuch other eryſipelatous inflammations frequently end in ſuppuration; but theſe caſes are ſeldom dangerous. At coming on they are ſometimes attended with drowſineſs, and even with ſome delirium; but this ſeldom happens, and theſe ſymptoms do not continue after the inflammation is formed; and Dr Cullen does not remember to have ſeen an inſtance of the tranſlation of an inflammation from the limbs to an internal part; and tho' theſe inflammations of the limbs be attended with pyrexia, they ſeldom require the ſame evacuations as the eryſipelas of the face. It is probable, however, that this diſeaſe is ſometimes attended with, or is the ſymptom of, a putrid fever; and in ſuch caſes the evacuations above-mentioned may be improper, and the uſe of the bark neceſſary; but our author remembers not to have ſeen any caſes of this kind.

LXVI. ERYSIPELAS with *Phlyctenæ*. Sp. II.

Eryſipelas zoſter, *Sauv.* ſp. 8.
Zona; Angliſ, *The* SHINGLES, *Ruſſel* de tab. gland. p. 124. Hiſt. 35.
Herpes Zoſter, *Sauv.* ſp. 9.

THIS differs from the former in no other way than in being attended with an eruption of phlyctenæ or ſmall watery bladders on ſeveral parts of the body.—The method of cure is the ſame.

LXVII. PESTIS, the PLAGUE. Gen. XXVII.

Peſtis, *Sauv.* gen. 91. *Lin.* 2. *Junck.* 78.
Febris peſtilentialis, *Vog.* 33. *Hoffm.* II. 93.
Peſtis benigna, *Sauv.* ſp. 2. Peſtis Maſſilienſis, Claſs III. Traité de la peſte, p. 41. Ejuſdem peſtis, Cl. 5ta Traité, p. 228.
Peſtis remittens, *Sauv.* ſp. 9.
Peſtis vulgaris, *Sauv.* ſp. 1. Peſtis Maſſil. Cl. ii. Traité, p. 38. Ejuſd. Cl. iii. & iv. Traité, p. 225, &c. *Waldſchmidt.* de peſte Holſatica, apud *Halleri* Diſſ. Pract. tom. v. *Chenot.* de peſte Tranſylvanica, 1755, 1759. *De Haen*, Rat. Med. pars xiv.
Peſtis Egyptiaca, *Sauv.* ſp. 11. *Alpin.* de Med. Egypt.
Peſtis interna, *Sauv.* ſp. 3. Peſt. Maſſil. Cl. I. Traité, p. 37—224.

Deſcription. OF this diſtemper Dr Cullen declines giving any particular hiſtory, becauſe he never ſaw it; from the accounts of other authors, however, he is of opinion, that the circumſtances peculiarly characteriſtic of it, eſpecially of its more violent and dangerous ſtates, are, 1. The great loſs of ſtrength in the animal functions, which often appears early in the diſeaſe. 2. The ſtupor, giddineſs, and conſequent ſtaggering, which reſembles drunkenneſs, or the headach and various delirium, all of them denote a great diſorder in the functions of the brain. 3. Anxiety, palpitation, ſyncope, and eſpecially the weakneſs and irregularity of the pulſe, denote a conſiderable diſturbance in the action of the heart. 4. Nauſea and vomiting, particularly the vomiting of bile, which ſhews an accumulation of vitiated bile in the gall-bladder and biliary ducts, and from thence derived into the inteſtines and ſtomach; which denote a conſiderable ſpaſm, and loſs of tone in the extreme veſſels on the ſurface of the body. 5. The buboes and carbuncles, which denote an acrimony prevailing in the fluids; and, laſtly, The petechiæ, hæmorrhages, and colliquative diarrhœa, which denote a putreſcent tendency prevailing in a great degree in the maſs of blood.

To theſe characteriſtics of the plague enumerated by Dr Cullen, we ſhall add one mentioned by Sir John Pringle, which, though perhaps leſs frequent than the others, yet ſeems worthy of notice. It is this, That in the plague there is an extraordinary enlargement of the heart and liver. In nine diſſections of bodies dead of the plague at Marſeilles, this extraordinary enlargement of the heart is taken notice of in them all, and of the liver in ſeven of them. The account was ſent to the Royal Society by M. Didier, one of the phyſicians to the king of France, and hath been publiſhed in the Philoſophical Tranſactions. In the firſt caſe, the author takes notice, that "the heart was of an extraordinary bigneſs; and the liver was of double the natural ſize.—Caſe 2. The heart was of a prodigious bigneſs, and the liver much enlarged.—Caſe 3. The heart double the natural bigneſs.—Caſe 4. The heart was very large, and the liver was bigger and harder than ordinary.—Caſe 5. The heart was of a prodigious bigneſs.—Caſe 6. The heart was larger than in its natural ſtate; the liver alſo was very large.—Caſe 7. The heart was of a prodigious ſize, and the liver was very large.—Caſe 8. The heart was much larger than natural, and the liver of a prodigious ſize.—Caſe 9. The heart was double the natural bigneſs, and the liver was larger than ordinary."—This preternatural enlargement Dr Pringle thinks is owing to the relaxation of the ſolid parts, by which means they become unable to reſiſt the impetus of blood, and therefore are eaſily extended; as in the caſe of infancy, where the growth is remarkably quick. And a ſimilar enlargement he takes notice of in the ſcurvy, and other putrid diſeaſes.

Cauſes, &c. From a conſideration of the ſymptoms above-mentioned, Dr Cullen concludes, that the plague is owing to a ſpecific contagion, often ſuddenly producing the moſt conſiderable debility in the nervous ſyſtem or moving powers, and of a general putreſcency in the fluids.

Prevention. Here we muſt refer to all thoſe methods of preventing and removing the incipient contagion of putrid fevers, which have been ſo fully enumerated. Dr Cullen is perſuaded that the diſeaſe never ariſes in the northern parts of Europe, but in conſequence of being imported from ſome other country. The magiſtrate's firſt care therefore ought to be to prevent the importation; and this may generally be done by a due attention to bills of health, and to the proper performance of quarantines.—With reſpect to the latter, he is of opinion, that the quarantines of perſons may with ſafety be much leſs than 40 days; and if this were allowed, the execution of the quarantine would be more exact and certain, as the temptation to break it would be in a great meaſure avoided. With reſpect to the quarantine of goods, it cannot be perfect unleſs the ſuſpected goods be unpacked, duly ventilated, and other means be employed for correcting the infection they may carry; and if all this be properly done, it is probable that the time commonly preſcribed for quarantine may be alſo ſhortened.

A ſecond meaſure in the way of prevention is required, when an infection has reached and prevailed in any place, to prevent that infection from ſpreading into others. This can only be done by preventing the inhabitants or the goods of any infected place from going out of it, till they have undergone a proper quarantine.

The third meaſure, and which ought to be employed with great care, is, to prevent the infection from ſpreading among the inhabitants of a place in which it has ariſen. And in this caſe, a great deal may be done by the magiſtrate, 1. By allowing as many of the inhabitants as are free from infection, and are not neceſſary to the ſervice of the place, to go out of it. 2. By diſcharging all aſſemblies, or unneceſſary intercourſe of the people. 3. By ordering ſome neceſſary communications to be performed without contact. 4. By making ſuch arrangements and proviſions as may render it eaſy for the families remaining to ſhut themſelves up in their own houſes. 5. By allowing perſons to quit houſes where an infection appears, upon condition that they go into lazarettoes. 6. By ventilating, and purifying, and deſtroying, at the public expence, all infected goods. 7. By avoiding hoſpitals, and providing ſeparate apartments for infected perſons.

The fourth and laſt part of the buſineſs of prevention reſpects the conduct of perſons neceſſarily remaining in infected places, eſpecially thoſe obliged to have ſome communication with perſons infected. Thoſe obliged to remain in places infected, but not to have any near communication with the ſick, muſt avoid all near communication with other perſons or their goods; and it is probable, that a ſmall diſtance will ſerve, if, at the ſame time, there be no ſtream of air to carry the effluvia of perſons or goods to ſome diſtance. Thoſe who are obliged to have a near communication with the ſick ought to avoid any of the debilitating cauſes which render the body ſuſceptible of infection, as a ſpare diet, intemperance in drinking, exceſs in venery, cold, fear, or other depreſſing paſſions of the mind. A full diet of animal-food is alſo to be avoided, becauſe it increaſes the irritability of the body, and favours the operation of contagion; and indigeſtion, whether from the quantity or quality of the food, contributes very much to the ſame.

Beſides theſe, it is probable that the moderate uſe of wine and ſpirituous liquors, moderate exerciſe, and the cold bath, may be of uſe; tonic medicines alſo, of which the Peruvian bark is deſervedly accounted the chief, may alſo be uſed with great probability of ſucceſs. If any thing is to be expected from antiſeptics, Dr Cullen thinks camphire preferable to any other. In general, however, every one is to be indulged in the medicine of which he hath the beſt opinion, provided it is not evidently hurtful. Whether iſſues be uſeful in preſerving from the effects of contagion, Dr Cullen doth not determine.

Cure. Here, according to Dr Cullen, the indications are the ſame as in fever in general, but are not all equally important. The meaſures for moderating the violence of reaction, which operate by diminiſhing the action of the heart and arteries, have ſeldom any place here, excepting that the antiphlogiſtic regimen is generally proper. Some phyſicians have recommended bleeding, and Sydenham even ſeems to think it an effectual cure; but Dr Cullen thinks, that for the moſt part it is unneceſſary, and in many caſes might do much hurt. Purging has alſo been recommended; and in ſome degree it may be uſeful, in drawing off the putreſcent matter frequently preſent in the inteſtines; but a large evacuation this way may certainly be hurtful.

The moderating the violence of reaction, as far as it can be done, by taking off the ſpaſm of the extreme veſſels, is a meaſure of the utmoſt neceſſity in the cure of the plague; and the whole of the means formerly mentioned, as ſuited to this indication, are extremely proper. The giving an emetic, at the firſt approach of the diſeaſe, would probably be of great ſervice; and it is probable, that, at ſome other periods of the diſeaſe, emetics might be uſeful, both by evacuating bile abounding in the alimentary canal, and by taking off the ſpaſm of the extreme veſſels.

From ſome principles with reſpect to fever in general, and with reſpect to the plague in particular, our author is of opinion, that after the exhibition of the firſt vomit, the body ſhould be diſpoſed to ſweat; but this ſweat ſhould be raiſed only to a moderate degree, though it muſt be continued for 24 hours or more if the patient bears it eaſily. The ſweating is to be excited and conducted according to the rules laid down under SYNOCHA; and muſt be promoted by the plentiful uſe of diluents rendered more grateful by vegetable acids, or more powerful by being impregnated with ſome portion of neutral ſalts. To ſupport the patient under the continuance of the ſweat, a little weak broth, acidulated with the juice of lemons, may be given frequently, and ſometimes a little wine if the heat of the body be not conſiderable. If ſudorific medicines are judged neceſſary, opiates will be found moſt effectual and ſafe; but they ſhould not be combined with aromatics, and probably may be more effectual if joined with a portion of emetics and of neutral ſalts. But if, notwithſtanding the uſe of emetics and ſudorifics in the beginning, the diſeaſe ſhould ſtill continue, the cure muſt turn upon the uſe of means for obviating debility and putreſcency; and for this purpoſe tonic medicines, eſpecially the Peruvian bark, and cold drink, are the moſt proper. For the treatment of buboes and carbuncles, ſee the article SURGERY.

GENUS XXVIII. VARIOLA; the SMALL-POX.

Variola, *Sauv.* gen. 92. *Lin.* 3. *Sag.* gen. 290.
Febris varioloſa, *Vog.* 35. *Hoffm.* II. 49.
Variolæ, *Boerh.* 1371. *Junck.* 76.

LXVIII.

LXVII. The *Diſtinct* Small-pox. Sp. I.

Variola diſcreta benigna, *Sauv.* ſp. 2.
Variolæ regulares diſcretæ, *Sydenh.* ſect. iii. cap 2.
Variolæ diſcretæ ſimplices, *Helvet.* Obſ. ſp. 1.
Variola diſcreta complicata, *Sauv.* ſp. 2. *Helvet.* ſp. 2.
Variolæ anomalæ, *Sydenh.* ſect. iv. cap. 6.
Variola diſcreta dyſenteriodes, *Sauv.* ſp. 4. *Sydenh.* ſect. iv. cap. 1.
Variola diſcreta veſicularis, *Sauv.* ſp. 5.
Variola diſcreta cryſtallina. *Mead* de variol. cap. 2.
Variola diſcreta verrucoſa, *Sauv.* ſp. 6. *Mead* ibid.
Variola diſcreta ſiliquoſa, *Sauv.* ſp. 7. *Freind* Oper. p. 358.
Variola diſcreta miliaris, *Sauv.* ſp. 8. *Helvet.* Obſ. ſp. 3.

LXVIII. The *Confluent* Small-pox. Sp. II.

Variola confluens, *Sauv.* ſp. 9.
Variolæ regulares confluentes, ann. 1667. *Sydenham.* ſect. iii. cap. 2.
Variolæ confluentes ſimplices, *Helvet.* Obſ. ſp. 1.
Variola confluens cryſtallina, *Sauv.* ſp. 10.
Variola japonica, *Kempfer.*
Veſiculæ Divæ Barbaræ, *C. Piſ.* obſ. 149.
Variola confluens maligna, *Helvet.* Obſ. ſp. 1.
Variola confluens cohærens, *Sauv.* ſp. 11.
Variola confluens maligna, *Helvet.* ſp. 2.
Variola confluens nigra, *Sauv.* ſp. 12. *Sydenham.* ſect. v. cap. 4.
Variola confluens maligna, *Helvet.* ſp. 3.
Variola ſanguinea, *Mead* de variolis, cap. 2.
Variola confluens corymboſa, *Sauv.* ſp. 13.
Variola confluens maligna, *Helvet.* ſp. 4.

Deſcription. In the diſtinct ſmall-pox, the diſeaſe begins with a ſynocha or inflammatory fever. It generally comes on about mid-day, with ſome ſymptoms of a cold ſtage, and commonly with a conſiderable langour and drowſineſs. A hot ſtage is ſoon formed, and becomes more conſiderable on the ſecond and third day. During this courſe children are liable to frequent ſtartings from their ſlumbers; and adults, if they are kept a-bed, are diſpoſed to much ſweating. On the third day, children are ſometimes affected with one or two epileptic fits. Towards the end of the third day the eruption commonly appears, and gradually increaſes during the fourth; appearing firſt on the face, and ſucceſſively on the inferior parts, ſo as to be completed over the whole body on the fifth day. From the third day the fever abates, and againſt the fifth it entirely ceaſes. The eruption appears firſt in ſmall red ſpots hardly eminent, but by degrees riſing into pimples. There are generally but few on the face; but, even when more numerous, they are ſeparate and diſtinct from one another. On the fifth or ſixth day, a ſmall veſicle, containing an almoſt colourleſs fluid, appears on the top of each pimple. For two days theſe veſicles increaſe in breadth only, and there is a ſmall hollow pit in their middle, ſo that they are not raiſed into ſpheroidical puſtules till the eighth day. Theſe puſtules from their firſt formation continue to be ſurrounded with an exactly circular inflamed margin, which when they are numerous diffuſes ſome inflammation over the neighbouring ſkin, ſo as to give ſomewhat of a damaſk-roſe colour to the ſpaces between the puſtules. As the puſtules increaſe in ſize, the face ſwells conſiderably if they are numerous on it; and the eye-lids particularly are ſo much ſwelled, that the eyes are entirely ſhut. As the diſeaſe proceeds, the matter in the puſtules becomes by degrees more opaque and white, and at length aſſumes a yellowiſh colour. On the eleventh day, the ſwelling of the face is abated, and the puſtules ſeem quite full. On the top of each a darker ſpot appears; and at this place the puſtule, on the eleventh day, or ſoon after, is ſpontaneouſly broken, and a portion of the matter oozes out; in conſequence of which the puſtule is ſhrivelled, and ſubſides; while the matter oozing out dries, and forms a cruſt upon its ſurface. Sometimes only a little of the matter oozes out, and what remains in the puſtule becomes thick and even hard. After ſome days, both the cruſts and the hardened puſtules fall off, leaving the ſkin which they covered of a browniſh red colour; nor doth it reſume its natural colour till many days after. In ſome caſes, where the matter of the puſtules has been more liquid, the cruſts formed by it are later in falling off, and the part they covered ſuffers ſome deſquamation, which occaſions a ſmall hollow or pit in it.

On the legs and hands the matter is frequently abſorbed; ſo that at the height of the diſeaſe, theſe puſtules appear as empty as veſicles. On the tenth and eleventh days, as the ſwelling of the face ſubſides, a ſwelling ariſes in the hands and feet; but which again ſubſides as the puſtules come to maturity. When the puſtules on the face are numerous, ſome degree of pyrexia appears on the tenth and eleventh days, but diſappears again after the puſtules are fully ripened; or perhaps remains in a very ſlight degree till the puſtules on the feet have finiſhed their courſe; and it is ſeldom that any fever continues longer in the diſtinct ſmall-pox. When the puſtules are numerous on the face, upon the ſixth or ſeventh day ſome uneaſineſs in the throat, with a hoarſeneſs of the voice, comes on, and a thin liquid is poured out from the mouth. Theſe ſymptoms increaſe with the ſwelling of the face; and the liquids of the mouth and throat becoming thicker are with difficulty thrown out; and there is at the ſame time ſome difficulty in ſwallowing, ſo that liquids taken in to be ſwallowed are frequently rejected or thrown out by the noſe. But all theſe affections of the fauces are abated as the ſwelling of the face ſubſides.

In the confluent ſmall-pox all the ſymptoms abovementioned are much more ſevere. The eruptive fever particularly is more violent; the pulſe is more frequent and more contracted, approaching to that ſtate of pulſe which is obſerved in typhus. The coma is more conſiderable, and there is frequently a delirium. Vomiting alſo frequently attends, eſpecially at the beginning of the diſeaſe. In very young infants epileptic fits are ſometimes frequent on the firſt days of the diſeaſe, and ſometimes prove fatal before any eruption appears, or they uſher in a very confluent and putrid ſmall-pox. The eruption appears more early on the third day, and it is frequently preceded or accompanied with an eryſipelatous effloreſcence. Sometimes the eruption appears in cluſters like the meaſles. When the eruption is completed, the pimples

pimples are always more numerous upon the face, and at the ſame time ſmaller and leſs eminent. Upon the eruption the fever ſuffers ſome remiſſion, but never goes off entirely; and after the fifth or ſixth day it increaſes again, and continues to be conſiderable thoughout the remaining part of the diſeaſe. The veſicles formed on the top of the pimples appear ſooner; and while they increaſe in breadth, the do not retain a circular, but are every way of an irregular figure. Many of them run into one another, inſomuch that very often the face is covered with one veſicle rather than with a number of puſtules. The veſicles, as far as they are anyway ſeparated, do not ariſe to a ſpheroidal form, but remain flat, and ſometimes the whole of the face is of an even ſurface. When the puſtules are in any meaſure ſeparated, they are not bounded by an inflamed margin, but the part of the ſkin that is free from puſtules is commonly pale and flaccid. The liquor that is in the puſtules changes from a clear to an opaque appearance, and becomes whitiſh or browniſh, but never acquires the yellow colour and thick conſiſtence that appears in the diſtinct ſmall-pox. The ſwelling of the face, which only ſometimes attends the diſtinct ſmall-pox, always attends the confluent kind; it alſo comes on more early, and ariſes to a greater height, but abates conſiderably on the tenth or eleventh day. At this time the puſtules or veſicles break and ſhrivel; pouring out at the ſame time a liquor, which is formed into brown or black cruſts, which do not fall off for a long time after. Thoſe of the face, in falling off, leave the ſkin ſubject to a deſquamation, which pretty certainly produces pittings. On the other parts of the body the puſtules of the confluent ſmall-pox are more diſtinct than on the face; but never acquire the ſame maturity and coſiſtence of pus as in the properly diſtinct kind. The ſalivation, which ſometimes only attends the diſtinct ſmall-pox, very conſtantly attends the confluent; and both the ſalivation and the affection of the fauces above-mentioned, are, eſpecially in adults, in a higher degree. In infants a diarrhœa comes frequently in place of a ſalivation.

In this kind of ſmall-pox there is often a very conſiderable putreſcency of the fluids, as appears from petechiæ, ſerous veſicles, under which the ſkin ſhews a diſpoſition to gangrene, and from bloody urine or other hæmorrhages; all of which ſymptoms frequently attend this diſeaſe. In the confluent ſmall-pox alſo, the fever, which had only ſuffered a remiſſion from the eruption to the maturation, at or immediately after this period is frequently renewed again with conſiderable violence. This is what has been called the *ſecondary fever*, and is of various duration and event.

Cauſes, &c. It is evident that the ſmall-pox is originally produced by a contagion; and that this contagion is a ferment with reſpect to the fluids of the human body, which aſſimilates a great part of them to its own nature; and it is probable, that the quantity thus aſſimilated is, in proportion to their ſeveral bulks, nearly the ſame in different perſons. This quantity paſſes again out of the body, partly by inſenſible perſpiration, and partly by being depoſited in puſtules; but if the quantities generated be nearly equal, the quantities paſſing out of the body the two ways above-mentioned are very unequal in different perſons. The cauſes which determine more of the variolous matter to paſs by perſpiration, or to form puſtules, are probably certain circumſtances of the ſkin, which determine more or leſs of the variolous matter to ſtick in it, or to paſs freely through it. The circumſtance of the ſkin which ſeems to determine the variolous matter to ſtick in it, is a certain ſtate of inflammation depending much on the heat of it: thus we have many inſtances of parts of the body, from being more heated, having a greater number of puſtules than other parts. Thus parts covered with plaſters, eſpecially thoſe of the ſtimulant kind, have more puſtules than others. —Certain circumſtances alſo, ſuch as adult age, and full living, determining to a phlogiſtic diatheſis, ſeem to produce a greater number of puſtules, and *vice verſa*. It is therefore probable, that an inflammatory ſtate of the whole ſyſtem, and more particularly of the ſkin, gives occaſion to a greater number of puſtules; and the cauſes of this may produce moſt of the other circumſtances of the confluent ſmall-pox, ſuch as the time of eruption, the continuance of the fever, the effuſion of a more putreſcent matter and leſs fit to be converted into pus, together with the form and other circumſtances of the puſtules.

Prognoſis. The more exactly the diſeaſe retains the form of the diſtinct kind, it is the ſafer; and the more completely the diſeaſe takes the form of the confluent kind, it is the more dangerous. It is only when the diſtinct kind ſhews a great number of puſtules on the face or otherwiſe, by fever or putreſcency, approaching to the circumſtances of the confluent, that the diſtinct kind is attended with any danger.

In the confluent kind the danger is always very conſiderable: and the more violent and permanent the fever is, the greater the danger; and eſpecially in proportion to the increaſe of the ſymptoms of putreſcency. When the putrid diſpoſition is very great, the diſeaſe ſometimes proves fatal before the eighth day; but in moſt caſes death happens on the eleventh, and ſometimes not till the fourteenth or ſeventeenth day.

Though the ſmall-pox may not prove immediately fatal, the more violent kinds are often followed by a morbid ſtate of the body, ſometimes of very dangerous event. Theſe conſequences, according to Dr Cullen, may be imputed ſometimes to an acrid matter produced by the preceding diſeaſe, and depoſited in different parts; and ſometimes to an inflammatory diatheſis produced and determined to particular parts of the body.

Cure. The art of medicine hath never yet afforded a method of preventing the eruption of the ſmall-pox after the contagion is received; all that can be done is, to render the diſeaſe more mild, which is generally effected by INOCULATION. It is not to be ſuppoſed that the mere giving of the infection artificially could make any difference in the nature of the diſeaſe, was it not that certain precautions are commonly uſed in the caſe of thoſe who are inoculated, which cannot be uſed in the caſe of thoſe who receive them naturally. Theſe meaſures, according to Dr Cullen, are chiefly the following.

1. The chooſing for the ſubject of inoculation perſons otherwiſe free from diſeaſe, and not liable from their age or otherwiſe to any incidental diſeaſe.

2. The chooſing that time of life which is moſt favourable to a mild diſeaſe.
3. The chooſing for the practice a ſeaſon moſt favourable to a mild diſeaſe.
4. The preparing the perſon to be inoculated, by enjoining abſtinence from animal-food for ſome time before inoculation.
5. The preparing the perſon by courſes of mercurial and antimonial medicines.
6. The taking care at the time of inoculation to avoid cold, intemperance, fear, or other circumſtances which might aggravate the future diſeaſe.
7. After theſe preparations and precautions, the chooſing a fit matter to be employed in inoculation, by taking it from a perſon of a ſound conſtitution, and free from any diſeaſe, or ſuſpicion of it; by taking it from a perſon who has had the ſmall-pox of the moſt benign kind; and laſtly, by taking the matter from ſuch perſon as ſoon as it has appeared in the puſtules, either on the part inoculated, or on other parts of the body.
8. The introducing, by inoculation, but a ſmall portion of the contagious matter.
9. After inoculation, the continuing of the vegetable diet, and the employment of mercurial and antimonial medicines, and at the ſame time employing frequent purging.
10. Both before and after inoculation, taking care to avoid external heat, either from the ſun, artificial fires, warm chambers, much clothing, or being much in bed; and, on the contrary, expoſing the perſon to a free and cool air.
11. Upon the appearance of the eruptive fever, the rendering that moderate by the employment of purgatives; by the uſe of cooling and antiſeptic acids; and eſpecially by expoſing the perſon frequently to a cool, and even a cold air, at the ſame time giving freely of cold drink.
12. After the eruption, the continuing the application of cold air, and the uſe of purgatives, during the courſe of the diſeaſe, till the puſtules are fully ripened.

On theſe meaſures Dr Cullen obſerves, that, as the common infection may often ſeize perſons under a diſeaſed ſtate, which may render the ſmall-pox more violent, it is evident that inoculation muſt have a great advantage by avoiding ſuch concurrence. But as the avoiding of this may in the mean time frequently leave perſons expoſed to the common infection, it is well worth while to inquire what are the diſeaſed ſtates which ſhould reſtrain from the practice of inoculation. This is not yet ſufficiently aſcertained: for it hath been obſerved, that the ſmall-pox has often occurred with a diſeaſed ſtate of the body, without being thereby rendered more violent; and it hath alſo been obſerved, that ſome diſeaſes of the ſkin are equally innocent. Our author is of opinion, that they are diſeaſes of the febrile kind, or ſuch ailments as induce or aggravate a febrile ſtate, that eſpecially give the concurrence which is moſt dangerous with the ſmall-pox. He is alſo of opinion, that though a perſon be in a diſeaſed ſtate, if that ſtate be of uncertain nature and effect, and at the ſame time the ſmall-pox are very common in the neighbourhood, ſo that it muſt be extremely difficult to guard againſt the common infection, it will always be ſafer to give the ſmall-pox by inoculation than to leave the perſon to take them by the common infection.

Though inoculation hath been practiſed with ſafety upon perſons of all ages, yet there is reaſon to conclude, that adults are more liable to a violent diſeaſe than perſons of younger years. At the ſame time it is obſerved, that children, in the time of their firſt dentition, are liable, from the irritation of that, to have the ſmall-pox rendered more violent; and that infants, before the time of dentition, upon receiving the contagion of the ſmall-pox are liable to be afflicted with epileptic fits, which frequently prove fatal. Hence it is evident, that though circumſtances may admit and approve of inoculation at any age, yet for the moſt part it will be advantageous to chooſe perſons after the firſt dentition is over, and before the time of puberty. The operation of inoculation may be performed at any ſeaſon of the year; yet as it is certain that the cold of winter may increaſe the inflammatory, and the heats of ſummer increaſe the putreſcent, ſtate of the ſmall-pox, it is highly probable that inoculation may have ſome advantage from avoiding the extremes either of cold or heat.

As the uſe of animal-food may increaſe both the inflammatory and putreſcent ſtate of the human body, ſo it muſt render perſons, in receiving the contagion of the ſmall-pox, leſs ſecure againſt a violent diſeaſe; and therefore inoculation may derive ſome advantage by enjoining abſtinence from animal-food for ſome time before the operation is performed: but Dr Cullen is of opinion, that a longer time is neceſſary than what is commonly preſcribed.

Mercurial and antimonial preparations may have ſome effect in determining to a more free perſpiration, and therefore may be of ſome uſe in preparing a perſon for the ſmall-pox; but there are many obſervations which render their uſe doubtful. The quantity of both theſe medicines, particularly the antimony, commonly employed, is too inconſiderable to have any effects. Mercurials indeed have been often employed more freely; but even their ſalutary effects have not been evident, and they have ſometimes been evidently productive of miſchief. It is therefore much to be doubted, whether inoculation really derives any benefit from theſe preparatory courſes or not.

It has been often obſerved, in the caſe of almoſt all contagions, that cold, intemperance, fear, and ſome other circumſtances, concurring with the application of the contagion, have greatly aggravated the future diſeaſe; it muſt undoubtedly be the ſame in the caſe of the ſmall-pox: and it is certain that inoculation muſt derive a great advantage, perhaps its principal one, from avoiding the concurrences above-mentioned.

It has commonly been ſuppoſed, that inoculation derives ſome advantage from the choice of the matter employed in it; but it is very doubtful if any choice be here neceſſary, or can be of any benefit in determining the ſtate of the diſeaſe. It is not indeed probable that there is any difference of contagion producing the ſmall-pox; for there are innumerable inſtances of the contagion ariſing from a perſon who labours under the diſtinct ſmall-pox producing the confluent kind, and the contrary. Since the practice of inoculation hath been introduced, it hath alſo been obſerved, that the ſame variolous matter would in one perſon produce the diſtinct, and in another the confluent ſmall-pox. It is therefore highly probable, that the difference of the ſmall-pox does not depend upon any difference of the contagion, but upon ſome difference in the ſtate of the perſons to whom it is applied, or in the ſtate of certain circumſtances concurring with the application of the contagion.

Some have ſuppoſed, that inoculation has an advantage over the natural infection, by introducing only a ſmall portion of contagious matter into the body; but this is by no means well aſcertained. It is not known what quantity of contagion is introduced into the body by the common infection of the ſmall-pox; and it is probable the quantity is not great: nor, though it were larger than that thrown in by inoculation, is it certain what the effects would be. A certain quantity of ferment may be neceſſary to excite fermentation in a given maſs; but when that quantity is given, the fermentation and aſſimilation are extended to the whole maſs; and we do not find that a greater quantity than is juſt neceſſary, either increaſes the activity of the fermentation, or more certainly ſecures the aſſimilation of the whole. In the caſe of the ſmall-pox, a conſiderable difference in the quantity of the contagion introduced, hath not ſhewn any effects in modifying the diſeaſe.

Purging has the effect of diminiſhing the activity of the ſanguiferous ſyſtem, and of obviating the inflammatory ſtate of it; and therefore it is probable, that the frequent uſe of cooling purgatives gives a conſiderable advantage to the practice of inoculation; and probably this is alſo obtained by diminiſhing the determination to the ſkin. It ſeems alſo probable, that mercurials and antimonials are uſeful only as they make part of the purging courſe.

It is probable that the ſtate of the ſmall-pox depends very much upon the ſtate of the eruptive fever, and particularly in avoiding the inflammatory ſtate of the ſkin; and therefore it is alſo probable, that the meaſures taken for moderating the eruptive fever, and inflammatory ſtate of the ſkin, afford the greateſt improvement which has been made in the practice of inoculation. The tendency of purging, and the uſe of acids to this purpoſe, is ſufficiently obvious: and upon the ſame grounds we ſhould ſuppoſe that blood-letting might be uſeful; but probably this has been omitted, and perhaps other remedies might be ſo, ſince we have found a more powerful and effectual one in the application of cold air and the uſe of cold drink.

It hath been the practice of inoculators to continue the uſe of purgatives and the application of cold air after the eruption; but it cannot be ſaid to give any particular advantages to inoculation, and the employment of purgatives ſeems often to have led to an abuſe. When the ſtate of the eruption is determined, when the number of puſtules is very ſmall, and the fever hath entirely ceaſed, the ſafety of the diſeaſe may be ſaid to be aſcertained, and further remedies abſolutely ſuperfluous: in ſuch caſes therefore the uſe of purgatives is unneceſſary, and may be hurtful.

It remains now only to conſider the treatment of the ſmall-pox, when the ſymptoms ſhall be violent, as may ſometimes happen, even after inoculation and every remedy and precaution have been uſed. The cauſe of this is not aſcertained, but it ſeems to be a putreſcent tendency of the fluids. When therefore, from the prevailing of ſmall-pox as an epidemic, and more eſpecially when it is known that a perſon not formerly affected with the diſeaſe has been expoſed to the infection, if ſuch perſon ſhould be attacked with the ſymptoms of fever, there can be little doubt that it is the fever of the ſmall-pox, and therefore he is to be treated in every reſpect as if he had received the diſeaſe by inoculation. He is to be freely expoſed to cool air, to be purged, and to have cooling acids given liberally. If theſe meaſures moderate the fever, nothing more is neceſſary: but if the nature of the fever be uncertain; or if, with ſuſpicions of the ſmall-pox, the fever be violent; or even if, knowing the diſtemper to be the ſmall-pox, the meaſures above-mentioned do not moderate the fever ſufficiently; veneſection will be proper; and more eſpecially if the perſon be an adult, of a plethoric habit, and accuſtomed to full living. In the ſame circumſtances it will always be proper to give a vomit; which is uſeful in the beginning of all fevers, and eſpecially in this, where a determination to the ſtomach appears by pain and ſpontaneous vomiting.

It frequently happens, eſpecially in infants, that, during the eruptive fever of the ſmall-pox, convulſions occur. Of theſe, if only one or two fits appear on the evening preceding the eruption, they give a prognoſtic of a mild diſeaſe, and require no remedy: but if they occur more early, are violent, and frequently repeated, they are very dangerous, and require a ſpeedy remedy; and here bleeding and bliſtering are of no ſervice, the only effectual medicine is an opiate given in a large doſe.

Theſe are the remedies neceſſary during the eruptive fever; and if, upon the eruption, the puſtules on the face are diſtinct, and their number few, the diſeaſe requires no further remedies. But when, upon the eruption, the number of pimples on the face is conſiderable, when they are not diſtinct; and eſpecially if, upon the fifth day, the fever does not ſuffer a conſiderable remiſſion; the diſeaſe ſtill requires a great deal of attention.

If, after the eruption, the fever ſhall ſtill continue, the avoiding of heat and the continuing to expoſe the body to a cool air will ſtill be proper. If the fever is conſiderable, with a full hard pulſe, in an adult perſon, a bleeding will be neceſſary, and more certainly a cooling purgative: but it will be ſeldom neceſſary to repeat the bleeding, as a loſs of ſtrength very ſoon comes on; but the repetition of a purgative, or the frequent uſe of laxative glyſters, is commonly advantageous.

When a loſs of ſtrength, with other marks of a putreſcent tendency of the fluids, appears, the Peruvian bark muſt be given in ſubſtance, and in large quantity. In the ſame caſe, the uſe of acids and of nitre is advantageous, and commonly it is proper alſo to give wine very freely. From the fifth day of the diſeaſe throughout the whole courſe of it, it is proper to give an opiate once or twice a-day; taking care at the ſame time to obviate coſtiveneſs, by purgatives or by laxative glyſters. From the eighth to the eleventh day of a violent diſeaſe, it will be proper to lay on bliſters ſucceſſively on different parts of the body, and that without regard to the parts being covered with puſtules. Bliſters are alſo to be applied to the external fauces, in caſe of difficult deglutition, and viſcid ſaliva and mucus, which are thrown out with difficulty, at the ſame time that detergent gargles are to be diligently uſed. During the whole courſe of this diſeaſe, when a conſiderable fever is preſent, antimonial medicines may be given in nauſeating doſes with advantage, and theſe commonly anſwer the purpoſe of purgatives.

The remedies above-mentioned are frequently proper from the fifth day till the ſuppuration is finiſhed. But as after that period the fever is ſometimes continued and increaſed; or as ſometimes, when there was little or no fever before, a fever now ariſes and continues with conſiderable danger; this is called the *ſecondary fever*, and requires a particular treatment.

When the ſecondary fever follows the diſtinct ſmall-pox, and the pulſe is full and hard, the caſe is to be treated as an inflammatory affection, by bleeding and purging; but the ſecondary fever which follows the confluent kind, is to be conſidered as a putrid diſeaſe, and bleeding is improper. Some purging may be neceſſary, but the remedies to be chiefly depended upon are the Peruvian bark and acids. When the ſecondary fever firſt appears, whether after a diſtinct or confluent ſmall-pox, it is uſeful to exhibit an antimonial emetic in nauſeating doſes, but in ſuch a manner as to produce ſome vomiting. For avoiding the pits which frequently follow the ſmall-pox, no method hitherto propoſed ſeems to be ſufficiently certain.

On the ſubject of inoculation, Baron Dimſdale, a very celebrated writer, informs us, that were it left to his choice, he would decline inoculating children under two years old; becauſe within that period they are expoſed to all the dangers of dentition, fevers, fluxes, convulſions, and other accidents, ſufficiently difficult in themſelves to manage in ſuch tender ſubjects.

Beſides, as already obſerved, convulſive paroxyſms often accompany the variolous eruptive fever in children; and though generally looked upon in no unfavourable light, as often preceding a diſtinct kind of ſmall-pox, yet they are at all times attended with ſome degree of danger: nay, many have expired under them; while others, who have ſtruggled through with great difficulty, have been ſo debilitated, and their faculties ſo impaired, that the effects have continued during the remaining part of their lives.

It ought alſo to be conſidered, that young children have uſually a larger ſhare of puſtules from inoculation, than thoſe who are advanced a little farther in life; under which circumſtance many have died: that it ſeems moſt prudent to wait till this dangerous period be over, eſpecially as its duration is ſo ſhort, that the danger of their receiving the ſmall-pox in the natural way, before this time expires, is very little; and it is eaſier to preſerve them from it, than when they are left more to themſelves, and may be more expoſed to infection. But children above this period may be inoculated with greater freedom; nor does there appear any reaſon to exclude healthy adults of any age; perſons of 70 having paſſed thro' this proceſs with the utmoſt eaſe and ſafety.

In regard to conſtitution, Baron Dimſdale obſerves, that greater liberties may be taken than were formerly judged admiſſible. Perſons afflicted with various chronic complaints, of ſcrophulous, ſcorbutic, and arthritic habits; perſons of unwieldy corpulency, and of intemperate, irregular lives; have all paſſed through this diſeaſe with as much facility as the moſt temperate, healthy, and regular. But thoſe who labour under any acute or critical diſeaſe, or its effects, are obviouſly unfit and improper ſubjects. So likewiſe are thoſe in whom are evident marks of corroſive acrimonious humours, or who have an evident debility of the whole frame from inanition or any other cauſe. All ſuch require to be treated in a particular manner previous to the introduction of this diſeaſe. Conſtitutions diſpoſed to frequent returns of intermittents, ſeem likewiſe juſtly exceptionable; eſpecially as the preparatory regimen may in ſome habits increaſe this tendency. Baron Dimſdale, however, has known inſtances of ſevere ague-fits attacking perſons between the inſertion of the matter and the eruption of the pox, and even during maturation, when the Peruvian bark has been given liberally and with much ſucceſs; the principal buſineſs, in the mean time, ſuffering no injury or interruption.

Among the circumſtances generally conſidered as more or leſs propitious to inoculation, the ſeaſon of the year has been reckoned a matter of ſome importance. Spring and autumn have been generally recommended, as being the moſt temperate ſeaſons; the cold of winter, and the ſummer-heats, having been judged unfavourable for this purpoſe. But the Baron remarks, that experience does not juſtify thoſe opinions; for, according to the beſt obſervation he has been able to make, inoculated perſons have generally had more puſtules in ſpring than at any other time of the year; and epidemic diſeaſes being commonly moſt frequent in autumn, eſpecially fluxes, intermittents, and ulcerated ſore throats (all which are liable to mix more or leſs with the ſmall-pox), the autumn, upon this account, does not ſeem to be the moſt favourable ſeaſon in general.

Our author's opinion is, that conſidering the ſurpriſing and indiſputable benefits ariſing at all times to patients in the ſmall-pox, from the free admiſſion of freſh cool air and evacuations, we may ſafely inoculate at all ſeaſons, provided care be taken to ſcreen the patients as much as poſſible from heat in ſummer, and to prevent them from keeping themſelves too warm and too much ſhut up, as they are naturally diſpoſed to do, from the weather in winter. When ſeaſons, however, are marked with any peculiar epidemics, of ſuch a kind eſpecially as may render a mild diſeaſe more untractable, it may perhaps be moſt prudent not to inoculate while ſuch diſeaſes are prevalent.

In directing the preparatory regimen, Baron Dimſdale principally aims at the following points, *viz.* To reduce the patient, if in high health, to a lower and more ſecure ſtate; to ſtrengthen the conſtitution, if too low; to correct what appears vitiated; and to clear the ſtomach and bowels, as much as may be, from all crudities and their effects. With this view he orders ſuch of his patients as conſtitute the firſt claſs abovementioned, and who are by much the majority, to live in the following manner: To abſtain from all animal food, including broths, alſo butter and cheeſe;

and from all fermented liquors, excepting ſmall beer, which is allowed ſparingly; and from all ſpices, and whatever is endued with a manifeſt heating quality. The diet is to conſiſt of pudding, gruel, ſago, milk, rice-milk, fruit-pies, greens, roots, and vegetables of any of the kinds in ſeaſon, prepared or raw. Eggs, though not to be eaten alone, are allowed in puddings, and butter in pye-cruſt. The patients are to be careful that they do not eat ſuch a quantity as to overload their ſtomachs, even of this kind of food. Tea, coffee, or chocolate, are permitted for breakfaſt, to thoſe who chooſe or are accuſtomed to them.

In this manner they are to proceed about nine or ten days before the operation; during which period, at nearly equal diſtances, they are directed to take three doſes of the following powder, either made into pills or mixed with a little ſyrup or jelly, at bed-time, and a doſe of Glauber's ſalt diſſolved in thin water-gruel, each ſucceeding morning.

The powder is compoſed of eight grains of calomel, the ſame quantity of the compound powder of crab's-claws, and one eighth part of a grain of emetic tartar. Inſtead of the latter, Baron Dimſdale has ſometimes ſubſtituted two grains of precipitated ſulphur of antimony. In order to facilitate the diviſion of the doſes, a large quantity is prepared at once, and great care taken that the ſeveral ingredients be well mixed.

This quantity is uſually ſufficient for a healthy ſtrong man; and the doſe muſt be leſſened for women or children, according to their age and ſtrength, as well as for perſons advanced in years.

The firſt doſe is generally ordered at the commencement of the courſe; the ſecond, three or four days after; and the third about the eighth or ninth day. The Baron chooſes to inoculate the day after the laſt doſe has been taken. On the days of purging, broths are allowed, and the patients are deſired to abſtain from unprepared vegetables.

What has been ſaid concerning the preparation, muſt be conſidered as proper only for the young or middle-aged, in a good ſtate of health: but among thoſe who are deſirous of inoculation are often found tender, delicate, and weakly women; men of bad ſtamina, valetudinarians by conſtitution, by illneſs, or intemperance; alſo aged perſons, and children; and for all ſuch a very different treatment muſt be directed. Here a milder courſe of medicine, rather of the alterative than purgative kind, is preferable; and in many inſtances, an indulgence in ſome light animal-food, with a glaſs or two of wine in caſe of lowneſs, is not only allowable, but neceſſary to ſupport a proper degree of ſtrength, eſpecially in advanced age.

Children whoſe bowels are often tender, and ought not to be ruffled by ſtrong purges, yet require a mild mercurial, and bear it well. Beſides emptying the bowels of crudities, it is a good ſecurity againſt worms and their effects, which ſometimes produce very alarming and even fatal diſorders.

Inattention to the particular ſtate of health of thoſe who are entering upon the preparatory courſe, has been productive of great miſchief. This is chiefly obſervable reſpecting the indiſcreet uſe of mercurials, by which a ſalivation has often been raiſed, to the riſque of impairing good conſtitutions, and the ruin of ſuch as were previouſly weak and infirm. The diſtinctions and treatment neceſſary, will be obvious to thoſe who are acquainted with the animal-œconomy and medical practice.

The time of menſtruation has generally been the guide in reſpect to the inoculation of women, that the whole of the diſeaſe might be over within the menſtrual period. Baron Dimſdale informs us, that he obſerves this rule, when he can chooſe his time without any inconvenience, and he inoculates ſoon after the evacuation ceaſes; tho' he has no reaſon to decline performing the operation at any time.

Women with child have likewiſe been inoculated, and done well; but the ſtate of pregnancy ſeems unfavourable to the proceſs, which ought therefore not to be hazarded without ſome urgent reaſon. Baron Dimſdale has not inoculated any woman whom he knew to be pregnant; but on ſome who concealed their pregnancy he has performed the operation, without producing a miſcarriage, the hope of which event, he ſuſpects, had rendered them deſirous of the proceſs. One of thoſe had a child born nine weeks after inoculation, at the full time, with diſtinct marks of the diſeaſe, though the mother had very few eruptions.

The manner moſt uſually practiſed in this country for communicating the ſmall-pox by inoculation, has of late been the following: A thread is drawn through a ripe puſtule, and well moiſtened with matter. A piece of this thread is inſinuated into a ſuperficial inciſion made in one or both arms, near the part where iſſues are uſually fixed; and being covered with a plaſter, is there left for a day or two.

Very different methods of inoculation, however, are purſued; two of which Baron Dimſdale has frequently practiſed and deſcribes; but he informs us, that the following has proved ſo invariably ſucceſsful, as to induce him to give it the preference.

The patient to be infected being in the ſame houſe, and, if no objection is made to it, in the ſame room, with one who has the diſeaſe, a little of the variolous matter is taken from the place of inſertion, if the ſubject be under inoculation; or a puſtule, if in the natural way, on the point of a lancet, ſo that both ſides of the point are moiſtened.

With this lancet an inciſion is made in that part of the arm where iſſues are uſually placed, deep enough to paſs thro' the ſcarf-ſkin, and juſt to touch the ſkin itſelf; and in length as ſhort as poſſible, not more than one eighth of an inch.

The little wound being then ſtretched open between the finger and thumb of the operator, the inciſion is moiſtened with the matter, by gently touching it with the flat ſide of the infected lancet. This operation is generally performed in both arms, and ſometimes in two places in one arm, a little diſtant from each other. For as Baron Dimſdale has not obſerved any inconvenience from two or three inciſions, he ſeldom truſts to one; that neither he nor his patient may be under any doubt about the ſucceſs of the operation from its being performed in one place only.

Baron Dimſdale has alſo tried the following method, with the ſame ſucceſs as that above deſcribed; but he does not ſo much approve of it, becauſe he has been credibly informed that it has ſometimes failed in the practice of others. A lancet being moiſtened with the variolous fluid in the ſame manner as in the other, is gently introduced, in an oblique manner, between the ſcarf and true ſkin, and the finger of the operator is applied on the point, in order to wipe off the infection from the lancet, when it is withdrawn. In this method, as well as in the former, a little blood will ſometimes appear; but Baron Dimſdale neither draws blood with deſign, nor does he think there is any neceſſity of wiping it off before the matter is introduced.

In both theſe ways of inoculating, neither plaſter, bandage, nor covering is applied, nor in any reſpect neceſſary.

Baron Dimſdale informs us, that thoſe methods of producing this diſeaſe have never once failed him; and experience has ſufficiently proved that there is no danger from additional infection by the natural diſeaſe at the ſame time. He therefore makes no ſcruple of having the perſon to be inoculated, and the perſon from whom the infection is to be taken, in the ſame room; nor has he ever obſerved any ill conſequence attending this practice. But he adviſes the inoculated patients (tho' perhaps there is no neceſſity for that precaution) to be afterwards ſeparated from places of infection till certain ſigns of ſucceſs appear, when all reſtraint is removed, there being then no danger from accumulation.

Baron Dimſdale remarks, that it ſeems to be of no conſequence whether the infecting matter be taken from the natural or inoculated ſmall-pox. He has uſed both, and never has been able to diſcover the leaſt difference, either reſpecting the certainty of infection, the progreſs, or the event. He therefore takes the infection from either, as opportunity offers, or at the option of the patients or their friends.

Neither is it of any conſequence whether the matter be taken before, or at the criſis of, the diſtemper. It is generally ſuppoſed, that the ſmall-pox is not infectious till after the matter has acquired a certain degree of maturity; and in the common method of inoculation this is ſo much attended to, that when the operation has proved ineffectual, the failure has been aſcribed to the unripeneſs of the matter.

But, as the author remarks, it appears very clearly from the preſent practice of inoculation, that ſo ſoon as any moiſture can be taken from the infected part of an inoculated patient, previous to the appearance of any puſtules, and even previous to the eruptive fever, this moiſture is capable of communicating the ſmall-pox with the utmoſt certainty. Baron Dimſdale has taken a little clear fluid from the elevated pellicle on the inciſed part, even ſo early as the fourth day after the operation; and has at other times uſed matter fully digeſted at the criſis, with equal ſucceſs. In general, however, he prefers taking the matter for infection during the eruptive fever, as he ſuppoſes it at that time to have its utmoſt activity.

In all caſes, when he takes matter from an inoculated perſon, it is from the place where it was inſerted; as he is always ſure to find infection there if the diſeaſe ſucceeds, and always of ſufficient energy.

It may appear ſtrange that no bandage, dreſſing, or application whatſoever, is uſed to the part infected; but that the moſt ſimple inciſion being made, and moiſtened with the ſmalleſt particle of the recent fluid matter, the whole is committed to nature. This method, however, the baron obſerves, is perfectly right: becauſe the application of either plaſter or unguent, as is the uſual practice, will occaſion an inflammation on ſome ſkins; and, in all, tend to disfigure the natural appearance of the inciſion, and prevent our forming a proper judgment of the progreſs of the infection.

If neither an inoculated patient be at hand, nor any one in the neighbourhood has a diſtinct kind of the natural diſeaſe, a thread may be uſed as in the common manner, provided it be very recently infected; but baron Dimſdale is of opinion, that the thread ought to be uſed as ſoon as poſſible after being charged with infecting matter.

The following method of introducing the diſeaſe has likewiſe been found effectual: Dip the point of a lancet in variolous matter; let it be held in the air till it is dry; after which it may be put up and kept in the common caſe, without any farther care. With this prepared lancet raiſe the ſcarf-ſkin obliquely, and keep the lancet a little time in motion between the two ſkins, that part of the matter may be mixed with the animal juices; then withdraw the lancet, and leave the inciſion uncovered as before.

A due attention to the progreſs of infection, diſcoverable by the part where the operation was performed, is a neceſſary circumſtance; becauſe a juſt prognoſtic may thence be ſometimes formed of the future ſtate of the diſtemper, and indications may be taken from the different appearances on the arm, that will enable us to prevent inconveniencies.

Our author obſerves, that the former method of covering the place of inciſion with a plaſter, and continuing upon it dreſſings of one ſort or other, prevented much uſeful information of this kind. They precluded any judgment by the touch, and ſometimes rendered that by the eye equivocal.

The day after the operation is performed, though it takes effect, little alteration is diſcoverable. On the ſecond day, if the part be viewed with a lens, there generally appears a kind of orange-coloured ſtain about the inciſion, and the ſurrounding ſkin ſeems to contract. At this time Baron Dimſdale uſually gives the following medicine at going to bed, either mixed with a little of any kind of jelly, or more frequently made into a pill.

> Calomel, and compound powder of crabs-claws, of each three grains; emetic tartar, one-tenth of a grain.

A quantity of this medicine ſhould be carefully prepared at once, in order to make the diviſion more exact.

On the fourth or fifth day, upon applying the finger, a hardneſs is perceptible to the touch. The patient feels an itching on the part, which appears ſlightly inflamed; and under a kind of veſication is ſeen a little clear fluid, the part reſembling a ſuperficial burn. About the ſixth, moſt commonly ſome pain and ſtiffneſs is felt in the axilla; a circumſtance which not only foretells the near approach of the eruptive ſymptoms, but is a ſign of a favourable progreſs of the diſeaſe. Sometimes on the ſeventh, oftener on the eighth day, ſymptoms of the eruptive fever appear; ſuch as ſlight remitting pains in the head and back, ſucceeded by tranſient ſhiverings and alternate heats, which continue in a greater or leſs degree till the eruption be perfected. At this time alſo it is uſual for the patient to complain of a very diſagreeable taſte in his mouth, the breath is always fetid, and there enſues a ſmell peculiar to the variolous eruptive fever.

The inflammation in the arms at this time ſpreads faſt; and, upon viewing it with a good glaſs, the inciſion for the moſt part appears ſurrounded with an infinite number of ſmall confluent puſtules, which increaſe in ſize and extent as the diſeaſe advances. On the tenth or eleventh day, a circular or oval effloreſcence is uſually diſcovered ſurrounding the inciſion, and extending ſometimes near half round the arm, but more frequently to about the ſize of a ſhilling; and being under the cuticle, is ſmooth to the touch and not painful. This appearance alſo is favourable. It accompanies eruption; every diſagreeable ſymptom ceaſes; and at the ſame time it certainly indicates the whole affair to be over, the pain and ſtiffneſs in the axilla alſo going off.

The feveriſh ſymptoms are for the moſt part ſo mild, as ſeldom to require any aſſiſtance, except a repetition of the ſame medicine that was directed on the ſecond night after the operation; and next morning the following laxative draught ſhould be given, to procure three or four ſtools.

Infuſion of ſena two ounces, manna half an ounce, tincture of jalap two drachms.

Theſe are given as ſoon as the eruptive ſymptoms are perceivable, if they ſeem to indicate any uncommon degree of vehemence.

It has been obſerved that by attending to the progreſs of infection, we may in general be able to prognoſticate with ſome degree of certainty the iſſue of the diſtemper. Particular incidents will ever happen, but not ſufficient to invalidate the propriety of general rules.

If the appearances already deſcribed are obſerved early, a very favourable event may be expected; but it happens in ſome caſes, that the ſucceſs of the inoculation is barely perceptible, the colour about the wound remaining pale, inſtead of changing to red or inflamed; the edges of the inciſion ſpread but little, they remain almoſt entirely flat, and are attended neither with itching nor uneaſineſs of any kind. Nay, ſometimes on the fifth, and even the ſixth day, the alteration is ſo little as to render it doubtful whether the infection has taken place.

When matters are in this ſtate, the appearance is unfavourable, implying a late and more untoward diſeaſe: To prevent which, Baron Dimſdale directs the powder or pill to be taken every night; and in caſe it fails to operate by ſtool, or there be the leaſt diſpoſition to coſtiveneſs, an ounce of Glauber's ſalts, or more commonly the laxative draught already mentioned, is given in the morning, once or twice, as the caſe may require. This courſe forwards the inflammation, which is always a deſirable circumſtance; it being conſtantly obſerved, that an early progreſs on the arm, and an early commencement of the eruptive complaints, portend that the diſtemper will be mild and favourable; and on the contrary, when both are late, the ſymptoms are uſually more irregular and unfavourable.

The management recommended by Baron Dimſdale at the period of eruption differing eſſentially from that of former practitioners, and being a matter of great importance, he gives the following explicit directions on this head, adviſing that they may be purſued with firmneſs and moderation.

Inſtead of the patient being confined to his bed or his room, when the ſymptoms of the eruptive fever come on, he is directed, as ſoon as the purging medicine has operated, to keep abroad, as much as he can bear, in the open air, be it ever ſo cold; always taking care not to ſtand ſtill, but to walk about moderately while abroad. He is alſo directed, if thirſty, to drink cold water.

Baron Dimſdale obſerves, that this treatment ſeems as hard at firſt to the patients as it muſt appear ſingular to thoſe who are unacquainted with ſuch practice; but the effects are ſo ſalutary, ſo conſtantly confirmed by experience, and an eaſy progreſs through every ſtage of the diſeaſe depends ſo much upon it, that he admits of no exception, unleſs the weather be extremely ſevere and the conſtitution very delicate. He adds, it is indiſputably true, that, in the few inſtances where the ſymptoms of eruption have run very high, the patients being averſe to any motion, and fearing the cold as the greateſt evil; yet when, under thoſe circumſtances, he has perſuaded them to riſe out of bed, and go out of doors, though led ſometimes by two aſſiſtants, and has allowed them to drink as much cold water as they choſe, they have not ſuffered the leaſt unfavourable accident: on the contrary, after they have been prevailed upon to comply with thoſe directions, they find their ſpirits revived; an inclination for nouriſhment returns; they reſt well; a gentle ſweat ſucceeds, accompanied with a favourable eruption; and the fever ſeems to be entirely extinguiſhed.

In general, the complaints in this ſtate are very moderate, and attended with ſo little illneſs that the patient eats and ſleeps well the whole time. A few puſtules appear, ſometimes equally diſpoſed; ſometimes the inflammations on the arms ſpread, and are ſurrounded with a few puſtules, which gradually advance to maturity; during which time, for the moſt part, the eruption proceeds kindly, and there is much more difficulty to reſtrain the patients within due bounds, and prevent their mixing with the public, thereby ſpreading the infection, than there was at firſt to prevail upon them to go abroad. During this time medicine is ſeldom wanted; the cool air ſeems the beſt cordial; and if any uncommon languor happens, a baſon of ſmall broth, or a glaſs of wine, is allowed in the day, or ſome white-wine whey at bed-time; which are indeed at any time allowed to tender, aged, or weakly perſons.

With thoſe exceptions, the patients are hitherto kept very ſcrupulouſly to the diet at firſt directed. But after the eruption is completed, they are, if occaſion requires, indulged in a little well-boiled meat of the lighteſt kind, as chicken, veal, or mutton.

The above-mentioned regimen, the cooling alterative purges, and the free uſe of cool air at the ſeaſon of eruption, almoſt univerſally prevent either alarming ſymptoms or a large crop of puſtules. Baron Dimſdale has ſeen a few with ſuch a quantity of puſtules, though diſtinct, that he has neither adviſed nor allowed them to go out of the houſe. But the generality of his patients, when the eruptions are few, amuſe themſelves abroad, within proper limits, with the puſtules upon them.

This practice, however, the Baron neither enjoins, nor maintains to be neceſſary; but he has not been able to obſerve that any inconvenience has ariſen from it. He alſo informs us, that, how ſtrange ſoever it may appear, thoſe who are moſt adventurous, ſeem to enjoy better ſpirits, and are more free from complaints, than others who are inclined to keep within doors.

Thoſe who have the diſeaſe in the ſlighteſt manner firſt deſcribed, viz. without any appearance of eruption but on the inoculated part, are ſoon permitted to go about their uſual affairs: and many inſtances have happened of very induſtrious poor men, who have immediately returned to their daily labour, with a caution not to intermix with thoſe who have not had the diſtemper, for fear of ſpreading it; and with injunctions to take, two or three times, of the purge already directed, or as many doſes of Glauber's ſalts. Thoſe who have the diſeaſe in a greater degree, are confined ſomewhat longer; and, if there be the leaſt diſpoſition to coſtiveneſs, a very mild laxative is now and then exhibited; as the progreſs to maturation appears rather to be advanced than retarded by ſuch means.

When the maturation is completed, and there is nothing farther to fear from the diſtemper, Baron Dimſdale allows his patients gradually to change their courſe of diet, from the perfectly cooling kind, to one a little more generous; recommending ſtrictly to all a return to their ordinary animal-diet, with much caution and reſtraint upon their appetites, both in reſpect of food and fermented liquors.

He obſerves it is not often that we are under a neceſſity of making any application to the part where the inſertion of the variolous matter was made. It moſt commonly heals up, and is covered with a ſcab, about the time when, in a natural way, all the pox would have been dried up. But in ſome caſes the inciſions continue to diſcharge a purulent matter a longer time. In theſe inſtances it is ſufficient to cover the part with the white cerate, or any other mild emplaſtic ſubſtance, which may at once prevent the linen from adhering to the ſore, and defend it from the air. As in theſe caſes the part remains unhealed from ſome peculiar cauſe in the habit, it will be neceſſary to give gentle purgatives, and proper alteratives, as particular exigencies may require.

After deſcribing the uſual progreſs of the ſmall-pox from inoculation, Baron Dimſdale remarks that there are frequent deviations from this courſe, which may embarraſs an unexperienced practitioner, and create a real difficulty, as well as apprehenſions of danger. He therefore proceeds to relate the means for removing thoſe ſymptoms, and the doubts reſpecting the event.

The ſymptom he firſt notices, and which, though it very rarely happens, ſometimes gives much trouble, is great ſickneſs, accompanied with vomiting, in the eruptive ſtate of the diſeaſe. For this complaint it is always neceſſary in the firſt place to clear the ſtomach; which may be effected, either by ordering the patient to drink plentifully of warm liquids to promote vomiting; or perhaps more properly, by giving to an adult one grain of emetic tartar, mixed with ten grains of compound powder of crabs-claws; taking care to diminiſh the doſe for very young and weak ſubjects.

This uſually throws off ſome bilious matter by vomit, ſometimes procures ſtools, or occaſions a moderate ſweat, and generally adminiſters relief. If, however, no ſtools ſhould follow from this medicine, and the ſickneſs ſhould remain, a gentle laxative almoſt certainly procures a reſpite, and the appearance of the eruption entirely removes the complaint.

Another deviation, of yet greater conſequence, which ſometimes happens towards the time of the eruption, and is often, though not always, accompanied with great ſickneſs, is an eryſipelatous effloreſcence. If this ſhews itſelf on the ſkin partially, and here and there in patches, it is not very alarming, and ſoon wears off. But ſometimes the whole ſurface of the body is covered with a raſh intimately mixed with the variolous eruption, and ſo much reſembling the moſt malignant kind of confluent ſmall-pox as ſcarcely to be diſtinguiſhed from it. In ſome ſuch caſes, accompanied with petechiæ and livid ſpots, Baron Dimſdale has been much alarmed; not being able by inſpection only, though aſſiſted by glaſſes, to determine whether what he ſaw was an inoffenſive raſh, or tokens of the greateſt malignity. Very ſtrict attention, however, has enabled him to diſtinguiſh the difference clearly; and for aſſiſting others in ſuch a diſcrimination, he makes the following remarks.

The real and eſſential difference is to be gathered from the concomitant ſymptoms. In the eryſipelatous or variolous raſh, there is not ſo much fever, nor is the reſtleſſneſs or pain of the head or loins ſo conſiderable, neither is there that general proſtration of ſtrength; all which are uſual attendants on a confluent ſmall-pox, eſpecially when accompanied with ſuch putrid appearances. Beſides, upon a careful examination, there may ſometimes be diſcerned a few diſtinct puſtules, larger than the reſt, mixed with the raſh, which are the real ſmall-pox. In thoſe caſes the patients are ordered to refrain from cold water, or any thing cold; and to keep within doors, but not in bed. If any ſickneſs yet remains, a little white-wine whey, or other temperate cordial, is adviſed; and this method has been ſo generally ſucceſsful, as to prevent any alarming complaint. After two or three days, the ſkin changes from a florid to a duſky colour, a few diſtinct puſtules remain, and advance properly to maturation, without any farther trouble enſuing from this formidable appearance.

This raſh has often been miſtaken for the confluence it ſo much reſembles; and has afforded occaſion for ſome practitioners, either ignorantly or diſingenuouſly, to pretend, that, after a very copious eruption of the confluent pox, they can by a ſpecific medicine diſcharge the greater part of the puſtules, leaving only as many diſtinct ones as may ſatisfy the patient that he has the diſeaſe.

Baron Dimſdale informs us, that raſhes of the kind above deſcribed frequently happen during the preparation (whether owing to the regimen, or medicine, or both, he does not determine), and cauſe the operation to be poſtponed. But he has obſerved, that in ſuch caſes they are apt to return at the time of the eruption of the ſmall-pox.

In general, as has been already ſaid, the ſymptoms which precede eruption commence at the end of the ſeventh or on the eighth day incluſive from the operation; but it often happens that they appear much ſooner, and ſometimes much later than this period. Baron Dimſdale has ſeen ſome caſes in which the diſeaſe has come on ſo ſuddenly after infection, and with ſo little complaint or uneaſineſs, that the whole affair has been terminated, purges taken, and the patient returned home perfectly well, in a week; before others, inoculated at the ſame time, from the ſame patient, and under the ſame circumſtances, have begun to complain.

In this caſe, the inoculated part ſhews early certain marks of infection, ſometimes on the very next day, or the day after, when the inciſion will often appear conſiderably inflamed and elevated. The patient about this time frequently makes ſome of the following complaints, viz. chillneſs, itchings, and ſlight pricking pains in the part, and ſometimes on the ſhoulder; giddineſs, drowzineſs, and a ſlight head-ach, ſometimes attended with a feveriſh heat, but often without any. The account themſelves give of their feelings is, in ſome, as if they had drank too much, and in others, as if they had caught a cold. Thoſe complaints ſeldom laſt 24 hours, often not ſo long, and with frequent intermiſſions; never, ſo far as our author remembers, riſing to a degree that requires confinement. During the continuance of thoſe complaints, the inflammation of the arm advances apace, and feels hard to the touch: but upon their wearing off, the inflamed appearances gradually diminiſh, and the part dries to a common ſmall ſcab; the ſkin, that was before red, turns livid, and the diſeaſe entirely vaniſhes. In ſome inſtances, thoſe ſymptoms attack much later; even on the ſeventh or eighth day, when an eruption might be expected in conſequence of them, yet none appears; but the arm gets well very ſoon, and the diſeaſe is at an end.

In this irregular ſort of the diſorder there have, however, been ſome examples where a few eruptions have appeared, and probably in conſequence of the inoculation: yet the puſtules have not looked like the true pox, neither have they maturated like them, nor laſted longer than three days; about which time, for the moſt part, they have dried away.

When this irregular kind of the diſeaſe firſt occurred in Baron Dimſdale's practice, he was in doubt whether the patients were quite ſecure from any future attacks of the diſtemper. In order to be ſatisfied of this point, he inoculated them a ſecond time, cauſing them to aſſociate with perſons in every ſtage of the diſeaſe, and to try all other means of catching the infection. This method has been practiſed with the generality of ſuch patients ever ſince, yet without a ſingle inſtance of its producing any diſorder. Baron Dimſdale, therefore, now makes no ſcruple of pronouncing them perfectly ſafe; and experience has enabled him to foretel, for the moſt part, in two or three days after the operation, whether the diſeaſe will paſs in this ſlight manner.

Upon the ſecond inoculation, however, the inciſed parts are uncommonly inflamed for a day or two, juſt in the ſame manner as has in numerous inſtances been obſerved, as well in thoſe who, though certain of having had the ſmall-pox in the natural way, have ſubmitted to inoculation for the ſake of experiment, as in others, who, being doubtful whether they have had the diſeaſe or not, have been inoculated in order to be ſatisfied. But in all ſuch caſes, the parts ſoon became well; nor did any of thoſe appearances which have been deſcribed as the conſtant attendants on inoculation, as pain in the head, giddineſs, marks of infection in the arm, &c. enſue. Neither can thoſe appearances ever be produced upon a perſon who has had the ſmall-pox before, either in the natural way, or by inoculation.

Another irregularity deſerving notice is, that ſometimes upon the abatement of the fever and other ſymptoms, after the appearance of ſeveral puſtules, and when the eruptive ſtage of the diſeaſe ſeems completed, it nevertheleſs happens that freſh eruptions come out, and continue doing ſo daily, for four, five, or even ſix days ſucceſſively; preceded ſometimes by a ſlight pain in the head, though more frequently they appear without any new diſturbance. Thoſe are generally few, of ſhort duration, and ſeldom come to maturity. Baron Dimſdale, however, has ſeen four caſes, in which, after a ceſſation of complaints, and an appearance of few puſtules, the eruptive ſtage of the diſeaſe was thought to be over, yet in two or three days a freſh fit of fever has attacked the patients, and after a ſhort illneſs a quantity of new puſtules has broke out far exceeding the firſt number, and thoſe remained and matured completely.

Some of the Baron's own patients, and, as he has been credibly informed, of other inoculators, have had conſiderable eruptions of this kind after they returned home; which have probably given occaſion for the reports of ſeveral having had the diſeaſe in the natural way after inoculation. But in confirmation that thoſe reports are ill-grounded, our author obſerves, that in all the caſes of this ſort which have occurred in his own practice, or, as far as he can learn, in that of others; the ſecond, or latter crop of puſtules, has always happened within the time uſually allowed for the progreſs of the ſmall-pox from inoculation; before the inflammation on the arm has ceaſed, and ſooner than we can ſuppoſe them to have been produced by infection received in the natural way. When this has happened, it has been to perſons in whom after a ſlight eruption and abatement of ſymptoms, the diſeaſe has prematurely been judged to be quite over, and they have therefore been permitted to return to their families.

Baron Dimſdale next conſiders the conſequences that ariſe from this very cool and repelling method, and how far the patient's future ſtate of health may be affected by a practice ſo oppoſite to eſtabliſhed theory.

In has been the general opinion, that in moſt or all eruptive complaints, eſpecially the ſmall-pox, the rational method of cure was to forward, by every gentle means, the efforts of nature in producing an eruption; and on the contrary, that there was danger in checking it, either by cold air, cold drink, or any conſiderable evacuations. For this purpoſe the uſe of warm diluents, and the lying in bed, eſpecially if the fever and ſymptoms run high, or at leaſt confining to the houſe, have been generally approved and recommended. Experience, however, has now ſufficiently confirmed the advantage of a different kind of treatment.

While the common or old methods prevailed of conducting inoculation, the patients, particularly children, after paſſing through the diſeaſe in a very favourable manner, were frequently liable to abſceſſes in the axilla and other parts, tedious ophthalmies, and troubleſome ulcerations in the place of inſertion; which though they could not be foreſeen nor prevented, yet often gave more pain and vexation to the patients, and trouble to the operator, than the diſeaſe itſelf had done. But on inquiry into the ſtate of thoſe who have been treated in the cool way, or according to the new method, Baron Dimſdale affirms, that in more than 1500 there has been only one who has had ſo much as a boil in the axilla; and this was a child who had in the ſame arm an iſſue, which was at that time dried up. He has ſeen only two very ſmall ſuperficial boils in others near the place of inſertion; and thoſe ſeemed to be occaſioned rather by an irritation from the diſcharge, than by any other cauſe, and were all ſoon healed with very little trouble.

In a few inſtances alſo, there has been a ſlough in the inciſed part, which has cauſed a ſore of ſhort duration; but not one inſtance of an ulcer of any continuance. Such little breakings out too, and ſcabs, as frequently ſucceed the mild natural ſmall-pox, ſometimes, though rarely, happen to thoſe inoculated in the new way; and, as they are of little conſequence, are generally cured by the ſame method of a few gentle purges.

In regard to ophthalmies from this kind of practice, Baron Dimſdale has never known an inſtance of one truly deſerving that name. The coats of the eye have been a little inflamed in a very few, but they ſoon became clear, without any means uſed for that purpoſe. He knows but two caſes where he thought the inflammation great enough to require bleeding; and not one where a bliſter was neceſſary. Thoſe complaints, therefore, which were formerly ſo frequent and troubleſome, ſeem to be much reduced by the new method, the great utility of which is now univerſally acknowledged.

LXIX. *Varicella*, the CHICKEN-POX. Gen. XXIX.

Varicella, *Vog.* 42.
Variola lymphatica, *Sauv.* ſp. 1.
Anglis, *The* CHICKEN-POX, Edin. Med. Eſſays, vol. ii. art. 2. near the end. *Heberden*, Med. Tranſac. art. 17.

THIS is a very ſlight diſeaſe; and is attended with ſo little danger, that it would not merit any notice, if it were not apt to be confounded with the ſmall-pox, and thus give occaſion to an opinion that a perſon might have the ſmall-pox twice in his life; or they are apt to deceive into a falſe ſecurity thoſe who have never had the ſmall-pox, and make them believe that they are ſafe, when in reality they are not. Theſe pox break out in many, according to Dr Heberden, without any illneſs or previous ſign; in others they are preceded by a little degree of chillneſs, laſſitude, cough, broken ſleep, wandering pains, loſs of appetite, and feveriſhneſs for three days.

In ſome patients they make their firſt appearance on the back, but this perhaps is not conſtant. Moſt of them are of the common ſize of the ſmall-pox, but ſome are leſs. Our author never ſaw them confluent, nor very numerous. The greateſt number was about 12 in the face, and 200 hundred over the reſt of the body.

On the firſt day of the eruption they are reddiſh. On the ſecond day there is at the top of moſt of them a very ſmall bladder, about the ſize of a millet-ſeed. This is ſometimes full of a watery and colourleſs, ſometimes of a yellowiſh liquor, contained between the cuticle and ſkin. On the ſecond, or, at the fartheſt, on the third day from the beginning of the eruption, as many of theſe pocks as are not broken ſeem arrived at their full maturity; and thoſe, which are fulleſt of that yellow liquor, very much reſemble what the genuine ſmall-pox are on the fifth or ſixth day, eſpecially where there happens to be a larger ſpace than ordinary occupied by the extravaſated ſerum. It happens to moſt of them, either on the firſt day that this little bladder ariſes, or on the day after, that its tender cuticle is burſt by the accidental rubbing of the clothes, or by the patient's hands to allay the itching, which attends this eruption. A thin ſcab is then formed at the top of the pock, and the ſwelling of the other part abates, without its ever being turned into pus, as it is in the ſmall-pox. Some few eſcape being burſt; and the little drop of liquor contained in the veſicle at the top of them, grows yellow and thick, and dries into a ſcab. On the fifth day of the eruption they are almoſt all dried and covered with a ſlight cruſt. The inflammation of theſe pocks is very ſmall; and the contents of them do not ſeem to be owing to ſuppuration, as in the ſmall-pox, but rather to what is extravaſated under the cuticle by the ſerous veſſels of the ſkin, as in a common bliſter. No wonder, therefore, that this liquor appears ſo ſoon as on the ſecond day; and that, upon the cuticle being broken, it is preſently ſucceeded by a ſlight ſcab: hence too, as the true ſkin is ſo little affected, no mark or ſcar is likely to be left, unleſs in one or two pocks, where, either by being accidentally much fretted, or by ſome extraordinary ſharpneſs of the contents, a little ulcer is formed in the ſkin.

The patients ſcarce ſuffer any thing throughout the whole progreſs of this illneſs, except ſome languidneſs of ſtrength and ſpirits and appetite, all which is probably owing to the confining of themſelves to their chamber.

Two children were taken ill of the chicken-pox, whoſe mother choſe to be with them, though ſhe had never had this illneſs. Upon the eighth or ninth day after the pocks were at their height in the children, the mother fell ill of this diſtemper then beginning to ſhew itſelf. In this inſtance the infection lay in the body much about the ſame time that it is known to do in the ſmall-pox.

Remedies are not likely to be much wanted in a diſeaſe attended with hardly any inconvenience, and which in ſo ſhort a time is certainly cured of itſelf.

The principal marks by which the chicken-pox may be dſtinguiſhed from the ſmall-pox are,

1. The appearance, on the ſecond or third day from the eruption, of that veſicle full of ſerum upon the top of the pock.

2. The cruſt, which covers the pocks on the fifth day; at which time thoſe of the ſmall-pox are not at the height of their ſuppuration.

Foreign medical writers hardly evet mention the name of this diſtemper; and the writers of our own country ſcarce mention any thing more of it than its name. Morton ſpeaks of it as if he ſuppoſed it to be a very mild genuine ſmall-pox. But theſe two diſtempers are ſurely totally different from one another, not only on account of their different appearances abovementioned, but becauſe thoſe who have had the ſmall-pox are capable of being infected with the chicken-pox; but thoſe who have once had the chicken-pox are not capable of having it again, though to ſuch as have never had this diſtemper, it ſeems as infectious as the ſmall-pox. Dr Heberden wetted a thread in the moſt concocted pus-like liquor of the chicken-pox which he could find; and after making a ſlight inciſion, it was confined upon the arm of one who had formerly had it; the little wound healed up immediately, and ſhewed no ſigns of any infection.

From the great ſimilitude between the two diſtempers, it is probable, that, inſtead of the ſmall-pox, ſome perſons have been inoculated from the chicken-pox; and that the diſtemper which has ſucceeded, has been miſtaken for the ſmall-pox by haſty or unexperienced obſervers.

There is ſometimes ſeen an eruption, concerning which our author is in doubt, whether it be one of the many unnoticed cutaneous diſeaſes, or only a more malignant ſort of chicken-pox.

This diſorder is preceded for three or four days by all the ſymptoms which forerun the chicken-pox; but in a much higher degree. On the fourth or fifth day the eruption appears, with very little abatement of the fever; the pains likewiſe of the limbs and back ſtill continue, to which are joined pains of the gums. The pocks are redder than the chicken-pocks, and ſpread wider; and hardly riſe ſo high, at leaſt not in proportion to their ſize. Inſtead of one little head or veſicle of a ſerous matter, theſe have from four to ten or twelve. They go off juſt like the chicken-pox, and are diſtinguiſhable from the ſmall-pox by the ſame marks; beſides which, the continuance of the pains and fever after the eruption, and the degree of both theſe, though there be not above 20 pocks, are what never happen in the ſmall-pox.

330 Genus XXX. RUBEOLA; the MEASLES.

Rubeola, *Sauv.* gen. 94. *Lin.* 4. *Sag.* 293.
Febris morbilloſa, *Vog.* 36. *Hoffm.* II. 62.
Morbilli, *Junck.* 76.

331 LXX. The *Regular* MEASLES. Sp. I.

Rubeola vulgaris, *Sauv.* ſp. 1.
Morbilli regulares, *Sydenh.* Sect. iv. cap. 5.

332 LXXI. The *Irregular* or *Anomalous* MEASLES, Var. 1.

Rubeola anomala, *Sauv.* ſp. 2.
Morbilli anomali, *Sydenh.* ſect. v. cap. 3.

333 LXXII. The MEASLES attended with *Quinſy* Var. 2.

334 LXXIII. The MEASLES with *Putrid Diatheſis* of the Blood. Var. 3.

335 LXXIV. The VARIOLODES, in Scotland commonly called the *Nirles*. Sp. II.

Rubeola variolodes, *Sauv.* ſp. 3.

Deſcription. This diſeaſe begins with a cold ſtage, which is ſoon followed with a hot, with the ordinary ſymptoms of thirſt, heat, anorexia, anxiety, ſickneſs, and vomiting; and theſe are more or leſs conſiderable in different caſes. Sometimes from the beginning, the fever is ſharp and violent: often, for the firſt two days, it is obſcure and inconſiderable; but always becomes violent before the eruption, which commonly happens on the fourth day. This eruptive fever, from the beginning of it, is always attended with hoarſeneſs, a frequent hoarſe dry cough, and frequently with ſome difficulty of breathing. At the ſame time, the eyelids are ſomewhat ſwelled; the eyes are a little inflamed, and pour out tears; and, with this, there is a coryza, and frequent ſneezing. For the moſt part, a conſtant drowſineſs attends the beginning of this diſeaſe. The eruption, as we have ſaid, commonly appears upon the fourth day, firſt on the face, and ſucceſſively on the lower parts of the body. It appears firſt in ſmall red points; but, ſoon after, a number of theſe appear in cluſters, which do not ariſe in viſible pimples, but, by the touch, are found to be a little prominent. This is the caſe on the face; but, in other parts of the body, the prominency, or roughneſs, is hardly to be perceived. On the face, the eruption retains its redneſs, or has it increaſed for two days; but, on the third, the vivid redneſs is changed to a browniſh red; and, in a day or two more, the eruption entirely diſappears, while a meally deſquamation takes place. During the whole time of the eruption, the face is ſomewhat turgid, but ſeldom conſiderably ſwelled. Sometimes, after the eruption has appeared, the fever ceaſes entirely: but this is ſeldom the caſe; and more commonly the fever continues or is increaſed after the eruption, and does not ceaſe till after the deſquamation. Even then the fever does not always ceaſe, but continues with various duration and effect. Though the fever happens to ceaſe upon the eruption's taking place, it is common for the cough to continue till after the deſquamation, and ſometimes much longer. In all caſes, while the fever continues, the cough alſo continues, generally with an increaſe of the difficulty of breathing; and both of theſe ſymptoms ſometimes ariſe to a degree which denotes a pneumonic affection. This may ariſe at any period of the diſeaſe; but very often it does not come on till after the deſquamation of the eruption.

After the ſame period, alſo, a diarrhœa frequently comes on, and continues for ſome time.

It is common for meaſles, even when they have not been of a violent kind, to be followed by inflammatory affections, particularly ophthalmia and phthiſis. If the blood be drawn from a vein in the meaſles, with the circumſtances neceſſary to favour the ſeparation of the gluten, this always appears ſeparated, and lying on the ſurface of the craſſamentum, as in inflammatory diſeaſes. For the moſt part, the meaſles, even when violent, are without any putrid tendency; but in ſome caſes, ſuch a tendency appears both in the courſe of the diſeaſe, and eſpecially after the ordinary courſe of it is finiſhed. See Dr Watſon, in London Med. Obſ. vol. iv. art. 11.

Cauſes. The meaſles are occaſioned by ſome kind of contagion, the nature of which is not underſtood; and which, like the former, affects a perſon only once in their lives.

Prognoſis. From the deſcription of this diſtemper already given, it appears that the meaſles are attended with a catarrhal affection, and by an inflammatory diatheſis to a conſiderable degree; and therefore the danger of them is to be apprehended chiefly from the coming on of a pneumonic inflammation.

Cure. From the conſideration mentioned in the prognoſis, it will be obvious, that the remedies eſpecially neceſſary are thoſe which may obviate and diminiſh the inflammatory diatheſis; and therefore, in a particular manner, blood-letting. This remedy may be employed at any time in the courſe of the diſeaſe, or after the ordinary courſe of it is finiſhed. It is to be employed more or leſs, according to the urgency of the ſymptoms of fever, cough, and dyſpnœa; and generally may be employed very freely. But, as the ſymptoms of pneumonic inflammation ſeldom come on during the eruptive fever; and, as this is ſometimes violent, immediately before the eruption, though a ſufficiently mild diſeaſe be to follow; bleeding is ſeldom very neceſſary during the eruptive fever, and may often be reſerved for the times of greater danger which are perhaps to follow.

In all caſes of meaſles, where there are no marks of putreſcency, and where there is no reaſon, from the known nature of the epidemic, to apprehend putreſcency, bleeding is the remedy to be depended upon: but aſſiſtance may alſo be drawn from cooling purgatives; and particularly from bliſtering on the ſides, or between the ſhoulders. The dry cough may be alleviated by the large uſe of demulcent pectorals, mucilaginous, oily, or ſweet. It may, however, be obſerved, with reſpect to theſe demulcents, that they are not ſo powerful in involving and correcting the acrimony of the maſs of blood as has been imagined; and that their chief operation is by beſmearing the fauces, and thereby defending them from the irritation of acrids, either ariſing from the lungs, or diſtilling from the head. For moderating and quieting the cough in this diſeaſe, opiates certainly prove the moſt effectual means, whenever they can be ſafely employed. In the meaſles, in which an inflammatory ſtate prevails in a conſiderable degree, opiates may be ſuppoſed to be inadmiſſible; and, in thoſe caſes in which a high degree of pyrexia and dyſpnœa ſhew either the preſence, or at leaſt the danger, of pneumonic inflammation, opiates might be very hurtful: but, in caſes in which the dyſpnœa is not conſiderable, and in which bleeding, to obviate or abate the inflammatory ſtate, has been duly employed; in ſuch caſes, while the cough and watchfulneſs are the urgent ſymptoms, opiates may be ſafely exhibited, and with great advantage. In all the exanthemata, there is an acrimony diffuſed over the ſyſtem, which gives a conſiderable irritation; and, for obviating the effects of this, opiates are uſeful, and always proper, when no particular contra-indication prevails.

When the deſquamation of the meaſles is finiſhed, though then there ſhould be no diſorder remaining, phyſicians have thought it neceſſary to purge the patient ſeveral times, with a view to draw off the dregs of this diſeaſe, that is, a portion of the morbific matter which is ſuppoſed to remain long in the body. Dr Cullen doth not reject this ſuppoſition; but, at the ſame time, cannot believe that the remains of the morbiſic matter, diffuſed over the whole maſs of blood, can be wholly drawn off by purging; and therefore thinks, that, to avoid the conſequence of the meaſles, it is not the drawing off the morbific matter which we need to ſtudy, ſo much as to obviate and remove the inflammatory ſtate of the ſyſtem which had been induced by the diſeaſe. With this laſt view, indeed, purging may ſtill be a proper remedy; but bleeding, in proportion to the ſymptoms of inflammatory diſpoſition, is ſtill more ſo.

From our late experience of the uſe of cold air in the eruptive fever of the ſmall-pox, ſome phyſicians have been of opinion that the practice may be tranſferred to the meaſles; but we have not yet had experience to determine this. We are certain, that external heat may be very hurtful in the meaſles, as in moſt other inflammatory diſeaſes; and, therefore, that the body ought to be kept in a moderate temperature during the whole courſe of the meaſles: but how far, at any period of the diſeaſe, cold air may be applied with ſafety, we are uncertain. Analogy, though ſo often the reſource of phyſicians, is frequently fallacious; and further, though the analogy with the ſmall-pox might lead to the application of cold air during the eruptive fever of the meaſles, the analogy with catarrh ſeems to be againſt the practice. When the eruption is upon the ſkin, we have had many inſtances of cold air making it diſappear, and thereby producing much diſorder in the ſyſtem; and we have alſo had frequent inſtances of this diſorder's being removed by reſtoring the heat of the body, and thereby again bringing out the eruption.

Upwards of 20 years ago, inoculation for the meaſles was propoſed, and practiſed in ſeveral inſtances with ſucceſs, by Dr Home of Edinburgh. His method of communicating the infection was, by applying, to an inciſion in each arm, cotton moiſtened with the blood of a patient labouring under the meaſles. But the contagion hath ſince been artificially induced by means of lint wet with the tears which flow from the eyes in the firſt ſtage of this diſorder. Thus, it is ſaid, the ſoreneſs of the eyes was mitigated, the cough abated, and the fever rendered leſs ſevere. But the practice was never much in faſhion, and now is ſcarce ever heard of.

LXXV. The MILIARY FEVER. Genus XXXI. 336

Miliaria, *Lin.* 7.
Miliaris, *Sauv.* gen. 95. *Sag.* gen. 295.
Febris miliaris, *Vog.* 37.
Febris purpurata rubra et alba miliaris, *Hoffm.* II. 68.
Febris purpurea ſeu miliaris, *Junck.* 75.
Germanis der Frieſel. *God. Welſch*, Hiſt. Med. de novo puerperarum morbo, qui der *Frieſel* dicitur, Lipſ. 1655.
Hamilton, de febr. miliar. 1710. *Fatonus*, de febr. mil. 1747. *Allioni* de miliar. 1758. *Fordyce*, de febr. mil. 1748. *Fiſcher*, de febr. mil. 1767. *De Haen*, de diviſ. febr. 1760, et in Ratio med. paſſim. *Matt. Collin* ad *Baldinger* de miliar. 1764.
Miliaris benigna, *Sauv.* ſp. 1.
Miliaris maligna, *Sauv.* ſp. 2.
Miliaris recidivans, *Sauv.* ſp. 3.

Miliaris Germanica, *Sauv.* ſp. 5.
Miliaris Boia, *Sauv.* ſp. *a.*
Miliaris Britannica, *Sauv.* ſp. *i.*
Miliaris nova febris, *Sydenh.* Sched. monit. *Sauv.* ſp. *d.*
Miliaris ſudatoria, *Sauv.* ſp. *e.*
Miliaris nautica, *Sauv.* ſp. g.
Miliaris purpurata, *Sauv.* ſp. *h.*
Miliaris lactea, *Sauv.* ſp. *c.*
Miliaris puerperarum, *Sauv.* ſp. *k.*
Miliaris ſcorbutica, *Sauv.* ſp. *l.*
Miliaris critica, *Sauv.* ſp. *b.*

Hiſtory and Deſcription. This diſeaſe is ſaid to have been unknown to the ancients, and that it appeared for the firſt time in Saxony about the middle of the laſt century. It is ſaid to have ſince ſpread from thence into all the other countries of Europe; and, ſince the period mentioned, to have appeared in many countries in which it had never appeared before.

From the time of its having been firſt taken notice of, it has been deſcribed and treated of by many different writers; and by all of them, till very lately, has been conſidered as a peculiar idiopathic diſeaſe. It is ſaid to have been conſtantly attended with peculiar ſymptoms. It comes on with a cold ſtage, which is often conſiderable. The hot ſtage, which follows, is attended with great anxiety, and frequent ſighing. The heat of the body becomes great, and ſoon produces profuſe ſweating, preceded, however, with a ſenſe of pricking, as of pin-points in the ſkin; and the ſweat is of a peculiar rank and diſagreeable odour. The eruption appears ſooner or later in different perſons, but at no determined period of the diſeaſe. It ſeldom or never appears upon the face; but appears firſt upon the neck and breaſt, and from thence often ſpreads over the whole body.

The eruption named *miliary* is ſaid to be of two kinds; the one named the *red*, the other the *white miliary*. The former, which in Engliſh is ſtrictly named a *ruſh*, is commonly allowed to be a ſymptomatic affection; and, as the latter is the only one that has any pretenſions to be conſidered as an idiopathic diſeaſe, it is this only that we ſhall more particularly deſcribe and treat of in this chapter.

What is then called the *white miliary eruption*, appears at firſt like the red, in very ſmall red pimples, for the moſt part diſtinct, but ſometimes cluſtered together. Their little prominence is better diſtinguiſhed by the finger than by the eye. Soon after the appearance of this eruption, and, at leaſt, on the ſecond day, a ſmall veſicle appears upon the top of the pimples. At firſt the veſicle is whey-coloured; but ſoon becomes white, and ſtands out like a little globule on the top of the pimple. In two or three days, theſe globules break, or are rubbed off; and are ſucceeded by ſmall cruſts, which ſoon after fall off in ſmall ſcales. While one ſet of pimples take this courſe, another ſet ariſe to run the ſame, ſo that the diſeaſe often continues upon the ſkin for many days together. Sometimes when one crop of this eruption has diſappeared, another, after ſome interval, is produced. And, it has been further obſerved, that, in ſome perſons, there is ſuch a diſpoſition to this diſeaſe, that they have been affected with it ſeveral times in the courſe of their lives.

This diſeaſe is ſaid to affect both ſexes, and perſons of all ages and conſtitutions; but it has been obſerved at all times to affect eſpecially, and moſt frequently, lying-in women.

It is often accompanied with violent ſymptoms, and has frequently proved fatal. The ſymptoms, however, attending it are very various; and they are, upon occaſion, every one attending febrile diſeaſes; but no ſymptom, or concourſe of ſymptoms, are ſteadily the ſame in different perſons, ſo as to give any ſpecific character to the diſeaſe. When the diſeaſe is violent, the moſt common ſymptoms are phrenetic, comatoſe, and convulſive affections, which are alſo ſymptoms of all fevers treated by a very warm regimen.

While there is ſuch a variety of ſymptoms appearing in this diſeaſe, it is not to be expected that any one particular method of cure can be propoſed; and, accordingly, we find in different writers different methods and remedies preſcribed; frequent diſputes about the moſt proper; and thoſe received and practiſed by ſome, oppoſed and deſerted by others.

It appears, however, to Dr Cullen, very improbable that this was really a new diſeaſe, when it was firſt conſidered as ſuch. There are very clear traces of it in authors who wrote long before that period; and though there were not, we know that ancient deſcriptions were inaccurate and imperfect, particularly with reſpect to cutaneous affections; and we know very well that thoſe affections which commonly appeared as ſymptomatic only, were commonly neglected, or confounded together under a general appellation.

The antecedent ſymptoms of anxiety, ſighing, and pricking of the ſkin, which have been ſpoken of as peculiar to this diſeaſe, are, however, common to many others; and, perhaps, to all thoſe in which ſweatings are forced out by a warm regimen. Of the ſymptoms ſaid to be concomitant of this eruption, there are none which can be ſaid to be conſtant and peculiar but that of ſweating. This, indeed, always precedes and accompanies the eruption; and, while the miliary eruption attends many different diſeaſes, it never, however, appears in any of theſe, but after ſweating; and in perſons labouring under the ſame diſeaſes it does not appear, if in ſuch perſons ſweating is avoided. It is, therefore, probable, that the eruption is the effect of ſweating; and that it is the effect of a matter not before prevailing in the maſs of blood, but generated under particular circumſtances in the ſkin itſelf. That it depends upon particular circumſtances of the ſkin, appears further from hence, that the eruption ſeldom or never appears upon the face, although it affects the whole of the body beſides; and that it comes upon thoſe places eſpecially which are more cloſely covered; and that it can be brought out upon particular places by external applications.

It is to be obſerved, that this eruptive diſeaſe differs from the other exanthemata in many circumſtances; in its not being contagious, and therefore never epidemic; in this the eruption appears at no determined period of the diſeaſe; that the eruption has no determined duration; that ſucceſſive eruptions frequently appear in the courſe of the ſame fever, and that ſuch eruptions frequently recur in the courſe of the ſame perſon's life. All this renders it very probable, that, in the miliary fever, the morbific matter is not a ſubſiſting contagion communicated to the blood, and thence, in conſequence of fever and aſſimilation, thrown out upon the ſurface of the body, but a matter occaſionally produced in the ſkin itſelf by ſweating.

This concluſion is further rendered probable from hence, that, while the miliary eruption has no ſymptoms or concourſe of ſymptoms peculiar to itſelf, it, upon occaſion, accompanies almoſt every febrile diſeaſe, whether inflammatory or putrid, if theſe happen to be attended with ſweating; and from thence it may be preſumed, that the miliary eruption is a ſymptomatic affection only, produced in the manner we have ſaid.

But, as this ſymptomatic affection does not always accompany every inſtance of ſweating, it may be proper to inquire, what are the circumſtances which eſpecially determine this eruption to appear? And to this our author gives no full and proper anſwer. He cannot ſay that there is any one circumſtance which in all caſes gives occaſion to this eruption; nor can he ſay what different cauſes, in different caſes, may give occaſion to it. There is only one obſervation that can be made to the purpoſe of this inquiry; and it is, that theſe perſons ſweating, under febrile diſeaſes, are eſpecially liable to the miliary eruption, who have been previouſly weakened by large evacuations, particularly of blood. This will explain why it happens to lying-in-women more frequently than to any other perſons; and to confirm this explanation, he has obſerved, that the eruption has happened to other women, though not in child-bed, but who had been much ſubjected to a frequent and copious menſtruation, and to an almoſt conſtant *fluor albus*. He has alſo obſerved it to have happened to men in fevers, after wounds from which they had ſuffered a great loſs of blood.

Further, that this eruption is produced by a certain ſtate of debility, will appear probable, from its ſo often attending fevers of the putrid kind, which are always attended with great debility. It is true, that it alſo ſometimes attends inflammatory diſeaſes, when it may not be accounted for in the ſame manner; but he believes it may be obſerved, that it eſpecially attends thoſe inflammatory diſeaſes in which the ſweats have been long protracted, or frequently repeated, and which have thereby produced a debility, and perhaps a debilitating putrid diatheſis.

It appears ſo clearly that this eruption is always a ſymptomatic and factitious affection, that our author is perſuaded it may be, in moſt caſes, prevented merely by avoiding ſweats. Spontaneous ſweatings, in the beginning of diſeaſes, are very rarely critical; and all ſweatings, not evidently critical, ſhould be prevented; and the promoting them, by increaſing external heat, is commonly very pernicious. Even critical ſweats ſhould hardly be encouraged by ſuch means. If, therefore, ſpontaneous ſweats ariſe, they are to be checked by the coolneſs of the chamber; by the lightneſs and looſeneſs of the bed-cloaths; by the perſons laying out their arms and hands; and by their taking cold drink; and in this way our author thinks he has frequently prevented miliary eruptions, which were otherwiſe likely to have appeared, particularly in lying-in-women.

But it may happen, when theſe precautions have been neglected, or from other circumſtances, that a miliary eruption does not actually appear; and the queſtion will then be put, how the caſe is to be treated? It is a queſtion of conſequence; as our author believes that the matter here generated is often of a virulent kind; it is often the offspring of putreſcency; and, when treated by increaſing the external heat of the body, it ſeems to acquire a virulence which produces thoſe ſymptoms mentioned above, and proves certainly fatal.

It has been an unhappy opinion with moſt phyſicians, that eruptive diſeaſes were ready to be hurt by cold; and that it was therefore neceſſary to cover up the body very cloſely, and thereby increaſe the external heat. We now know that this is a miſtaken opinion; that increaſing the external heat of the body is very generally miſchievous; and that ſeveral eruptions not only admit, but require the application of cold air. He is perſuaded, therefore, that the practice which formerly prevailed in the caſe of miliary eruptions, of covering up the body cloſe, and both by external means and internal remedies encouraging the ſweatings which accompany this eruption, was highly pernicious, and commonly fatal. He is therefore of opinion, that even when a miliary eruption has appeared, in all caſes in which the ſweating is not manifeſtly critical, we ſhould employ all the ſeveral means of ſtopping the ſweating that are mentioned above; and he has ſometimes had occaſion to obſerve, that even the admiſſion of cool air was ſafe and uſeful.

This is, in general, the treatment of miliary eruptions: but at the ſame time, the remedies ſuited to the primary diſeaſe are to be employed; and therefore, when the eruption happens to accompany inflammatory affections, and the fulneſs and hardneſs of the pulſe or other ſymptoms ſhew an inflammatory ſtate preſent, the caſe is to be treated by blood-letting, purging, and other antiphlogiſtic remedies.

Upon the other hand, when the miliary eruption attends diſeaſes, in which debility and putreſcency prevail, it will be proper to avoid all evacuations, and to employ tonic and antiſeptic remedies, particularly the Peruvian bark, cold drink, and cold air.

We ſhall conclude this ſubject with obſerving, that the venerable octogenarian practitioner, de Fiſcher, when treating of this ſubject, in laying down the indications of cure, has given this as one of them: "Excretionis periphericæ non primariam habere rationem."

GENUS XXXII. SCARLATINA. The SCARLET FEVER. 337

Scarlatina, *Sauv.* gen. 98. *Vog.* 39. *Sag.* 294. *Junck.* 75.

LXXVI. The *Mild* SCARLET FEVER. Sp. I. 338

Scarlatina febris, *Sauv.* ſp. 1. *Sydenham*, ſect. vi. cap. 2.

LXXVII. The SCARLET FEVER with *Ulcerated Sore Throat.* Sp. II. 539

Scarlatina anginoſa. *Withering* on the Scarlet Fever.

THE mild ſcarlet fever is deſcribed by Sydenham, who tells us that he can ſcarce account it a diſeaſe; and indeed nothing more ſeems to be neceſſary in the treatment of it than an antiphlogiſtic regimen, avoiding the application of cold air and cold drink. The diſeaſe however ſometimes rages epidemically, and is attended with very alarming ſymptoms, bearing no ſmall reſemblance to the cynanche maligna, in which caſe it is called *ſcarlatina anginoſa*.—The beſt deſcription of this diſtemper hath been publiſhed by Dr Withering in the year 1778. This diſeaſe made its appearance, we are told, at Birmingham and the neighbouring villages, about the middle of May 1778. It continued in all its force and frequency to the end of October; varying, however, in ſome of its ſymptoms, as the air grew colder. In the beginning of November it was rarely met with; but towards the middle of that month, when the air became warmer, it increaſed again, and in ſome meaſure reſumed thoſe appearances it poſſeſſed in the ſummer-months, but which it had loſt during the cold winds in October.

It affected children more than adults; but ſeldom occurred in the former under two years of age, or in the latter when once they had paſſed their fiftieth year.

Deſcription. With various general ſymptoms of fever, the patient at firſt complains of a dejection of ſpirits, a ſlight ſoreneſs or rather ſtiffneſs in the neck, with a ſenſe of ſtraitneſs in the muſcles of the neck and ſhoulders, as if they were bound with chords. The ſecond day of the fever this ſoreneſs in the throat increaſes, and the patients find a difficulty in ſwallowing; but the difficulty ſeems leſs occaſioned by the pain excited in the attempt, or by the ſtraitneſs of the paſſage, than by an inability to throw the neceſſary muſcles in action. The ſkin feels hot and dry, but not hard; and the patients experience frequent, ſmall, pungent pains, as if touched with the point of a needle. The breath is hot and burning to the lips, and thirſt makes them wiſh to drink; but the tendency to ſickneſs, and the exertions neceſſary in deglutition, are ſo unpleaſant, that they ſeldom care to drink much at a time. They have much uneaſineſs alſo from want of reſt during the night. In the morning of the third day, the face, neck, and breaſt, appear redder than uſual: in a few hours this redneſs becomes univerſal; and increaſes to ſuch a degree of intenſity, that the face, body, and limbs, reſemble a boiled lobſter in colour, and are evidently ſwollen. Upon preſſure the redneſs vaniſhes, but ſoon returns again. The ſkin is ſmooth to the touch, nor is there the leaſt appearance of pimples or puſtules. The eyes and noſtrils partake more or leſs of the general redneſs; and in proportion to the intenſity of this colour in the eyes, the tendency to delirium prevails.

Things continue in nearly this ſtate for two or three days longer, when the intenſe ſcarlet gradually abates, a brown colour ſucceeds, and the ſkin becoming rough, peels off in ſmall ſcales. The tumefaction ſubſides at the ſame time, and the patients gradually recover their ſtrength and appetite.

During the whole courſe of the diſeaſe, the pulſe is quick, ſmall, and uncommonly feeble; the urine ſmall in quantity; the ſub-maxillary glands ſomewhat enlarged and painful to the touch. The velum pendulum palati, the uvula, the tonſils, and gullet, as far as the eye can reach, partake of the general redneſs and tumefaction; but although collections of thick mucus, greatly reſembling the ſpecks or ſloughs in the putrid ſore throat, ſometimes occur, yet thoſe are eaſily waſhed off, and real ulcerations of thoſe parts were never obſerved.

Theſe are the moſt uſual appearances of this diſorder; but it too frequently aſſumes a much more fatal form. In ſome children the delirium commences in a few hours after the firſt attack; the ſkin is intenſely hot; the ſcarlet colour appears on the firſt or ſecond day, and they die very early on the third. Others again, who ſurvive this rapid termination, inſtead of recovering, as is uſual, about the time the ſkin begins to get its natural colour, fall into a kind of lingering, and die at laſt in the courſe of ſix or eight weeks.

In adults, circular livid ſpots, were frequently obſerved about the breaſt, knees, and elbows; alſo large blotches of red, and others of white intermixed, and often charging places.

In the month of October, when the air becomes colder, the ſcarlet colour of the ſkin was both leſs frequent and leſs permanent. Many patients had no appearance of it at all; whilſt others, eſpecially adults, had a few minute red pimples, crowned with white pellucid heads. The inſide of the throat was conſiderably tumefied; its colour a dull red, ſometimes tending to a livid. The pulſe beat in general 130 or 140 ſtrokes in a minute; was ſmall, but hard, and ſometimes ſufficiently ſo to juſtify the opening of a vein; and the blood thus taken away, in every inſtance when cool, appeared ſizy, and the whole craſſamentum firm.

Happy would it be, our author obſerves, if the baneful influence of this diſorder terminated with the febrile ſymptoms. But in ten or fifteen days from the ceſſation of the fever, and when a complete recovery might be expected, another train of ſymptoms occur, which at laſt frequently terminate fatally. The patienrs, after a few days amendment, feel a ſomething that prevents their farther approach to health; an unaccountable languor and debility prevails, a ſtiffneſs in the limbs, an accelerated pulſe, diſturbed ſleep, diſreliſh to food, and a ſcarcity of urine. Theſe ſymptoms, we are told, are ſoon ſucceeded by ſwellings of a real dropſical nature, forming ſometimes an anaſarca, and on other occaſions an aſcites.

Dr Withering, after examining the accounts given of this diſeaſe by different authors, proceeds to the diagnoſis. It may be diſtinguiſhed, he obſerves, from the petechial fever, by the eruption in the latter appearing ſeldom before the fourth day, by the regularity and diſtinctneſs of the ſpots, and by its principally occupying the neck, the back, and the loins. On the other hand, in the ſcarlet fever, the eruption generally appears about the third day; conſiſts either of broad blotches, or elſe one continued redneſs, which ſpreads over the face and the whole body.

In the fever called *purpura*, the puſtules are prominent, keep their colour under preſſure, and never appear early in the diſeaſe; whereas in the ſcarlet fever, the eruption appears more early, is not prominent, but perfectly ſmooth to the touch, and becomes quite white under preſſure.

Although the *purple fever* and *ſcarlatina* may be connected by ſome general cauſe, yet our author takes occaſion to obſerve, that they cannot be mere modifications of the ſame eruption: for examples occur, he ſays, of the ſame perſon being firſt ſeized with one of theſe diſorders, and afterwards with the other; but he never met with an inſtance of the ſame perſon having the ſcarlet fever twice; and he believes it to be as great an improbability as a repetition of the ſmall-pox.

This diſorder is particularly diſtinguiſhed from the *meaſles*, we are told, by the want of that cough, watery eye, and running at the noſe, which are known to be the predominant ſymptoms in the early ſtate of the meaſles, but are never known to exiſt in the ſcarlatina.

From the *eryſipelas* this diſeaſe is diſtinguiſhable, by the limited ſeat of the former, together with its not being contagious.

The *ulcerated ſore throat*, however, is more difficult to diſtinguiſh from this diſeaſe than any other; and yet the diſtinction is a matter of the greateſt importance, as the method of treatment, we are told, ought to be extremely different.—But although, in a number of circumſtances, theſe two diſeaſes bear a very great reſemblance, yet, with a little attention, the one may in general be diſtinguiſhed from the other. From Dr Fothergill's account of the ſore throat attended with ulcers, our author has made out the following characteriſtical circumſtances of the two diſeaſes, contraſted to one another.

Scarlatina Anginoſa.	Angina Gangrenoſa.
Seaſon. . Summer . . Autumn.	*Seaſon*. . Spring . . Winter.
Air. . Hot . . Dry.	*Air*. . Warm . . Moiſt.
Places. High . . Dry . . . Gravelly.	*Places*. Cloſe. . Low . . Damp. . Marſhy.
Subjects. Vigorous. Both ſexes alike. . Robuſt in moſt danger	*Subjects*. Delicate . . Women and female Children. Robuſt adults not in danger.
Skin. Full ſcarlet . . . . ſmooth . . If pimply, the pimples white at the top . . Always dry and hot.	*Skin*. Red tinge . . pimply. . The pimples redder than the interſtices . . bedewed with ſweat towards morning.
Eyes. Shining, equable, intenſe redneſs, rarely watery.	*Eyes*. Inflamed and watery, or ſunk and dead.
Throat. In ſummer, tonſils, &c. little tumefied; no ſlough . . In autumn, more ſwelled. Integuments ſeparating . . Sloughs white.	*Throat*. Tonſils, &c. conſiderably ſwelled and ulcerated . . . Sloughs dark brown.
Breath. Very hot, but not fetid.	*Breath*. Offenſive to the patients and aſſiſtants.
Voice. In ſummer, natural.	*Voice*. Flat and Rattling.
Bowels. Regular at the acceſſion.	*Bowels*. . Purging at the acceſſion.
Blood. Buffy. . Firm.	*Blood*. . Florid . . Tender.
Termination. The 3d, 5th, 8th, or 11th day.	*Termination*. No ſtated period.
Nature. Inflammatory.	*Nature*. Putrid.

It is not pretended, out author remarks, that all the above contraſted ſymptoms will be met with in every caſe. It is enough, he obſerves, that ſome of them appear; and that if conjoined, with the conſideration of the prevailing conſtitution, they enable us to direct that mode of treatment which will moſt contribute to the relief of the ſick.

Cauſes. Our author affirms that the immediate cauſe of this diſeaſe is a poiſon of a peculiar kind, communicable by contagion.

2. That this poiſon firſt takes poſſeſſion of the mucous membrane lining the fauces and the noſe; and either by its action upon the ſecretory glands, or upon the mucus itſelf, aſſimilates that mucus to its own nature.

3. That it is from this beginning, and from this only, that it ſpreads to the ſtomach, &c. and at length acts upon the ſyſtem at large.

4. That its firſt action upon the nerves, is of a ſedative or debilitating nature.

5. That in conſequence of certain laws of the nervous ſyſtem, when the debilitating effects operate upon the ſenſorium commune, a reaction takes place; and that this reaction is, *cæteris paribus*, proportioned to the debilitating power.

6. That, in conſequence of this re-action of the nervous ſyſtem, the vibratory motion of the capillary blood-veſſels dependent thereon is greatly increaſed; an unuſually large quantity of blood is accumulated in thoſe veſſels; the heart and large blood-veſſels are deprived of their cuſtomary proportion; and hence, though ſtimulated to more frequent contraction, the pulſe muſt neceſſarily be feeble.

7. That as violent exertions are followed by debility, upon the ceſſation of the fever, the capillary veſſels, which had acted with ſuch unuſual violence, are left in a ſtate of extreme debility, and are long in recovering their tone; hence it is that ſo many patients afterwards become dropſical.

Our author now proceeds to the conſideration of the different remedies, which either are at preſent in common uſe, or have been recommended as proper in this diſeaſe.

Cure. Blood-letting has been recommended by authors; but ſuch was the ſtate of the pulſe in this diſorder, at leaſt during the ſummer-months, that it was not in any inſtance thought adviſable to take away blood. In ſome caſes, indeed, where the fiery redneſs of the eyes ſeemed to demand the uſe of leeches, they were had recourſe to, but never with any advantage. In the harveſt months, when the pulſe was more firm, and when ſuffocation ſeemed to be threatened from the ſwelling in the fauces, blood-letting was ſometimes adviſed, but ſtill with leſs advantage than one would have expected in almoſt any other ſituation.

Vomiting.] This, our author obſerves, ſeems to be the remedy of nature; and he is ſurpriſed how it ſhould have been omitted by ſeveral authors, who have gone before him. Vomiting, he ſays, moſt amply fulfils the indications ariſing both from a conſideration of the cauſe and of the effects; and a liberal uſe of the remedy he holds forth as the true foundation for ſucceſsful practice in ſcarlet-fever and ſore-throat. His common form of emetic is a combination of tartar emetic and ipecacuanha, given in pretty ſmart dozes; and theſe are to be repeated at leaſt once in 48 hours, and in the worſt caſes ſo often as twice in 24 hours.

Purging.] The action of purgatives is conſidered by our author as altogether repugnant to the curative indications in this diſeaſe: for the poiſon, as formerly remarked, being received into the ſyſtem by the fauces, the operation of a purge, inſtead of diſcharging it, can only promote its diffuſion along the alimentary canal; and in fact, we are told, that when even a ſpontaneous purging ſupervenes in this diſeaſe, the patients ſink ſo amazingly faſt, that it is not within the reach of art to ſupport them.

Sudorifics. Cordials. Alexipharmics.] None of theſe remedies were found beneficial. With reſpect to cordials, our author obſerves, that although they ſeem to be indicated by the great loſs of ſtrength and feeble pulſe, yet the certain conſequence of their uſe always was, an increaſe of reſtleſſneſs, of the delirium, and of the heat.

Diuretics.] Theſe were found very beneficial. The vegetable fixed alkali is recommended as the moſt proper article of this kind: a dram or two may be eaſily ſwallowed every 24 hours, by giving a ſmall quantity in every thing the patient drinks.

Peruvian bark.] No medicine, we are told, ever had a fairer trial in any diſeaſe than the Peruvian bark had in this epidemic; for the feeble pulſe, great proſtration of ſtrength, with here and there a livid ſpot, were thought to be ſuch undeniable evidences of a putrid tendency, that the bark was poured down not with a ſparing hand. But this was only at firſt; for theſe livid ſpots and the ſloughs in the throat being found to be the effects of inflammation inſtead of putrefaction, and the bark inſtead of diminiſhing, rather increaſing theſe ſymptoms, it was at laſt entirely laid aſide.

Upon the ſame principles that the bark was preſcribed, fixable air was at firſt likewiſe adviſed, but with no evident effects either one way or another. Dulcified acids were alſo had recourſe to, but with no advantage.

Opiates.] Theſe, although recommended by ſome authors for the removal of inquietude and watchfulneſs, yet in this epidemic, inſtead of effecting theſe purpoſes, always increaſed the diſtreſs of the patient.

Bliſters.] In the ſummer appearance of the diſeaſe, bliſters were univerſally detrimental; they never failed to haſten the delirium; and if the caſe was of the worſt kind, they too often confirmed its fatal tendency. In the autumnal ſeaſon, when the inflammation was leſs generally diffuſed through the body, they were leſs detrimental, but did not even here produce any beneficial effects.

Injected gargles of contrayerva decoction, ſweetened with oxymel of ſquills, &c. were found very beneficial in bringing always large quantities of viſcid ropy ſtuff from the fauces.

The immerſion of the feet and legs in warm water, although it did no harm, yet did not either procure ſleep or abate the delirium, as it frequently does in other kinds of fever.

As in ſummer it was found difficult to keep the patients ſufficiently cool, they were ordered to lie upon a mattreſs inſtead of a feather-bed; a free circulation of air was kept up; and where the patient's ſtrength would admit of it, they were ordered frequently out of doors. Animal food and fermented liquors were denied them, and nothing allowed but tea, coffee, chocolate, milk and water, gruel, barley-water, and ſuch articles.

With reſpect to the dropſical diſorder which ſo frequently ſucceeds to this complaint, it was never obſerved, our author remarks, when the preceding ſymptoms had been properly treated.

When called upon to patients in the dropſical ſtate, our author commences his practice by a doſe of calomel at night, and a purgative in the morning. When a febrile pulſe attended the other ſymptoms, emetics were uſeful, as well as the ſaline draughts and other neutral ſalts. When great debility, comatoſe or peripneumonic ſymptoms occurred, bliſters were found very ſerviceable: but when dropſical ſymptoms were the principal cauſe of complaint, ſmall doſes of rhubarb and calomel are adviſed; recourſe was alſo had to diluted ſolutions of fixed alkalies, ſquills, Seltzer waters, and other diuretics.

When the urine flows freely, ſteel and other tonics are recommended; together with gentle excerciſe, high-ſeaſoned foods, wine, and the wearing of flannel in contact with the ſkin.

Our author concludes his eſſay with an enumeration of ſeveral caſes, treated according to the principles above laid down. The ſucceſsful termination of theſe caſes demonſtrates the propriety of the practice which he has recommended.

LXXVIII. URTICARIA, the Nettle-rash. 340

Genus XXXIII.

Febris urticata, *Vog.* 40.
Uredo, *Lin.* 8.
Purpura urticata, *Junck.* 75.
Scarlatina urticata, *Sauv.* ſp. 2.
Eryſipelatis ſpecies altera, *Sydenham,* ſect. vi. cap. 6.
Febris ſcarlatina, et febris urticata, *Meyſerey,* Mal. des armées, 291 et ſeq.

Deſcription. This diſeaſe has its Engliſh name from the reſemblance of its eruption to that made by the ſtinging of nettles. Theſe little elevations upon the ſkin in the nettle-raſh often appear inſtantaneouſly, eſpecially if the ſkin be rubbed or ſcratched, and ſeldom ſtay many hours in the ſame place, and ſometimes not many minutes. No part of the body is exempt from them; and where many of them riſe together, and continue an hour or two, the parts are often conſiderably ſwelled; which particularly happens in the face, arms, and hands. Theſe eruptions will continue to infeſt the ſkin, ſometimes in one place and ſometimes in another, for one or two hours at a time, two or three times every day, or perhaps for the greateſt part of the 24 hours.—In ſome perſons they laſt only a few days, in others many months; nay, ſometimes the diſeaſe hath laſted for two years, with very ſhort intervals, or even for ſeven or ten years.

But though the eruption of the urticaria reſembles, as already obſerved, that produced by the ſtinging of nettles, it is ſometimes accompanied with long wheals, as if the part had been ſtruck with a whip. Whatever be the ſhape of theſe eminences, they always appear ſolid, without having any cavity or head containing either water or any other liquor: and this affords an eaſy mark whereby this diſeaſe may be diſtinguiſhed from the itch. For it often happens, that the inſufferable itching with which this eruption is attended, provokes the patient to ſcratch the parts ſo violently, that a ſmall part of the cuticle on the top of theſe little tumours is rubbed off; a little ſcab ſucceeds; and, when the ſwelling is gone down, there is left an appearance hardly to be diſtinguiſhed from the itch, but by the circumſtance juſt now mentioned. The nettle-raſh alſo further differs from the itch, in not being infectious.

Cauſes, &c. Dr Heberden inclines to aſcribe this diſtemper to ſome mechanical cauſe outwardly applied to the ſkin. He obſerves, that moſt people ſuffer in a ſimilar manner from the real ſtinging of nettles. Cowhage, or, as it is corruptly called, *cow-itch*, is a ſort of phaſeolus, or French bean, the pod of which is covered over with a kind of down or hair, and the effect of it upon the ſkin is much the ſame as that of nettles; and almoſt any hairs cut equally ſhort, and ſprinkled upon the ſkin, whenever they happen to ſtick in it, will make the part itch or ſmart in ſuch a manner as to give great uneaſineſs; it is alſo a conſiderable time before the ſkin can be cleared of the finer ones, when once they are ſtrewed upon it.

Reaumur, in the fourth memoir of his Hiſtory of Inſects, deſcribes a ſpecies of caterpillars to which belongs a ſort of hairs almoſt inviſible to the naked eye, which are eaſily detached, and frequently float in the air round their neſt, though it have not been at all diſturbed. The touch of theſe hairs has a ſimilar effect with the cow-itch; that is, they occaſion intolerable itchings, with little bumps and redneſs, ariſing ſometimes to a ſlight inflammation. Theſe he found would continue four or five days, if the animal or the neſt had been much handled; and though they had not been touched at all, yet, by only walking near their neſts, the ſame effects would be brought on, but for a ſhorter time. Theſe hairs affect the ſkin in this manner by ſticking in it, as he could perceive with a glaſs of a great magnifying power; for with one of a ſmall power they were not viſible. The uneaſy ſenſations cauſed by theſe ſmall wounds, not only, as he ſays, laſt ſeveral days, but move from one part of the body to the other; ſo that they will ceaſe upon one wriſt, and immediately begin on the other; from the wriſt they will go to the fingers or the face, or even to the parts of the body which are covered. He ſuppoſes, that the motions of the body, when much of this fine down lies near or upon the ſkin, may drive it from one part to another, or change what was lying there inoffenſively to a ſituation fit to make it penetrate into the ſkin. Neither cold water, nor oil, nor ſpirit-of-wine, with which the parts affected were bathed, had any effect in removing the itching. He thinks the moſt efficacious remedy which he tried for this complaint was, to rub the parts ſtrongly with parſley, which inſtantly leſſened the ſenſations, and, after two or three hours, entirely freed him from them. It is alſo well known, that many ſpecies of caterpillars, by only walking over the hands, will produce ſomething like this effect on the parts which they touch, and undoubtedly from the ſame cauſe.

Dr Heberden aſks, Is it impoſſible that the nettle-raſh ſhould ariſe from the ſame cauſes, or from others ſimilar, which we miſs by looking too deeply for them in the blood and humours? Such, ſays he, may have been its origin in ſome inſtances, where it has laſted only a few days; but where this affection hath continued for ſome years, in perſons who change their linen every day, and who bathe frequently all the time, it can hardly be aſcribed to ſuch an external cauſe. Our author has obſerved it frequently to ariſe from cantharides: but though it hath continued many weeks after the removal of the bliſter, yet it might be ſuſpected that this aroſe from the fine ſpicula of the cantharides ſticking all this time about the ſkin; it being cuſtomary to ſtrew much of the dry powder of the cantharides over the bliſter-plaſter, whence it may readily be carried to other parts of the body. But it is certain that ſimilar effects will ſometimes follow the internal uſe of wild valerian root, or the eating of fiſh not ſufficiently dreſſed; muſcles, ſhrimps, and even honey, and the kernels of fruits, will alſo ſometimes produce ſymptoms of a ſimilar kind. But whatever be its cauſe, Dr Heberden never ſaw any reaſon to ſuppoſe that the nettle-raſh had in any way vitiated the humours to ſuch a degree as to require the uſe of internal remedies; and if the itching could be certainly and expeditiouſly allayed, there would be no occaſion for any farther cure. The Doctor concludes this hiſtory of the diſorder with a caſe communicated to him by Dr Monſey, phyſician of Chelſea-college, and in which the diſeaſe appeared with uncommon violence.

W. A. aged near 30, of a thin ſpare habit, was ſeized with a diſorder attended with ſymptoms of a very uncommon kind. Whenever he went into the air, if the ſun ſhined bright, he was ſeized with a tickling of his fleſh on thoſe parts expoſed to the ſun: this tickling, by his continuing in the air, increaſed to a violent itching, attended with great heat and pain: the ſkin would then be almoſt as red as vermilion, and thicken like leather; and this remained till he went out of the open air, and then abated in about 15 or 20 minutes. This happened only when the ſun was above the horizon; at other times he was what he called *quite well*.—But it was not owing to the heat of the ſun; for the ſun in winter affected him full as much, if not more, and the heat of the fire had no ſuch effect. Thus he was confined to the houſe for ten years. He tried ſeveral hoſpitals, and had advices from many phyſicians, without the leaſt abatement of his complaints. At laſt it was agreed by a conſultation of phyſicians, that he ſhould try dipping in ſalt-water; which he did at Yarmouth for 13 weeks, without any viſible amendment. One hot day, having pulled off his clothes and gone into the ſea in the middle of the day, the heat diffuſed itſelf ſo violently all over his body, that, by the time he had put on his clothes, his eye-ſight began to fail, and he was compelled to lie down upon the ground to ſave himſelf from falling. The moment he lay down, the faintneſs went off: upon this he got up again; but had no ſooner ariſen, than he found himſelf in the former condition: he therefore lay down again, and immediately recovered. He continued alternately getting up and lying down, till the diſorder began to be exhauſted, which was in about half an hour; and he was frequently obliged to have recourſe to the ſame expedient.

Having at laſt accidentally met with Dr Monſey, this phyſician queſtioned him concerning the cauſe of the diſorder; but nothing could be gueſſed at, excepting that the patient owned he had one winter lived entirely upon bullock's-liver and porter, from inability to purchaſe better victuals. A comrade lived with him at that time, on the ſame proviſions; and he alſo was affected in a ſimilar manner, though in a leſs degree, and had recovered. This patient was then firſt put upon a courſe of Dover's ſweating powder without any effect, and afterwards tried a courſe of nitrous ones with the ſame bad ſucceſs. At laſt Dr Monſey determined to try the effect of mercury, which happily proved effectual in removing this obſtinate and uncommon diſtemper. The patient began with taking five grains of calomel for three nights running, and a cathartic next morning. In this courſe he went on for near a fortnight, at the end of which he found himſelf very ſenſibly relieved. This encouraged him to go on rather too boldly, by which means a ſlight ſalivation enſued; however, that went off ſoon, and in about ſix weeks he was quite well.—Some time after, he was threatened with a return of his diſorder; but this was effectually relieved by a doſe of calomel, which he had afterwards occaſion to repeat for the ſame reaſon, and with the ſame ſucceſs; but at laſt the diſorder ſeemed to be radically cured, by his having no further ſymptoms of a relapſe.

341 LXXIX. PEMPHIGUS. Gen. XXXIV.

Pemphigus, *Sauv.* gen. 93. *Sag.* 291.
Morta, *Lin.* 1.
Febris bulloſa, *Vog.* 41.
Pemphigus major, *Sauv.* ſp. 1.
  Exanthemata ſeroſa, *C. Piſon.* Obſ. 150.
  Febris pemphygedes, *Ephem. Germ.* D. I. A. viii. Obſ. 56.
Pemphigus caſtrenſis, *Sauv.* ſp. 2.
  Febris ſyneches, cum veſiculis per pectus et collum ſparſis, *Morton* App. ad Exerc. II.
Pemphigus Helveticus, *Sauv.* ſp. 3. *Langhans* in Act. Helvet. vol. ii. p. 260. et in *Beſchreibuug* des Siementhals, Zurich 1753.

This is a very rare diſeaſe, inſomuch that Dr Cullen declares he never ſaw it. He declines taking the deſcriptions of foreign phyſicians; we ſhall therefore content ourſelves with giving an inſtance of this very uncommon diſtemper, as it was obſerved in the infirmary at Aberdeen.—A private ſoldier of the 73d regiment, aged eighteen years, formerly a pedlar, and naturally of a healthy conſtitution, was received into the hoſpital at Aberdeen on the 25th of April. About twenty days before that, he had been ſeized with the meaſles when in the country; and, in marching to town, on the ſecond day of their eruption, he was expoſed to cold; upon which they ſuddenly diſappeared.

Having arrived at Aberdeen, he was quartered in a damp, ill-aired, under ground apartment. He then complained of ſickneſs at ſtomach, great oppreſſion about the præcordia, head-ach, laſſitude, and wearineſs, on the leaſt exertion; with ſtiffneſs and rigidity of his knees and other joints. The ſurgeon of the regiment viſited him: he was purged, but with little benefit. About ten days before, he obſerved on the inſide of his thighs a number of very ſmall, diſtinct, red ſpots, a little elevated above the ſurface of the ſkin, and much reſembling the firſt appearance of ſmall-pox. This eruption gradually ſpread itſelf over his whole body, and the puſtules continued every day to increaſe in ſize.

Upon being received into the hoſpital, he complained of head-ach, ſickneſs at ſtomach, oppreſſion about the præcordia, thirſt, ſore throat, with difficulty of ſwallowing; his tongue was foul, his ſkin felt hot and feveriſh; pulſe from 110 to 120, rather depreſſed; belly coſtive; eyes dull and languid, but without delirium. The whole ſurface of his ſkin was interſperſed with veſicles, or phlyctænæ, of the ſize of an ordinary walnut; many of them were larger, eſpecially on the arms and breaſt. In the interſtices, between the veſicles, the appearance of the ſkin was natural, nor was there any redneſs round their baſe; the diſtance from one to another was from half an inch to a handbreadth or more. In ſome places two or three were joined together, like the puſtules in the confluent ſmall-pox. A few veſicles had burſt of themſelves, and formed a whitiſh ſcab or cruſt. Theſe were moſtly on the neck and face; others ſhewed a tolerably laudable pus. However, by far the greateſt number were perfectly entire, turgid, and of a bluiſh colour. Upon opening 342 them it was evident, that the cuticle elevated above the cutis, and diſtended with a thin, yellowiſh, ſemipellucid ſerum, formed this appearance. Nor was the ſurface of the cutis ulcerated, or livid; but of a red florid colour, as when the cuticle is ſeparated by a bliſter, or ſuperficial burning. No other perſon laboured under a ſimilar diſeaſe, either in the part of the country from which he came, or when he reſided in Aberdeen.

This caſe was treated in the following manner. The largeſt of the veſicles were ſnipped, and dreſſed with *unguent. e lap. calaminari.* In the evening he was vomited with a ſolution of tartar emetic, given in ſmall quantities and at intervals. This alſo procured two looſe ſtools. And he was ordered for drink, water-gruel acidulated with lemon-juice.

"April 16. He ſtill complained of ſickneſs, ſome oppreſſion about his breaſt, and ſore throat; he had ſlept little during the night; his tongue was foul and blackiſh; his ſkin, however, was not ſo hot as the preceding day; his urine was high-coloured, but had the appearance of ſeparation; his pulſe 90, and ſoft; moſt of the ſores on the trunk of the body looked clean. Others, particularly where the veſicles were confluent, ſeemed beginning to ulcerate, and to have a bluiſh ſublivid appearance. They were dreſſed afreſh with cerate, and he was ordered the following medicines:

℞ Decoct. Cort. Peruvian. ℥vi. Vini rubr. Luſitan. ℥iii. M. Hujus mixturæ capiat ℥ß. tertia quaque hora.

"His acidulated drink was continued; and on account of the very offenſive ſmell on approaching near him, ſome vinegar was placed in a baſon before the bed, and ſprinkled on the floor; and the room was kept properly aired.

“April 17. His ſores looked tolerably clean, unleſs on his arms and thighs; where they were livid, a little ulcerated, and diſcharged a bloody ichor.

“His head-ach, ſickneſs, &c. were moſtly gone; his tongue was rather cleaner; pulſe 68, and ſoft. As the decoction of the bark ſat eaſily on his ſtomach, the following preſcription was ordered:

℞ Pulv. ſubtiliſſ. Cort. Peruv. ʒß. Vini rubri Luſitan. Aquæ fontan. āā ʒß. M. ft. Hauſt. tertia quaque hora repetend.

The acidulated drink was continued, and freſh dreſſings applied to the ſores.

“April 18. The little ulcers in his arms and thighs ſtill diſcharged a bloody ichor, and looked ill; his other complaints were better; pulſe 82. The bark had not nauſeated him, and it was continued as well as his former drink.

“April 19. His ſores looked greatly cleaner and better; the fever was gone, his pulſe natural, and he had no complaint but weakneſs and a troubleſome itching of the ſkin: The Peruvian bark, &c. were continued.

“April 20. Some of the ulcers ſtill poured forth a bloody ichor; moſt of them, however, looked well, and had begun to heal—fever gone—medicines continued.

“From the 21ſt April, he went on gaining ſtrength, and his ſores appeared to heal faſt; he was deſired to take only four doſes every day; and by the 27th his ſores, &c. were totally dried up—he had no complaint—was diſmiſſed cured.”

342 LXXX. APHTHA, the Thrush. Genus XXXV.

Aphtha, *Sauv.* gen. 100. *Lin.* 9. *Sag.* 298. *Boerh.* 978. *Hoffm.* II. 478. *Junck.* 137.
Febris aphthoſa, *Vog.* 44.

The only idiopathic ſpecies is the thruſh to which infants are ſubject; (Aphtha lactucimen, *Sauv.* ſp. 1.)

The aphthæ are whitiſh or aſh-coloured puſtules, invading the uvula, fauces, palate, tonſils, inſide of the cheeks, gums, tongue, and lips. They for the moſt part begin at the uvula, ſending forth a glutinous mucus, and the puſtules covering all or the greateſt number of the parts above-mentioned with a thick whitiſh cruſt adhering moſt tenaciouſly. This cruſt doth not induce an eſchar on the parts on which it lies by eating into them, but comes off in whole pieces after the puſtules have arrived at maturity. This will often happen in a ſhort time, ſo that the throat and internal parts of the mouth are frequently obſerved to be clean which a few hours before were wholly covered with white cruſts. Neither is this diſeaſe confined to the throat and fauces, but is ſaid to affect the œſophagus, ſtomach, and all parts of the alimentary canal. Of this indeed there is no other proof, than that, after a great difficulty of ſwallowing, there is ſometimes an immenſe quantity of aphthæ evacuated by ſtool and vomit, ſuch as the mouth could not be thought capable of containing.

Cauſes, &c. The aphthoſe fever ſeems to be produced by cold and moiſture, as it is found only in the northern countries, and eſpecially in marſhy places; and in them the aphthæ often appear without any fever at all.

Prognoſis. There is no ſymptom by which the coming out of aphthæ can be foretold, tho' they are common in many fevers; but they themſelves are in general a bad ſymptom, and always ſignify a very tedious diſorder: the danger denoted by them is in proportion to the difficulty of deglutition; and a diarrhœa accompanying them is likewiſe bad. This indeed generally carries off old people when they become affected with aphthæ. The dark-coloured aphthæ alſo are much more dangerous than ſuch as are of a brown or other dark colour; but it is a good ſign when the appetite returns, and the dark-coloured ones are ſucceeded by others of a whiter colour. Neither are thoſe which are unaccompanied with fever ſo dangerous as the other kind.

Cure. As the aphthæ are ſeldom a primary diſeaſe, we muſt generally endeavour to remove the diſorder upon which they depend, after which they will fall off; but in the mean time we are not to neglect applications to the aphthæ themſelves, ſuch as detergent and ſoftening gargles made of the decoction of figs, with the addition of honey of roſes, a little vinegar, and ſome tincture of myrrh: in thoſe ulcerated aphthæ which appear in the malignant ſore throat, Mr Penroſe recommends the *vitrum antimonii ceratum.*

Order IV. HÆMORRHAGIÆ; Hæmorrhages. 443

Hæmorrhagiæ, *Vog.* Claſs II. Ord. I. *Hoffm.* II. 194. *Junck.* 5.
Sanguifluxus, *Sauv.* Claſs IX. Ord. I. *Sag.* Claſs V. Order I.

LXXXI. EPISTAXIS, or Bleeding at the Nose. 344
Genus XXXVIII.

Hæmorrhagia, *Sauv.* gen. 239. *Lin.* 173. *Sag.* gen. 174.
Hæmorrhagia narium, *Hoffm.* II. 196. *Janck.* 6.
Hæmorrhagia plethorica, *Sauv.* ſp. 2. *Hoffm.* II. 198.

The other ſpecies enumerated by authors are all ſymptomatic.

Deſcription. The milder ſpecies of this hæmorrhage comes on more frequently in ſummer than in winter, and for the moſt part without giving any warning, or being attended with the leaſt inconvenience; but the leſs benign kind is preceded by ſeveral remarkable ſymptoms. Theſe are, congeſtions of the blood ſometimes in one part and ſometimes in another, and which are often very troubleſome in the ſides of the head; there is a redneſs of the cheeks; an inflation of the face, and the veſſels of the neck and temples; a *tinnitus aurium;* a heavy pain of the eyes, with a prominence, dryneſs, and ſparks; there is a vertiginous affection of the head, with an itching of the noſtrils, and a ſenſe of weight, eſpecially about the root of the noſe. In ſome the ſleep is diſturbed with dreams about blood, fire, &c. Frequently the belly is coſtive, there is a diminution of the quantity of urine, a ſuppreſſion of ſweat, coldneſs of the lower extremities, and tenſions of the hypochondria, eſpecially the right one.

Cauſes, &c. This hæmorrhage may occur at any time of life; but moſt commonly happens to young perſons, owing to the peculiar ſtate of the ſyſtem at that time. Sometimes, however, it happens after the ακμη and during the ſtate of manhood, at which time it is to be imputed to a plethoric ſtate of the ſyſtem; to a determination of the blood, by habit, to the veſſels of the noſe; or to the particular weakneſs of theſe veſſels.

In all theſe caſes the diſeaſe may be conſidered as an arterial hæmorrhage, and depending upon an arterial plethora; but it ſometimes occurs in the decline of life, and may then be conſidered as the ſign of a venous plethora in the veſſels of the head. It often happens at any period of life in certain febrile diſeaſes, which are altogether or partly of an inflammatory nature, and which ſhew a particular determination of the blood to the veſſels of the head. As by this evacuation the diſeaſes are often removed, it may on theſe occaſions be deemed truly *critical.* It happens to perſons of every conſtitution and temperament; but moſt frequently to the plethoric and ſanguine, and more commonly to men than women.

Prognoſis. In young people, the bleeding at the noſe may be conſidered as a ſlight diſeaſe, and ſcarce worth notice. But, even in young perſons, when it recurs very frequently and in great quantity, it is alarming; and is to be conſidered as a mark of an arterial plethora, which in the decline of life may give the blood a determination to parts from which the hæmorrhage would be more dangerous. And this will require more particular attention as the marks of plethora and congeſtion preceding the hæmorrhage are more conſiderable, and as the flowing of the blood is attended with a more conſiderable degree of febrile diſorder. Theſe conſequences are more eſpecially to be dreaded, when the epiſtaxis happens to perſons after their ακμη, returning frequently and violently. Even in the decline of life, however, it may be conſidered as in itſelf very ſalutary; but at the ſame time it is a mark of a dangerous ſtate of the ſyſtem, i. e. of a ſtrong tendency to a venous plethora in the head, and hath accordingly been often followed by apoplexy, palſy, &c. When it happens in febrile diſeaſes, and is in pretty large quantity, it may be generally conſidered as critical and ſalutary; but it is very apt to be too profuſe, and thus become dangerous. It ſometimes occurs during the eruptive fever of ſome exanthemata, and is in ſuch caſes ſometimes ſalutary; but if theſe exanthemata be accompanied with any putrid tendency, this hæmorrhage, as well as artificial blood-lettings, may have very bad tendency.

Cure. Though this diſeaſe has been generally thought very ſlight, Dr Cullen is of opinion that it ſhould ſeldom be left to the conduct of nature; and that in all caſes it ſhould be moderated by keeping the patient in cool air, by giving cold drink, by keeping the body and head erect, by avoiding any blowing of the noſe, ſpeaking, or other irritation; and if the blood has flowed for ſome time without ſhewing any tendency to ſtop, we are to attempt the ſuppreſſion of the hæmorrhage by preſſing the noſtril from which the blood flows, waſhing the face with cold water, or applying this to ſome other parts of the body. Theſe meaſures he judges to be proper even on the firſt attacks, and in young perſons where the diſeaſe is the leaſt hazardous: but theſe meaſures will ſtill be more requiſite if the diſeaſe frequently recurs without any external violence; if the returns happen to perſons diſpoſed to a plethoric habit; and more particularly if the ſigns of plethora appear in the foregoing ſymptoms.

When the bleeding is ſo profuſe that the pulſe becomes weak and the face pale, every means muſt be uſed to put a ſtop to it, and that whether the patient is young or old. Beſides thoſe methods abovementioned, we muſt uſe aſtringents both internal and external; but the latter are the moſt powerful, and the choice of theſe may be left to the ſurgeon. The internal aſtringents are either vegetable or foſſil; but the vegetable aſtringents are ſeldom powerful in the cure of any hæmorrhages except thoſe of the alimentary canal. The foſſil aſtringents are more powerful, but differ conſiderably in ſtrength from one another. The chalybeates appear to have little ſtrength: the preparations of lead are more powerful; but cannot be employed, on account of their pernicious qualities, unleſs in caſes of the utmoſt danger. The *tinctura ſaturnina*, or *antiphthiſica*, is a medicine of very little efficacy, either from the ſmall quantity of lead it contains, or from the particular ſtate in which it is. The ſafeſt and at the ſame time the moſt powerful aſtringent ſeems to be alum.

For ſuppreſſing this and other hæmorrhages, many ſuperſtitious remedies and charms have been uſed, and ſaid to have been employed with ſucceſs. This has probably been owing to the miſtake of the by-ſtanders, who have ſuppoſed that the ſpontaneous ceſſation of the hæmorrhage was owing to their remedy. At the ſame time Dr Cullen is of opinion, that ſuch remedies have ſometimes been uſeful, by impreſſing the mind with horror or dread. Opiates have ſometimes proved ſucceſsful in removing hæmorrhages; and when the fulneſs and inflammatory diatheſis of the ſyſtem have been previouſly taken off by bleeding, they may, in Dr Cullen's opinion, be uſed with ſafety and advantage. Ligatures have been applied upon the limbs, for retarding the return of the venous blood from the extremities; but their uſe ſeems to be ambiguous. In the caſe of profuſe hæmorrhages, no care is to be taken to prevent the patient from fainting, as this is often the moſt certain means of ſtopping them.

GENUS XXXVIII. HÆMOPTYSIS, or SPITTING of BLOOD. 345

Hæmoptyſis, *Sauv.* gen. 240. *Lin.* 179. *Vog.* 84.
Sag. gen. 175. *Junck.* 8.
Hæmoptoe, *Boerh.* 1198.
Sanguinis fluxus ex pulmonibus, *Hoffm.* II. 202.

LXXXII. HÆMOPTYSIS from *Plethora.* Sp. I. 346

LXXXIII. HÆMOPTYSIS, from *External Violence.* Sp. II. 347

Hæmoptyſis accidentalis, *Sauv.* ſp. 1.
Hæmoptyſis habitualis, *Sauv.* ſp. 2.
Hæmoptyſis traumatica, *Sauv.* ſp. 12.

LXXXIV. HÆMOPTYSIS with *Pthiſis.* Sp. III. 348

Hæmoptyſis phthiſica, *Sauv.* ſp. 9.
Hæmoptyſis ex tuberculo pulmonum, *Sauv.* ſp. 10.

LXXXV. The *Calculous* HÆMOPTYSIS. Sp. IV.
Hæmoptyſis calculoſa, *Sauv.* ſp. 14.

349 LXXXVI. The *Vicarious* HÆMOPTYSIS. Sp. V.
350 Hæmoptyſis catamenialis, *Sauv.* ſp. 4.
Hæmoptyſis periodica, *Sauv.* ſp. 5.

Deſcription. THE hæmoptyſis commonly begins with a ſenſe of weight and anxiety in the cheſt, ſome uneaſineſs in breathing, pain of the breaſt or other parts of the thorax, and ſome ſenſe of heat under the ſternum; and very often it is preceded by a ſaltiſh taſte in the mouth. Immediately before the appearance of blood, a degree of irritation is felt at the top of the larynx. The perſon attempts to relieve this by hawking, which brings up a little florid and ſomewhat frothy blood. The irritation returns; and in the ſame manner blood of a ſimilar kind is brought up, with ſome noiſe in the wind-pipe, as of air paſſing through a fluid. Sometimes, however, at the very firſt, the blood comes up with coughing, or at leaſt ſomewhat of coughing accompanies the hawking abovementioned.

The blood is ſometimes at firſt in very ſmall quantity, and ſoon diſappears; but in other caſes, eſpecially when it frequently recurs, it is in greater quantity, and often continues to appear at times for ſeveral days together. It is ſometimes profuſe, but rarely in ſuch quantity as either by its exceſs or by a ſudden ſuffocation to prove immediately mortal.

It is not always eaſy to diſcover whether the blood evacuated by the mouth proceeds from the internal ſurface of the mouth itſelf, from the fauces or adjoining cavities of the noſe, from the ſtomach, or from the lungs. It is, however, very neceſſary to diſtinguiſh the different caſes, and for this Dr Cullen offers the following conſiderations.

1. When the blood proceeds from ſome part of the internal ſurface of the mouth, it comes out without any hawking or coughing; and generally, upon inſpection, the cauſe is evident.

2. When blood proceeds from the fauces, or adjoining cavities of the noſe, it may be brought out by hawking, and ſometimes by coughing. In this caſe there may be a doubt concerning its real ſource, and the patient may be allowed to pleaſe himſelf with the thoughts that the blood doth not come from the lungs. But the phyſician muſt remember that the lungs are much more frequently the ſource of an hæmoptyſis than the fauces. The latter ſeldom happens but to perſons who have before been liable to an hæmorrhage from the noſe, or to ſome evident cauſe of eroſion; and in moſt caſes, by looking into the fauces, the diſtillation of the blood from thence will be perceived.

3. When blood proceeds from the lungs, the manner in which it is brought up will commonly ſhew from whence it comes; but independent of that, it may alſo be known from the cauſes of hæmoptyſis from the lungs, to be afterwards mentioned, having preceded.

4. When vomiting accompanies the throwing out of blood from the mouth, we may generally know the ſource from whence it proceeds, by conſidering that blood does not proceed ſo frequently from the ſtomach as from the lungs; that blood proceeding from the ſtomach commonly appears in greater quantity than from the lungs. The pulmonary blood alſo is uſually of a florid colour, and mixed with a little frothy mucus only; but the blood from the ſtomach is of a darker colour, more grumous, and mixed with the other contents of the ſtomach. The coughing or vomiting, as the one or the other happens firſt to ariſe, may ſometimes point out the ſource of the blood; and this hath alſo its peculiar antecedent ſigns and cauſes.

Cauſes, &c. An hæmoptyſis may be produced at any time of life by external violence; and, in adult perſons, while the arterial plethora prevails in the ſyſtem, i. e. from the age of 16 to 35, an hæmoptyſis may at any time be produced merely by a plethoric ſtate of the lungs. More frequently, however, it ariſes from a faulty proportion between the capacity of the lungs and that of the reſt of the body. Thus it is often an hereditory diſeaſe, which implies a peculiar and faulty conformation.

This diſeaſe eſpecially happens to perſons who diſcover the ſmaller capacity of their lungs by the narrowneſs of their cheſt, and by the prominence of their ſhoulders; which laſt is a mark of their having been long liable to a difficulty of reſpiration. In ſuch caſes, too, the diſeaſe very frequently happens to perſons of a ſanguine temperament, in whom particularly the arterial plethora prevails. It happens alſo to perſons of a ſlender delicate make, of which a long neck is a mark; to perſons of much ſenſibility and irritability, and therefore of quick parts; to perſons who have formerly been liable to hæmorrhages from the noſe; to thoſe who have ſuffered a ſuppreſſion of any uſual hæmorrhage, the moſt frequent inſtance of which is in females, who have ſuffered a ſuppreſſion of their menſtrual flux; and laſtly, to perſons who have ſuffered the amputation of any conſiderable limb.

All this conſtitutes the prediſponent cauſe of hæmoptyſis; and the diſeaſe may happen merely from the prediſponent cauſe ariſing to a conſiderable height. But in thoſe who are already prediſpoſed, it is often brought on by the concurrence of various occaſional and exciting cauſes. One of theſe, and perhaps a frequent one, is external heat; which, even when in no great degree, brings on the diſeaſe in ſpring, and the beginning of ſummer, while the heat rarifies the blood more than it relaxes the ſolids, which had before been contracted by the cold of winter. Another exciting cauſe is a ſudden diminution of the weight of the atmoſphere, eſpecially when concurring with any effort in bodily exerciſe. The effort too, alone, may often be the exciting cauſe in thoſe who are already prediſpoſed; and more particularly any violent exerciſe of reſpiration. In the prediſpoſed, alſo, the diſeaſe may be occaſioned by any degree of external violence.

Prognoſis. The hæmoptyſis may ſometimes be no more dangerous than a hæmorrhage from the noſe; as when it happens to females in conſequence of a ſuppreſſion of their menſes; when, without any marks of prediſpoſition, it ariſes from external violence; or, from whatever cauſe ariſing, when it leaves no cough, dyſpnœa, or other affection of the lungs, behind it. But, even in theſe caſes, a danger may ariſe from too large a wound being made in the veſſels of the lungs, from any quantity of red blood being left to ſtagnate in the cavity of the bronchiæ, and particularly from any determination of the blood being made into the veſſels of the lungs, which by renewing the hæmorrhage may have theſe conſequences.

Cure. On this ſubject Dr Cullen differs from thoſe who preſcribe chalybeates and the Peruvian bark in the cure of hæmoptyſis. Both of theſe, he obſerves, contribute to increaſe the phlogiſtic diatheſis then prevailing in the ſyſtem, and the hæmoptyſis from prediſpoſition is always accompanied with a ſuch a diatheſis. Inſtead of theſe, therefore, he recommends bloodletting in greater or ſmaller quantity, and more or leſs frequently repeated as the ſymptoms ſhall direct. At the ſame time cooling purgatives are to be employed, and every part of the antiphlogiſtic regimen is to be ſtrictly enjoined. In the London Medical Obſervations, the uſe of nitre is greatly recommended by Dr Dickſon, to whom its efficacy was made known by Dr Letherland, phyſician to St Thomas's hoſpital. The moſt commodious method of exhibiting it he found was in an electuary. Four ounces of conſerve of roſes were made into an electuary with half an ounce of nitre; of which the bulk of a large nutmeg was directed to be given, four, ſix, or eight times a-day, according to the urgency of the caſe. The good effects of this, our author tells us, have often aſtoniſhed him; and when given early in the diſeaſe, he ſays he can depend as much upon it for the cure of an hæmoptyſis, as on the bark for the cure of an intermittent. He agrees with Dr Cullen, however, that in thoſe caſes where there is any hardneſs in the pulſe, and which almoſt always happens, there is a neceſſity for veneſection. A cool regimen, and quiet of body and mind, are certainly uſeful; but Dr Cullen obſerves, that ſome kinds of geſtation, ſuch as ſailing, and travelling in an eaſy carriage on ſmooth roads, have often proved a remedy. When the cough is very troubleſome, it is abſolutely neceſſary to exhibit frequently a ſmall doſe of an opiate. Dr Dickſon alſo informs us, that the nitre joined with ſpermaceti, or *pulv. e tragacanth. comp.* has produced equally good effects with the electuary above-mentioned; in the compoſition of which the Doctor at firſt conſidered the conſerve only as a vehicle for the nitre, though he means not to inſinuate that the former is totally deſtitute of efficacy.

351 PHTHISIS, or CONSUMPTION *of the* LUNGS.

Phthiſis, *Sauv.* gen. 276. *Lin.* 208. *Vog.* 319. *Sag.* 101. *Junck.* 33.
Phthiſis pulmonis, *Boerh.* 1196.
Affectio phthiſica, ſive tabes pulmonalis, *Hoffm.* II. 284.

352 LXXXVII. The *Incipient* PHTHISIS, with an expectoration of *Pus.* Sp. I.

Phthiſis incipiens, *Morton.* Phyſiolog. L. II. cap. 3.
Phthiſis ſicca, *Sauv.* ſp. 1.

353 LXXXVIII. The *Confirmed* PHTHISIS with an expectoration of *Pus.* Sp. II.

Phthiſis confirmata *auctorum.*
Phthiſis humida, *Sauv.* ſp. 2.

SOMETIMES, notwithſtanding all the care we can take, the hæmoptyſis will degenerate into a phthiſis pulmonalis, or conſumption of the lungs; and ſometimes an hæmoptyſis will be the conſequence of this dangerous diſorder. It hath been indeed ſuppoſed, that an ulceration of the lungs, or phthiſis, was the natural and almoſt neceſſary conſequence of an hæmoptyſis: but, according to Dr Cullen, this is in general a miſtake; for there are many inſtances of an hæmoptyſis from external violence without being followed by any ulceration. The ſame thing hath often been obſerved where the hæmoptyſis aroſe from an internal cauſe; and this not only in young perſons, when the diſeaſe returned for ſeveral times, but when it has often recurred during the courſe of a long life; and it may eaſily be conceived, that a rupture of the veſſels of the lungs, as well as of the veſſels of the noſe, may be ſometimes healed. The cauſes of phthiſis, therefore, Dr Cullen reduces to five heads. 1. An hæmoptyſis. 2. A ſuppuration of the lungs in conſequence of a pneumonia. 3. A catarrh. 4. An aſthma; and, 5. Tubercles.

1. When a phthiſis ariſes from an hæmoptyſis, it is probable that it is occaſioned by particular circumſtances; and what theſe circumſtances are, may not always be eaſily known. It is poſſible, that merely the degree of rupture, or frequently repeated rupture, preventing the wound from healing, may occaſion an ulcer; or it is poſſible, that red blood effuſed, and not brought up entirely by coughing, may, by ſtagnating in the bronchiæ, become acrid, and erode the parts. But theſe hypotheſes are not ſupported by any certain evidence; and from many obſervations we are led to think, that ſeveral other circumſtances muſt concur in producing the diſeaſe from hæmoptyſis.

2. The ſecond cauſe of an ulceration of the lungs to be conſidered, is a ſuppuration formed in conſequence of pneumonia. When a pneumonia, with ſymptoms neither very violent nor very ſlight, has continued for many days, it is to be feared it will end in a ſuppuration: but this is not to be determined by the number of days; for, not only after the fourth, but even after the tenth day, there have been examples of a pneumonia ending by a reſolution; and if the diſeaſe has ſuffered ſome intermiſſion, and again recurred, there may be inſtances of a reſolution happening at a much later period from the beginning of the diſeaſe than that juſt now mentioned. But, if a moderate diſeaſe, in ſpite of proper remedies employed, be protracted to the 14th day without any conſiderable remiſſion, a ſuppuration is pretty certainly to be expected; and it will be more certain ſtill, if no ſigns of reſolution have appeared, or if an expectoration which had appeared ſhall have again ceaſed, and the difficulty of breathing has continued or increaſed while the other ſymptoms have been rather abated.

That in a pneumonia, the effuſion is made which may lay the foundation of a ſuppuration, we conclude from the difficulty of breathing becoming greater when the patient is in a horizontal poſture, or when the patient can lie more eaſily on the affected ſide. That, in ſuch caſes, a ſuppuration has actually begun, we conclude from the patient's being frequently affected with ſlight cold ſhiverings, and with a ſenſe of cold felt ſometimes in one ſometimes in another part of the body. We form the ſame concluſion alſo from the ſtate of the pulſe, which is commonly leſs frequent and ſofter, but ſometimes quicker than before. That a ſuppuration is already formed, we conclude from there being a conſiderable remiſſion of the pain which had before ſubſiſted; while at the ſame time the cough and eſpecially the dyſpnœa continue, and are rather increaſed. At the ſame time the frequency of the pulſe is rather increaſed, the feveriſh ſtate ſuffers conſiderable exacerbations every evening, and by degrees a hectic in all its circumſtances comes to be formed.

In this ſtate of ſymptoms, we conclude very confidently, that an abſceſs, or, as it is called, a *vomica*, is formed in ſome part of the pleura, and moſt frequently in that portion of it inveſting the lungs. Here purulent matter frequently remains for ſome time, as if incloſed in a cyſt; but commonly not long before it comes to be either abſorbed and transferred to ſome other part of the body, or breaks through into the cavity of the lungs, or into that of the thorax. In the latter caſe it produces the diſeaſe called *empyema;* but it is when the matter is poured into the cavity of the bronchiæ that it properly conſtitutes the phthiſis pulmonalis. In the caſe of empyema, the chief circumſtances of a phthiſis are indeed alſo preſent: but we ſhall here conſider only that caſe in which the abſceſs of the lungs gives occaſion to a purulent expectoration.

An abſceſs of the lungs in conſequence of pneumonia, is not always followed by a phthiſis: for ſometimes a hectic fever is not formed; the matter poured into the bronchiæ is a proper and benign pus, which frequently is coughed up very readily, and ſpit out; and though this purulent expectoration ſhould continue for ſome time, if it be without hectic, the ulcer ſoon heals, and every morbid ſymptom diſappears. This has ſo frequently happened, that we may conclude, that neither the acceſs of the air, nor the conſtant motion of the lungs, will prevent an ulcer of theſe parts from healing if the matter of it be well-conditioned. An abſceſs of the lungs, therefore, does not neceſſarily produce the phthiſis pulmonalis; and if it is followed by ſuch a diſeaſe, it muſt be in conſequence of particular circumſtances which corrupt the purulent matter produced, render it unſuitable to the healing of the ulcer, and at the ſame time make it afford an acrimony, which, abſorbed, produces a hectic and its conſequences.

The corruption of the matter of ſuch abſceſſes may be owing to ſeveral cauſes; as, 1. That the matter effuſed during the inflammation had not been a pure ſerum fit to be converted into a laudable pus, but had been joined with other matters which prevented that, and gave a conſiderable acrimony to the whole: Or, 2. That the matter effuſed and converted into pus, merely by long ſtagnation in a vomica, or by its connection with an empyema, had been ſo corrupted as to become unfit for the purpoſe of pus in the healing of the ulcer. Theſe ſeem to be poſſible cauſes of the corruption of matter in abſceſſes, ſo as to make it the occaſion of a phthiſis in perſons otherwiſe ſound; but it is probable that a pneumonic abſceſs eſpecially produces phthiſis when it happens to perſons previouſly diſpoſed to that diſeaſe, and therefore only as concurring with ſome other cauſes of it.

3. The third cauſe ſuppoſed to produce a phthiſis is a catarrh; which, in many caſes, ſeems in length of time to have the expectoration of mucus proper to it gradually changed to an expectoration of pus; and at the ſame time, by the addition of a hectic fever, the diſeaſe, which was at firſt a pure catarrh, is changed into a phthiſis. But this ſuppoſition is not eaſily to be admitted. The catarrh is properly an affection of the mucous glands of the trachea and bronchiæ analogous to the coryza and leſs violent kinds of cynanche tonſillaris, which very ſeldom end in ſuppuration. And although a catarrh ſhould be diſpoſed to do ſo, the ulcer produced might readily heal up, as it does in the caſe of a cynanche tonſillaris; and therefore ſhould not produce a phthiſis.

Further, the catarrh, as purely the effect of cold, is generally a mild diſeaſe as well as of ſhort duration; and, according to Dr Cullen, there are at moſt but very few of the numerous caſes of it, which can be ſaid to have ended in a phthiſis. In all theſe caſes in which this ſeems to have happened, he thinks it probable that the perſons affected were peculiarly prediſpoſed to phthiſis; and the beginning of phthiſis ſo often reſembles a catarrh, that it may have been miſtaken for ſuch a diſeaſe. It often happens alſo to increaſe the fallacy, that the application of cold, which is the moſt frequent cauſe of catarrh, is alſo frequently the exciting cauſe of the cough, which proves to be the beginning of a phthiſis.

Many phyſicians have ſuppoſed that an acrimony of the fluids eroding ſome of the veſſels of the lungs is a frequent cauſe of ulceration and phthiſis; but this appears to Dr Cullen to be a mere ſuppoſition. He acknowledges, that in many caſes an acrimony ſubſiſting in ſome part of the fluids is the cauſe of the diſeaſe; but obſerves that it is at the ſame time probable, that this acrimony operates by producing tubercles, rather than by any direct eroſion.

A phthiſis, indeed, moſt commonly ariſes from tubercles. Dr Simmons informs us, that he has had opportunities of inſpecting the bodies of ſeveral people who died in this way, and never found them totally abſent. He hath likewiſe ſeen them in ſubjects of different ages, who had been troubled with no ſymptoms of an affection of the breaſt during their lifetime. In theſe, however, they were ſmall, and few in number. This proves that they may exiſt without inconvenience till they begin to diſturb the functions of the lungs by their ſize and number; or till ſome degree of inflammation is excited, either by accidental cauſes, or by certain changes that take place within their ſubſtance; for as yet we know but little of their true nature. Theſe little tumours vary in their conſiſtence; in ſome they are compoſed of a pulpy ſubſtance, and in others approach more to the nature of ſcirrhus. They are moſt commonly formed in conſequence of a certain conſtitutional prediſpoſition; but whatever is capable of occaſioning a morbid irritability of the lungs ſeems to be capable of generating them. Thus the ſpaſmodic aſthma frequently ends in tubercles and conſumption; and it is not unuſual for millers, ſtone-cutters, and others, to die conſumptive, from their being ſo conſtantly expoſed to duſt, which in theſe caſes probably acts by producing ſimilar concretions: and Dr Kirkland obſerves, that ſcythe-grinders are ſubject to a diſeaſe of the lungs, from particles of ſand mixing with iron duſt, which among themſelves they call the *grinders rot*. Tubercles likewiſe often have their ſource from a ſcrophulous acrimony; and ſome eminent phyſicians have ſuppoſed that the generality of pulmonary conſumptions are of this kind. This notion, however, they have carried too far: they have probably been miſled by theſe tuberculous concretions which, without good reaſon, have been ſuppoſed to be diſeaſed glands, and of courſe analogous to the glandular affections we meet with in the ſcrophula. Tubercles may likewiſe ſometimes be owing to the ſudden repulſion of cutaneous eruptions, or of the matter of exanthemata, &c. or to other cauſes.

The perſons who are moſt liable to conſumption are thoſe of a fair complexion, fine and ſoft ſkin, florid cheeks, and a ſlender make; with high cheek-bones, hollow temples, long neck, ſhoulders ſtanding out like wings, narrow cheſt, and a remarkable prominence of the proceſſes of the os ſacrum. To theſe marks we may add, that of *ſound teeth*, which, as the diſeaſe advances, uſually become of a milky white colour, and more or leſs tranſparent. Of thoſe who are carried off by this diſeaſe, Dr Simmons aſſerts, the greater number will be found never to have had a carious tooth.

Perſons of the above deſcription often remain for a long time without feeling any other inconvenience than ſome oppreſſion at the breaſt in moiſt weather, or in hot apartments. Their breathing is eaſily hurried, ſometimes by the ſlighteſt motion; and they become languid, paler, and thinner. All this while, however, they feel no heat or painful ſenſation in the breaſt. As the evil increaſes, the patient begins to be attacked with a ſlight, frequent, and dry cough, which is moſt troubleſome in the night-time. This, however, by proper care, is often relieved; and the patient remains in this ſtate for a conſiderable time, and even for many years, if he is ſenſible of his danger, and careful to guard againſt it by a ſuitable manner of living. More commonly, however, we find the cough increaſing, and ſometimes accompanied with more or leſs of catarrh. This is uſually aſcribed to cold; and but too generally neglected, till the diſeaſe becomes alarming by its obſtinacy and its effects. This may be conſidered as the *beginning*, or firſt period, of the diſeaſe. During this ſtage, the cough is ſometimes dry from the firſt; and ſometimes, when it ſets in in the form of a catarrh, is attended with more or leſs expectoration of mucus.

When the cough ſets in in the form of a catarrh, and appears to be occaſioned by an increaſed ſecretion of a thin ſaltiſh mucus irritating the membrane of the trachea, all judicious practitioners agree in recommending an attention to regimen, the free uſe of diluting liquors, bland emulſions, ſmall doſes of nitre, the taking away a few ounces of blood if there be much inflammation, the inhaling the ſteams of warm water †, and the occaſional uſe of ſuch a doſe of elixir paregoricum as will be ſufficient to allay the irritation of the bronchiæ, and to promote a gentle moiſture on the ſkin. Theſe methods will generally be found to be efficacious, eſpecially if the patient's chamber is of a moderate temperature, and he carefully avoids expoſure to a cold, damp, or raw air, till the complaint is removed. In caſes in which the cough has been obſtinate, and the inflammatory ſymptoms conſiderable, Dr Simmons has often experienced the great advantages of the warm bath, the heat of which did not exceed 92°. When this is had recourſe to, the the patient ſhould remain in it only a very few minutes, and go ſoon afterwards to bed; but not with a view to force a ſweat by an increaſed weight of bedclothes, as is too often injudiciouſly practiſed.

Patients of a conſumptive habit, who have had an attack of this kind at the beginning of winter, are particularly liable to a return of the complaint during the continuance of the cold ſeaſon, on the ſlighteſt occaſion and with greater violence. A relapſe is therefore to be carefully guarded againſt; and nothing will be found to do this more effectually than the uſe of ſocks and a flannel under-waiſtcoat. The uſe of flannel has been condemned by ſeveral medical writers as increaſing the inſenſible perſpiration; but in the preſent caſe, to ſay nothing of ſome others in which it may be uſeful, it will in general be found to have the beſt effects. It will prevent a too great determination to the lungs, and ſhould not be left off till the approach of ſummer. In ſome few inſtances in which flannel was found to have a diſagreeable effect, a piece of dimity, worn over the breaſt next the ſkin, prevented the return of colds and coughs in perſons of a delicate habit, who had before been liable to them on the ſlighteſt occaſions. In theſe caſes, circumſtances that are ſeemingly of the moſt trifling nature become of importance.

Sometimes the cough is occaſioned by an immediate inflammation of ſome part of the lungs, from ſome of the uſual cauſes of inflammation; and when this happens no time is to be loſt in removing it. To do this will perhaps require more than one bleeding, together with a ſtrict attention to a cooling plan of diet, diluting drinks, the inhalation of warm ſteams, and, if convenient, the uſe of the warm bath; but above all, the ſpeedy application of a large bliſter as near as may be to the ſuppoſed ſeat of the inflammation. The cough, in this caſe, will often remain after the original complaint is abated. A prudent uſe of opiates at bed-time, joined to gum ammoniacum, will then generally be uſeful as a ſedative and antiſpaſmodic.

In this, as well as in the catarrhal cough juſt now mentioned, many practitioners are too eager to adminiſter the Peruvian bark, with the view, as they term it, of *bracing up* the patient: but this never fails to increaſe the cough, and of courſe to do great and very often irreparable miſchief.

And here it will not be foreign to our ſubject to obſerve, that a ſymptomatic cough, which has its riſe not from catarrh, or from an immediate inflammation of the lungs, but from their ſympathy with the ſtomach, has ſometimes laid the foundation of phthiſis, from its having been miſtaken, and of courſe improperly treated. It ſeems to be owing to a redundancy or vitiated ſtate of the bile, or to ſome affection of the ſtomach, which it is perhaps not eaſy to define. It is ſometimes a concomitant of other bilious ſymptoms; and when this happens to be the caſe, it cannot eaſily be miſtaken; but we ſometimes find it occurring ſingly, and in general attacking perſons of a ſedentary life. Dr Stoll of Vienna, who has noticed this cough, has very properly given it the name of *tuſſis ſtomachica*. This complaint is ſo far from being relieved by bleeding, that it conſtantly grows worſe after it, eſpecially if the evacuation is in any conſiderable quantity. The oily remedies ſeldom fail to exaſperate this cough, which at firſt is dry, frequent, and often extremely violent, but which ſeldom fails to give way to one or two gentle pukes, and the occaſional uſe of mild purges. The cough, as in other caſes, often continues from habit after the cauſe that gave riſe to it has been removed, and may then be checked by opiates.

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† See *Inhaler*.

When the diſeaſe has been neglected, or our attempts to remove it in the beginning have failed, both of which circumſtances but too frequently happen, the patient begins to complain of a ſoreneſs, and of ſlight lancinating pains ſhooting through the breaſt, ſometimes in the direction of the mediaſtinum, and ſometimes confined chiefly to one ſide. The ſoreneſs is pretty conſtant, and much increaſed by the cough. The pain in the ſide often prevents the patient from lying on the ſide affected; and this inability of lying, except on one ſide, frequently occurs even when no ſuch pain is felt. In this ſtage of the diſeaſe, fluſhing heats are felt in the palms of the hand and ſoles of the feet: the breathing is ſhort and laborious; and it is not long before the patient begins to expectorate a thin and frothy phlegm, at firſt in ſmall quantities, coughed up with difficulty and ſoreneſs, and now and then ſtreaked with blood: this may be conſidered as the *inflammatory period* of the diſeaſe, to which ſucceeds the *ſuppurative ſtage*. In the latter, the expectoration becomes more copious and purulent, the breath proportionably offenſive, and the exacerbations of the hectic more conſiderable: an increaſed quickneſs of the pulſe comes on about the middle of the day; but the moſt conſiderable paroxyſm of the fever is at night, and at firſt continues till towards morning, commonly till three or four o'clock, when it terminates in a ſweat, which uſually begins upon the breaſt. As the diſeaſe advances, theſe ſweats become more profuſe, and ſometimes come on almoſt as ſoon as the pulſe begins to quicken, but without affording any relief to the patient. During the exacerbations, we obſerve a circumſcribed redneſs of the cheeks, while the reſt of the face is pale, and appears as if it were not clean waſhed. The coſtiveneſs that commonly accompanies the beginning of the diſeaſe is uſually ſucceeded by a diarrhœa; the ſpitting leſſens, and all the purulent matter ſeems to be carried downwards. The waſting of the fat and the loſs of nouriſhment occaſion the nails to curve inwards, the hair to fall off, and the eyes to ſink in their ſockets. In the mean time, the legs commonly ſwell; till at length death cloſes a ſcene which is melancholy to all but the patient himſelf, who in general continues ſenſible to the laſt moment, and even then indulges a vain hope of prolonging a miſerable exiſtence. In ſome caſes, and that not unfrequently, a delirium comes on towards the cloſe of the diſeaſe.

The hectic fever that attends this and ſome other chronic diſeaſes, is evidently the effect of acrimony, and moſt commonly of pus abſorbed and carried into the circulation. The nature of this acrimony, and the different irritability of different patients, are probably the ſources of the variety we obſerve in fevers of this denomination; a variety which is doubtleſs much greater than we are aware of. Thus we find that the matter of the ſmall-pox excites a fever of this kind; but this *ſecondary fever*, as it is called, differs from the hectic attendant on conſumptions; nor does the latter correſpond with that which ſometimes accompanies the ſuppuration of a cancerous ulcer. In the pulmonary conſumption, or at leaſt in the third ſtage of it, the fever induced is truly of the putrid kind, and has been well denominated *febris hectica putrida* by the judicious Morton, who conſiders it as being combined with a peripneumonic or inflammatory fever, which recurs as often as freſh tubercles begin to inflame. For although we have named one period of the diſeaſe the *inflammatory*, and another the *ſuppurative period*, yet we are not to ſuppoſe that the latter is exempt from inflammation. While matter is poured into the bronchiæ, or abſorbed and carried into the ſyſtem from one part of the lungs, other parts are in a crude ſtate of inflammation, or advancing towards ſuppuration; ſo that, on examining the lungs of perſons who die conſumptive, we find ſome tubercles that are ſmall and juſt formed, ſome that are large and full of matter, and others that are in a ſtate of ulceration. This eaſily accounts for the occaſional combination of inflammatory ſymptoms with thoſe of the putrid hectic. When the matter abſorbed is a laudable pus, as in the caſe of a pſoas abſceſs, we find the form of the hectic differing from either of thoſe we have mentioned.

Cure. In theſe different periods of the diſeaſe, the curative indications are ſufficiently obvious. To prevent the formation of freſh tubercles; to obviate the inflammation of thoſe already formed; to promote their reſolution; to allay morbid irritability, the cough, and other troubleſome ſymptoms; and, above all, to check the tendency to hectic,—are the views that every rational phyſician propoſes to himſelf in the treatment of the genuine conſumption. We know of no medicines that can exert their ſpecific effects upon the lungs by diſſolving tuberculous concretions; nor is it probable, from what we know of the animal œconomy, that any ſuch will ever be diſcovered. Yet medicines that operate in a general manner upon the ſyſtem, may, by promoting abſorption, and diminiſhing the determination to the lungs, tend to diſperſe tubercles, or to prevent their formation. There are not wanting inſtances of wonderful recoveries in caſes where the evil was ſuppoſed to be beyond the power of phyſic; and in ſome, where nature was left to herſelf; ſo that a phyſician who has obſerved the various and powerful reſources nature has within herſelf, will be very cautious how he aſſerts that a diſeaſe is incurable.

The moſt formidable effects of ulcerated lungs are the abſorption and conſequent hectic. It ſeems evident, that, in many caſes, death is brought on by this, rather than by the lungs themſelves being rendered unfit for the purpoſes of reſpiration. So that if we can obviate the effects of the abſorption, diminiſh the preternatural determination to the lungs, and fulfil the other general indications juſt now mentioned, we may very often enable nature to recover herſelf. It may be alleged indeed, that the phyſician's art has hitherto proved very unſucceſsful in theſe caſes; but may not this be owing to the remedies that are adopted being very often ſuch as are inimical to the cure?

The bark is, perhaps, the moſt commonly employed of any, and often confided in as an ultimate reſource in theſe caſes. But beſides this, the elixir of vitriol, the balſams, and frequent bleedings, have each had their partizans. The uſe of bliſters and iſſues, opiates, a mik and vegetable diet, exerciſe, and change of air, are pretty generally recommended by all. Concerning the bark, Deſault * long ago obſerved, that it had been productive of great miſchief in conſumptive caſes; and Dr Fothergill, in a paper lately publiſhed by him † on this ſubject, very judiciouſly remarks, that the bark is ſo far from curing the hectic ariſing from diſtempered lungs, that, according to the beſt of his obſervations, it not only takes up that time which might probably have been better employed in the uſe of other medicines, but for the moſt part aggravates the diſeaſe beyond remedy. Indeed it will be found by every attentive obſerver, that, whenever pus, or any kind of matter excites an hectic, by being abſorbed and carried into the circulation, the bark will never fail to exaſperate the complaint, eſpecially if it is accompanied with any degree of inflammatory diatheſis, unleſs the matter has a free outlet from the ſyſtem; as in the caſe of abſceſſes, for inſtance, in which we often find the bark productive of excellent effects. It is likewiſe well known to be uſed as a tonic, to obviate the effects of fluor albus, or any other immoderate evacuation in delicate perſons, which, by enfeebling the ſyſtem, very often lays the foundation of phthiſis: but the moment we have reaſon to ſuſpect that the lungs are ulcerated, it ought to be laid aſide; and in the genuine tuberculous conſumption, it is at all times inadmiſſible.

Dr Fothergill, however, obſerves, that there are two cauſes of conſumptions, which often produce ſymptoms ſo ſimilar to thoſe of the genuine phthiſis, as ſometimes to have led him to make uſe of the bark in apparent tendencies to a genuine pulmonary conſumption with advantage.

One of theſe cauſes is, the ſuckling of children longer than is conſiſtent with the mother's ability. This caſe frequently occurs among the middling and lower claſſes of females of conſtitutions naturally delicate and tender. In ſuch a ſtate of weakneſs, ſome ſlight cold brings on a cough, which increaſes gradually, till at length it produces the true pulmonary conſumption. Here the bark given early, in moderate doſes, and merely as a tonic remedy, is often of excellent uſe.

Another cauſe is, any weakening diſcharge, either from abſceſſes, the greater operations of ſurgery, a copious and conſtant *fluor albus*, or ſimilar enfeebling evacuations. That the bark is, for the moſt part, of uſe in theſe caſes, when the lungs are not inflamed, is indubitable; and if they are ſo affected, but not beyond a certain degree, it is alſo efficacious in preventing the progreſs of the conſumption.

In phthiſical complaints ſucceeding ſuch ſituations, a prudent trial of the bark ſeems neceſſary. Small doſes of the decoction, either alone, or joined with the ſaline mixture or ſuch other additions as the phyſician thinks proper, may be given. But if the breath becomes more tight and oppreſſed, the cough dry, the pulſe more quick and hard, and eſpecially if ſlight tranſitory pains or ſtitches about the thorax are more frequently complained of, a perſeverance in the uſe of the bark will increaſe the diſeaſe. If ſuch alſo ſhould be the appearances in the progreſs of the diſeaſe, or, from whatever cauſe, if the bark is accompanied with ſuch effects, the uſe of it ought to be with-held.

If, on the other hand, no pain, tightneſs, or oppreſſion, is perceived, and there appears a manifeſt abatement of the ſymptoms, it will be adviſeable to proceed. The adminiſtration of this medicine, however, requires a judicious obſerver; and it ought neither to be given in the early inflammatory ſtage of this diſeaſe, nor be continued in any ſubſequent period, if it produces the effects abovementioned.

By its tonic virtues it will often enable nature to conquer many difficulties. In confirmation of this remark, Dr Fothergill farther obſerves, that he has ſeen it of uſe in promoting expectoration, when this became deficient from want of ſtrength towards the end of peripneumonic fevers; but that it ſtops this diſcharge, changes ſlight wandering pains into ſuch as are fixed, and increaſes them with all their conſequences, in a variety of caſes.

The elixir of vitriol is often exhibited in conſumptive caſes, with no leſs impropriety than the bark. This medicine, from its aſtringency, is obviouſly improper in the inflammatory ſtate of the diſeaſe. But in the latter ſtage, when a general tendency to putrefaction takes place, it is ſerviceable in reſiſting the effect; it reſtrains the colliquative ſweats; and if the lungs are not injured paſt repair, it is allowed to be a very uſeful auxiliary.

Various are the opinions concerning the efficacy of Briſtol-water in this diſeaſe. The experienced author laſt mentioned informs us, that he has ſeen many perſons recover from pulmonary diſeaſes after drinking theſe waters, whoſe cure ſeemed to be doubtful from any other proceſs; and he thinks this circumſtance, added to the general reputation of Briſtol-waters in phthiſical caſes, affords ſufficient inducement to recommend the trial of them in the early ſtage of ſuch complaints. It is, however, before the approach of a confirmed phthiſis that patients ought to repair to Briſtol; otherwiſe a journey thither will not only be without benefit, but may even prove detrimental.

Some have imagined, that the journey, a better air, change of ſituation and of objects, have contributed to the patient's recovery; and theſe may doubtleſs be of advantage. It ſeems, however, that the water drank freſh at the pump, actually contains principles conducive to the recovery of patients affected with phthiſical complaints. It ſeems to poſſeſs a ſlight calcareous ſtypticity, and perhaps the air it contains may alſo have an antiſeptic quality. On the whole, it appears to be an efficacious medicine, and is often found of remarkable benefit to conſumptive patients.

Change of air, ſometimes even from good to bad, is of great conſequence in all chronic diſeaſes of the lungs. In conſumptive caſes, however, the air of all large cities is found to be particularly injurious.

A ſea-voyage has been much recommended in the cure of this diſeaſe. The benefit of exerciſe has alſo been ſtrongly urged by many writers; but, however ſalutary when properly uſed, it certainly ought to be regulated with diſcretion. Dr Dickſon declares himſelf of opinion, that riding on horſeback in conſumptive caſes is moſt commonly hurtful, without ſuch regulations as in general have been little regarded ed. For inſtance, he has known a perſon who, by a ride of an hour or two in the morning, was very much recruited, and who, at another time, in the afternoon and evening, without undergoing more bodily motion, has returned faint and languid, and apparently worſe. This obſervation on the ſame perſon has been ſo frequently made, as to point out clearly the times when this exerciſe ſhall not do hurt in conſumptive caſes. In this diſeaſe, the pulſe, however calm in the morning, becomes more frequent in the afternoon and night, attended with heat and other feveriſh ſymptoms. Exerciſe therefore, at this time, can only add to the miſchief of the fever. For this reaſon he prudently recommends to all hectic perſons, eſpecially thoſe who ſhall travel to diſtant places on account of a better air, or the benefit expected from any particular water, that their travelling ſhould be ſlow, confined to a very few hours, and only in the morning.

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* Diſſert. ſur la Phthiſie.

† Med. Obſ. and Inq. vol. 5.

Horſe-exerciſe, however, ſeems to be chiefly beneficial in thoſe caſes where conſumption is a ſecondary diſeaſe. For example, in the nervous atrophy; in the hypochondriacal conſumption; or when it is the effect of long-continued intermittents, or of congeſtions in any of the abdominal viſcera; or in a word, whenever the conſumption is not attended with an inflamed or ulcerated ſtate of the lungs; long journeys on horſeback will be beneficial. Such a practice may likewiſe be highly uſeful in obviating an attack of phthiſis, or in carrying off a dry huſky cough in a perſon of a conſumptive habit, when there is reaſon to ſuppoſe that no tubercles are as yet formed. On the other hand, in the confirmed phthiſis, when the lungs are inflamed or ulcerated, much or violent exerciſe will be improper; and there have been inſtances where the death of the patient was evidently accelerated by it. The exerciſe therefore ſhould be gentle, proportioned to the ſtrength of the patient, and employed only in the morning. In fine weather, an eaſy open carriage is perhaps the moſt eligible, not only on account of its being open to tbe air, but becauſe it affords that kind of agitation which is moſt wanted in theſe caſes. For if we conſider the different modes of exerciſe, we ſhall find that walking, though the beſt exerciſe in health, as it employs the moſt muſcles, is the worſt for the ſickly, who ſhould have the benefit of exerciſe without fatigue. Riding on horſeback agitates the viſcera more than walking, and is therefore preferable to it in many chronic diſeaſes; but when a preternatural determination to the lungs has taken place, it will be liable to increaſe the evil, and may likewiſe be hurtful by the fatigue that attends it. For theſe reaſons it will be prudent to begin with a carriage; and if the patient gains ſtrength, and the diſeaſe abates, recourſe may afterwards be had to horſe-exerciſe.

The gentle motion of a coach has been often found of great utility in pulmonary complaints. Its efficacy ſeems to depend chiefly on its increaſing the determination to the ſurface of the body. The nauſea which this motion excites in ſome perſons is an effect of this increaſed determination. It has therefore been found beneficial in hæmoptyſis; and Dr Simmons mentions the caſe of a lady, who, after trying various remedies to no purpoſe, was cured of this complaint by travelling ſeveral hundred miles through different parts of England in her own coach. At firſt, whenever ſhe tarried three or four days in any place, the diſorder began to return again; but at length by perſevering in her journeys, it gradually went off. Deſault, who practiſed at Bourdeaux about 40 years ago, tells us, he ſent ſeveral conſumptive patients to Bareges, and with good ſucceſs; but that in theſe caſes his reliance was not ſo much upon the Bareges waters, as upon the motion of the carriage and the change of air in a journey of more than 100 leagues.

It is now pretty generally acknowledged, that the good effects of ſea-voyages in conſumptive caſes depend more upon the conſtant and uniform motion of the ſhip, than upon any particular impregnation of the ſea-air; although this from its coolneſs may likewiſe be of great uſe, eſpecially in the hot months, when ſea-voyages are generally undertaken by conſumptive patients. The ancients were no ſtrangers to this remedy; and amongſt the Romans it was no unuſual thing for conſumptive patients to ſail to Egypt. Pliny obſerves, that this was done not for the ſake of the climate, but merely on account of the length of the voyage.

Many of our Engliſh phyſicians have recommended a voyage to Liſbon in theſe caſes. When this is done, the proper ſeaſon of the year ſhould be carefully attended to. Dr Simmons knew a gentleman who went thither with ſymptoms of incipient phthiſis, and who experienced ſome relief during the courſe of the voyage; but happening to arrive at Liſbon at the beginning of the rainy ſeaſon, the diſeaſe was ſoon greatly increaſed, and terminated fatally.

The beſt adapted diet in conſumptive caſes, is milk, particularly that of aſſes. It may however be remarked, that there are conſtitutions in which this ſalutary nutriment ſeem to diſagree. A propenſity to generate bile, or too ſtrong a diſpoſition to aceſcency from a weakneſs of the digeſtive organs, both merit attention. Whey, either from cows or goats milk, appears to be more ſuitable in the former caſe; and for correcting acidity, lime-water may be added to the milk. The method of adding rum or brandy to aſſes or cows milk, ſhould be uſed with great caution: for when added beyond a certain quantity, as is often the caſe, they not only coagulate the milk, but heat the body; by which means the former diſagrees with the patient, and the ſpirit augments the diſeaſe.

In conſumptive caſes, Dr Simmons obſerves, that the patient's taſte ſhould be conſulted; and ſays that a moderate uſe of animal-food, where the ſalted and high-ſeaſoned kinds are avoided, is not to be denied. Shell-fiſh, particularly oyſters, are uſeful, as well as ſnails ſwallowed whole, or boiled in milk.

Repeated bleedings, in ſmall quantities, are conſidered in conſumptive caſes as highly advantageous: and in particular circumſtances they undoubtedly are ſo; for inſtance, when the conſtitution apparently abounds with blood; when the fluid drawn off is extremely ſizy; when there is much pain in the breaſt; and when veneſection is followed by an abatement of every ſymptom. In theſe caſes, bleeding is certainly proper, and ought to be repeated ſo long as it ſeems to be attended with advantage. In very delicate conſtitutions, however, where the pulſe is quick, with ſome degree of fulneſs, and the blood laſt drawn conſiderably ſizy, it may not prove equally ſerviceable.

It deſerves to be remarked, that the inflammatory appearance of the blood is not alone a ſufficient reaſon for bleeding; but, in determining the propriety of this evacuation, all other circumſtances ſhould be conſidered; ſuch as the patient's age, ſtrength, habit, and the ſtate of the diſeaſe.

A remark which has been judiciouſly made by Dr Fothergill, ought not to be omitted in the account of this diſeaſe. It is, that young delicate females, from the age of 15 or 16, and upwards, are often ſubject to conſumptions. When the diſeaſe has advanced conſiderably, the *menſes*, if they have made their appearance, moſt generally ceaſe. This alarms their female friends, and they call upon the phyſician to uſe his utmoſt endeavours for reſtoring the diſcharge; believing the ceſſation of it to be the immediate cauſe of the phthiſical complaint. Induced by their ſolicitations, medicines have ſometimes been adminiſtered, that, without obtaining this end, have tended to aggravate the diſtemper. This deficiency is often of no real diſadvantage in thoſe caſes; and in many the evacuation would prove injurious, by diminiſhing the ſtrength, which is already too much impaired. Even ſmall bleedings at the regular periods, have often done more harm than good. A ſudden ſuppreſſion may require bleeding; but when the evacuation fails through want of ſtrength, and from poverty of blood, the renewal of it increaſes the diſeaſe.

Beſides theſe remedies, Dr Simmons ſtrongly recommends a frequent repetition of vomits. Many phyſicians have ſuppoſed that where there is any increaſed determination to the lungs, vomits do miſchief: but our author is perſuaded, that inſtead of augmenting they diminiſh this determination; and that much good may be expected from a prudent uſe of this remedy, than which none has a more general or powerful effect on the ſyſtem. If any remedy is capable of diſperſing a tubercle, he believes it to be vomits. The affections of the liver, that ſometimes accompany pulmonary complaints, give way to repeated emetics ſooner than to any other remedy. In ſeveral caſes where the cough and the matter expectorated, the fluſhing heats, loſs of appetite, and other ſymptoms, threatened the moſt fatal event; the complaints were greatly relieved, and in others wholly removed, by the frequent uſe of emetics. Other ſuitable remedies were indeed employed at the ſame time; but the relief the patients generally experienced after the emetic, was a ſufficient proof of its ſalutary operation. By this, however, our author does not mean that vomits will be uſeful in every period of the diſeaſe, or in every patient. In general, it will be found that the earlier in the diſeaſe emetics are had recourſe to, the more likely they will be to do good and the leſs likely to do harm. The caſes in which this may be reckoned improper, are commonly thoſe in which the diſeaſe is rapid in its progreſs; or in that ſtage of it, when there is great debility, with profuſe colliquative ſweats.

In theſe caſes, when an emetic has been adminiſtered twice a-week, and the cough is mitigated, the expectoration facilitated, and the other ſymptoms relieved, both the patient and the phyſician will be encouraged to proceed, and to repeat the vomit every other day, or even every day, for ſeveral days together, as our author has ſometimes done when the good effects of it were obvious.

The choice of emetics to be employed in theſe caſes is by no means a matter of indifference. Carduus tea, chamomile tea, warm water, and others that act by their bulk, and by exciting nauſea, relax the tone of the ſtomach when they are frequently repeated, and of courſe will be improper. More active emetics are therefore to be preferred; and here ſome of the preparations of antimony might naturally be thought of. But the operation of theſe is not confined to the ſtomach. They produce evacuations by ſtool, and a diſpoſition to ſweat; and are therefore improper in the pulmonary hectic. The mildneſs and excellence of ipecacuanha as an emetic, are well known; but in theſe caſes Dr Simmons hath often employed the blue vitriol, concerning the effects of which we meet with ſome groundleſs aſſertions in ſeveral medical books. Its operation is confined to the ſtomach; it acts inſtantaneouſly, and its aſtringency ſeems to obviate the relaxation that is commonly ſuppoſed to attend the frequent uſe of emetics. In two caſes he experienced its good effects, after vomits of ipecacuanha had been given ineffectually. It ſhould be adminiſtered in the morning, and in the following manner:

Let the patient firſt ſwallow about half a pint of water, and immediately afterwards the vitriol diſſolved in a cupfull of water. The doſe of it muſt be adapted to the age and other circumſtances of the patient, and may be varied from two grains to ten, fifteen, or twenty. As ſome perſons are much more eaſily puked than others, it will be prudent to begin with a ſmall doſe: not that any dangerous effects will be produced by a large one, for the whole of the medicine is inſtantly rejected; but if the nauſea is violent and of long continuance, the patient may perhaps be diſcouraged from repeating it. In general, the moment the emetic has reached the ſtomach it is thrown up again. The patient muſt then ſwallow another half pint of water, which is likewiſe ſpeedily rejected; and this is commonly ſufficient to remove the nauſea.

Dr Marryat, in his *New Practice of Phyſic*, preſcribes with great freedom what he calls the *dry vomit*, from its being directed to be taken without drinking. This medicine conſiſts of blue vitriol and the emetic tartar; but its good effects have not yet been aſcertained by other practitioners.

Beſides the uſe of internal remedies in pulmonary affections, phyſicians have often preſcribed the ſteams of reſinous and balſamic ſubſtances to be conveyed into the lungs. The vapour of dulcified ſpirit of vitriol, dropt into warm water, has likewiſe been uſed in theſe caſes, and is advertiſed as a noſtrum under the name of *æther*. The inhaling of fixed air has alſo been ſpoken of as an uſeful practice. Dr Simmons hath ſeen all of theſe methods tried at different times; but without being able to perceive any real advantages from them in the ſuppurative ſtage of the diſeaſe, where they might be expected to be of the greateſt uſe; and in the beginning he hath often found the two firſt to be too ſtimulating. He therefore

fore preferred the ſimple vapour of warm water, and hath experienced its excellent effects in ſeveral inſtances: but when the complaint has made any conſiderable progreſs, its utility is leſs obvious; and when the patients have been much weakened, he hath ſeen it bring on profuſe ſweats, eſpecially when uſed in bed, and therefore generally recommended it to be uſed in the day-time. Formerly he made uſe of a fumigating machine, deſcribed in the gentleman's magazine for 1748, in which the air, inſpired by the patient, is made to paſs through hot water, by means of a tube that communicates with the external air, and with the bottom of the veſſel: but we have now a more elegant, and (on account of the valve and mouth-piece) a more uſeful, inſtrument of this kind, invented by the ingenious Mr Mudge. See Inhaler.

Another remedy recommended by ſome as a ſpecific in conſumptions, is the earth-bath. Van Swieten, in his Commentaries on Boerhaave, tells us, from the information of a perſon of credit, that in ſome parts of Spain they have a method of curing the phthiſis pulmonalis by the uſe of this remedy; and he quotes the celebrated Solano de Luque in confirmation of this practice. Solano ſpeaks of the *banos de tierra*, or earth-baths, as a very old and common remedy in Granada and ſome parts of Andaluſia, in caſes of hectic fever and conſumptions; and relates ſeveral inſtances of their good effects in his own practice. The method he adopted on theſe occaſions was as follows: He choſe a ſpot of ground on which no plants had been ſown, and there he made a hole large and deep enough to admit the patient up to the chin. The interſtices of the pit were then carefully filled up with the freſh mould, ſo that the earth might every where come in contact with the patient's body. In this ſituation the patient was ſuffered to remain till he began to ſhiver or felt himſelf uneaſy; and during the whole proceſs, Solano occaſionally adminiſtered food or ſome cordial medicine. The patient was then taken out, and, after being wrapped in a linen cloth, was placed upon a mattraſs, and two hours afterwards his whole body was rubbed with an ointment compoſed of the leaves of the *ſolanum nigrum* and hog's lard. He obſerves, that a new pit muſt be made every time the operation is repeated; and adviſes the uſe of theſe baths only from the end of May to the end of October. Dr Fouquet, an ingenious French phyſician, has tried this remedy in two caſes. In one, a confirmed phthiſis, he was unſucceſsful; but the remedy had not a fair trial. The patient, a man 30 years of age, had been for ſeveral months afflicted with cough, hectic fever, and profuſe colliquative ſweats. He was firſt put into the earth in the month of June; but ſoon complained of an uneaſy oppreſſion at his ſtomach, and was removed at the end of ſeven minutes. The ſecond time he was able to remain in it half an hour, and when taken out was treated in the way preſcribed by Solano. In this manner the baths were repeated five times, and the patient was evidently relieved; but having conceived a diſlike to the proceſs, he refuſed to ſubmit to any further trials, and died ſome months afterwards. In the ſecond caſe he was more fortunate: the patient, a girl 11 years of age, had been for three months troubled with a cough brought on by the meaſles, which was at length attended with a purulent expectoration, hectic fever, and night-ſweats. She began the uſe of the earth-bath in Auguſt, and repeated it eight times in the ſpace of 20 days. At the end of that time the fever and diſpoſition to ſweat had entirely ceaſed, and by the uſe of the common remedies the patient was perfectly reſtored. A phyſician at Warſaw has likewiſe preſcribed the earth-bath with good ſucceſs in caſes of hectic fever. The Spaniards confine it entirely to ſuch caſes; but in ſome other parts of the world we find a ſimilar method employed as a remedy for other diſeaſes, and particularly for the ſcurvy. Dr Prieſtley obſerves, that the Indians, he has been told, have a cuſtom of burying their patients labouring under putrid diſeaſes, up to the chin in freſh mould, which is alſo known to take off the fœtor from fleſh-meat beginning to putrefy. The rancidity of a ham may likewiſe be corrected by burying it for a few hours in the earth. The efficacy of this remedy in the ſea-ſcurvy has frequently been experienced by the crews of our Eaſt India ſhips. See below.

Solano, who is fond of philoſophizing in his writings, is of opinion, that the earth applied in this way abſorbs the morbid taint from the ſyſtem; but does it not ſeem more probable, that the effluvia of the earth, by being abſorbed and carried into the circulation, correct the morbid ſtate of the fluids, and thus are equally uſeful in the ſea-ſcurvy and in the pulmonary hectic? That the earth when moiſtened does emit a grateful odour is a fact generally known; and Baglivi long ago gave his teſtimony in favour of the grateful effects of the effluvia of freſh earth. He aſcribes theſe good effects to the nitre it contains.

With regard to the drains, ſuch as bliſters, iſſues, and ſetons, that are ſo frequently recommended in pulmonary complaints, there is leſs danger of abuſe from them, than from the practice of veneſection. The diſcharge they excite is not calculated to weaken the patient much; and the relief they have ſo often been found to afford, is a ſufficient reaſon for giving them a trial. Bliſters, as is well known, act in a twofold manner; by obviating ſpaſm, and producing revulſion: Iſſues and ſetons act chiefly in the latter of theſe two ways; and in this reſpect their effects, though leſs ſudden and leſs powerful at firſt, are more durable from the continuance of the diſcharge they occaſion. It is perhaps hardly neceſſary to remark, that, if much ſervice is to be expected from either of theſe remedies, they ſhould be applied early in the diſeaſe. The ingenious Mr Mudge, who experienced the good effects of a large ſcapulary iſſue on his own perſon, very properly obſerves, that the diſcharge in theſe caſes ought to be conſiderable enough to be felt. But it is ſeldom poſſible for us to prevail on the delicate perſons, who are moſt frequently the victims of this diſeaſe, to ſubmit to the application of a cauſtic between the ſhoulders. The diſcharge produced by a ſeton is by no means inconſiderable; and as in theſe caſes there is generally ſome inflammatory ſtitch, ſome part of the breaſt that is more painful or more affected by a deep inſpiration than the reſt, a ſeton in the ſide, as near as can be to the ſeat of the inflammation, will be an uſeful auxiliary. Our author has ſeen it evidently of great uſe in ſeveral caſes.

GENUS XL. HÆMORRHOIS, the HEMORRHODS or PILES.

Hæmorrhois, *Sauv.* gen. 217. *Lin.* 192. *Sag.* gen. 182.
Hæmorrhoidalis fluxus. *Hoffm.* 219.
Hæmorrhoides, *Junck.* 11. and 12.
Leucorrhois, *Vog.* 112.

354 LXXXIX. The *External* BLOODY PILES. Sp. I. Var. A.

Hæmorrhois moderata, *Sauv.* ſp. 1.
Hæmorrhoides ordinatæ, *Junck.* 11.
Hæmorrhoides nimiæ, *Junck.* 11.
Hæmorrhois immodica, *Sauv.* ſp. 2.
Hæmorrhoides excedentes, *Alberti.* de hæmorrhoid. p. 179.
Hæmorrhois polypoſa. *Sauv.* ſp. 3.

355 XC. *Mucous* PILES. Sp. I. Var. B.

Hæmorrhoides decoloratæ, albæ, et mucidæ, *Junck.* 13. *Alberti*, p. 248.

356 XCI. The PILES from a *Procidentia Ani.* Sp. II.

Hæmorrhois ab exania, *Sauv.* ſp. 4.

357 XCII. The *Running* PILES. Sp. II.

358 XCIII. The *Blind* PILES. Sp. IV.

Hæmorrhoides cœcæ, *Junck.* 12. *Alberti* p. 274.

Deſcription. THE diſcharge of blood from ſmall tumours on the verge of the anus conſtitutes what is called the *hæmorrhoids* or *piles*. They are diſtinguiſhed into the *external* and *internal*, according to the ſituation of the tumours, either without or within the anus. Sometimes, however, theſe tumours appear without diſcharging any blood; and in this caſe they are called the *hæmorrhoides cœcæ* or *blind piles*. Sometimes the diſeaſe appears without the verge of the anus in diſtinct ſeparate tumours; but frequently only one tumid ring appears, ſeeming as it were the anus puſhed without the body. Sometimes theſe tumours appear without any previous diſorder of the body: but more frequently, before the blood begins to flow, and ſometimes even before the tumours are formed, various affections are perceived in different parts of the body; as head-ach, vertigo, ſtupor, difficulty of breathing, ſickneſs, colic pains, pain of the back and loins, and frequently a conſiderable degree of pyrexia; while along with theſe ſymptoms there is a ſenſe of fullneſs, heat, itching, and pain, in and about the anus. Sometimes the diſeaſe is preceded by a ſerous diſcharge from the anus; and ſometimes this ſerous diſcharge, accompanied with ſwelling, ſeems to come in place of the diſcharge of blood, and to relieve the above-mentioned diſorders of the ſyſtem. This ſerous diſcharge hath therefore been named the *hæmorrhois alba*.

In this diſeaſe the quantity of blood diſcharged is different upon different occaſions. Sometimes it flows only when the perſon goes to ſtool, and commonly follows the diſcharge of fæces. In other caſes it flows without any diſcharge of fæces; and then generally in conſequence of the diſorders above-mentioned, when it is alſo commonly in larger quantity. This is often very conſiderable; and, by the repetition, ſo great, that we could hardly ſuppoſe the body to bear it but with the hazard of life. Indeed, though rarely, it has been ſo great as to prove ſuddently fatal, as probably was the caſe with ARIUS and COPERNICUS.—Theſe conſiderable diſcharges occur eſpecially to perſons who have been frequently liable to the diſeaſe. They often induce great debility, and frequently a leucophlegmatia or dropſy which proves fatal. Sometimes the tumours and diſcharges of blood in this diſeaſe recur exactly at ſtated periods. In the decline of life it frequently happens, that the hæmorrhoidal flux, formerly frequent, ceaſes to flow; and in that caſe it generally happens that the perſons are affected with apoplexy or palſy. Sometimes hæmorrhoidal tumours are affected with inflammation, which ends in ſuppuration and gives occaſion to the formation of fiſtulous ulcers in thoſe parts.

The hæmorrhoidal tumours have often been conſidered as varices or dilatations of the veins; and in ſome caſes varicous dilatations have appeared upon diſſection. Theſe, however, do not appear; and Dr Cullen is of opinion that they are uſually formed by an effuſion of blood into the cellular texture of the inteſtine near to its extremity. When recently formed they contain fluid blood, but after they remain for ſome time they are uſually of a firmer conſiſtence.

Cauſes, &c. It would ſeem probable, that the hæmorrhoidal tumours are produced by ſome interruption of the free return of the blood from the rectum, by which a rupture of the extremities of the veins is occaſioned. But conſidering that the hæmorrhage occurring here is often preceded by pain, inflammation, and a febrile ſtate, and with many other ſymptoms which ſhew a connection of the topical affection with the ſtate of the whole ſyſtem, it is probable that the interruption of the venous blood produces a conſiderable reſiſtance to the motion of the venous blood through the arteries, and conſequently that the diſcharge of blood is commonly from the latter. Some have thought, that a difference of the hæmorrhois, and of its effects upon the ſyſtem, might ariſe from the difference of the hæmorrhoidal veſſels from whence the blood iſſued. But Dr Cullen is of opinion, that we can ſcarce ever diſtinguiſh the veſſels from which the blood flows; and that the frequent inoſculations of both arteries and veins belonging to the lower extremity of the rectum, will render the effects of the hæmorrhage much the ſame, from whatever ſource it proceeds.

With regard to the hæmorrhoids, however, the author is of opinion, that they are, for the moſt part, merely a topical affection. They take place before the period of life at which a venous plethora happens. They happen to females, in whom a venous plethora determined to the hæmorrhoidal veſſels cannot be ſuppoſed; and they happen to both ſexes, and to perſons of all all ages, from cauſes which do not affect the ſyſtem, and are manifeſtly ſuited to produce a topical affection only.

Theſe cauſes are, in the firſt place, the frequent voiding of hard and bulky fæces, which, by their long ſtagnation in the rectum, and eſpecially when voided, muſt neceſſarily preſs upon the veins of it, and interrupt the courſe of the blood in them. For this reaſon the diſeaſe ſo frequently happens to thoſe who are habitually coſtive. From the ſame cauſes, the diſeaſe happens frequently to thoſe who are ſubject to a prolapſus ani. In voiding the fæces, it almoſt always happens that the internal coat of the rectum is more or leſs protruded; and, during this protruſion, it ſometimes happens that the ſphincter ani is contracted: in conſequence of this, a ſtrong conſtriction is made, which preventing the fallen-out gut from being replaced, and at the ſame time preventing the return of blood from it, occaſions a conſiderable ſwelling, and the formation of a tumid ring round the anus.

Upon the ſphincter's being a little relaxed, as it is immediately after its ſtrong contraction, the portion of the gut which had fallen out is commonly taken into the body again; but by the frequent repetition of the accident, the ſize and fulneſs of the ring formed by the prolapſed inteſtine is much increaſed. It is therefore more ſlowly and difficultly replaced; and in this conſiſts the chief uneaſineſs of hæmorrhoidal perſons. As the internal edge of this ring is neceſſarily divided by clefts, the whole often puts on the appearance of a number of diſtinct ſwellings; and it alſo frequently happens, that ſome portions of it are more conſiderably ſwelled, become more protuberant, and form thoſe ſmall tumours more ſtrictly called *hæmorrhoids* or *piles*.

From conſidering that the preſſure of the fæces, and other cauſes interrupting the return of venous blood from the lower extremity of the rectum, may operate a good deal higher up than that extremity, we may underſtand how tumours may be formed within the anus; and probably it alſo happens, that ſome of the tumours formed without the anus may continue when taken within the body, and even be increaſed by the cauſes juſt mentioned. Thus may the production of internal piles be explained, which, on account of their ſituation and bulk, are not protruded on the perſon's going to ſtool, and are therefore more painful.

The production of piles is particularly illuſtrated by this, that pregnant women are frequently affected with the diſeaſe.—This is to be accounted for, partly by the preſſure of the uterus upon the rectum, and partly by the coſtive habit to which pregnant women are liable. Dr Cullen hath known many inſtances of piles happening for the firſt time during the ſtate of pregnancy; and there are few women who have born children, that are afterwards entirely free from piles. —Purgatives alſo, eſpecially thoſe of the more acrid kind, and particularly aloetics, are apt to produce the piles, when frequently uſed; and as they ſtimulate particularly the great guts, they may be juſtly reckoned among the exciting cauſes of this diſeaſe.

Prognoſis. Though the hæmorrhoids are commonly, as we have ſaid, to be eſteemed a topical diſeaſe, they may, by frequent repetition, become habitual and connected with the whole ſyſtem; and this will more readily happen in perſons who have been once affected with the diſeaſe, if they are frequently expoſed to a renewal of the cauſes which occaſioned it. It happens alſo to perſons much expoſed to a congeſtion in the hæmorrhoidal veſſels, in conſequence of their being often in an erect poſition of the body, and in an exerciſe which puſhes the blood into the depending veſſels, while at the ſame time the effects of theſe circumſtances are much favoured by the abundance and laxity of the cellular texture about the anus. It is to be particularly obſerved, that when the hæmorrhoidal diſeaſe has either been originally or has become a ſyſtematic affection, it then acquires a particular connection with the ſtomach; ſo that certain affections of the ſtomach excite the hæmorrhoidal diſeaſe, and certain ſtates of this diſeaſe excite the diſorders of the ſtomach.

It hath been an almoſt univerſally received opinion, that the hæmorrhoidal flux is a ſalutary evacuation, which prevents many diſeaſes that would otherwiſe have happened; and that it even contributes to give long life: and as this opinion hath been ſtrenuouſly adopted by Dr Stahl, it hath had a very conſiderable influence on the practice of phyſic in Germany. But Dr Cullen maintains that we can never expect to reap much benefit from this flux, which at firſt is purely topical; and, granting that it ſhould become habitual, it is never proper to be encouraged. It is a naſty, diſagreeable diſeaſe; ready to go to exceſs, and thereby to prove hurtful, and ſometimes even fatal. At beſt it is liable to accidents, and thus to unhappy conſequences. He is therefore of opinion, that even the firſt approaches of the diſeaſe are to be guarded againſt; and that, though it ſhould have proceeded for ſome time, it ought always to be moderated, and the neceſſity of it ſuperſeded.

Cure. When any evident cauſe for this diſeaſe is perceived, we ought immediately to attempt a removal of that cauſe. One of the moſt frequent remote cauſes is an habitual coſtiveneſs; which muſt be obviated by a proper diet, as the perſon's own experience will beſt direct; or if the management of diet be not effectual, the belly muſt be kept open by medicines, which may prove gently laxative, without irritating the rectum. In moſt caſes it will be of advantage to acquire a habit with regard to time, and to obſerve it exactly. Another cauſe of the hæmorrhois to be eſpecially attended to is the prolapſus ani, which is apt to happen on a perſon's having a ſtool. If this ſhall occur to any conſiderable degree, and be not at the ſame time eaſily and immediately replaced, it moſt certainly produces piles, or increaſes them when otherwiſe produced. Perſons therefore who are liable to this prolapſus, ſhould, after having been at ſtool, take great pains to have the gut immediately replaced, by lying down in an horizontal poſture, and preſſing gently upon the anus, till the reduction ſhall be completely obtained. When this prolapſus is occaſioned only by the voiding of hard and bulky fæces, it is to be removed by obviating the coſtiveneſs which occaſions it. But in ſome perſons it is owing to a laxity of the rectum; and in thoſe it is often moſt conſiderable on occaſion of a looſe ſtool. In theſe caſes, it is to be treated by aſtringents, and proper artifices to keep the gut in its place.

When the diſeaſe has frequently recurred from neglect, and is thus in ſome meaſure eſtabliſhed, the methods above-mentioned are no leſs proper; but in this caſe ſome other meaſures muſt alſo be uſed. It is eſpecially proper to guard againſt a plethoric ſtate of the body; and therefore to avoid a ſendentary life, full diet, and intemperance in the uſe of ſtrong liquor, which in all caſes of hæmorrhagy is of the moſt pernicious conſequence.

Exerciſe of all kinds is of great ſervice in obviating and removing a plethoric ſtate of the body; but upon occaſion of the hæmorrhoidal flux, when this is immediately to come on, both walking and riding, as increaſing the determination of the blood into the hæmorrhoidal veſſels, are to be avoided. At other times, when no ſuch determination is already formed, theſe modes of exerciſe may be very properly employed.

Another method of removing plethora is by cold bathing; but this muſt be employed with caution. When the hæmorrhoidal flux is approaching, it may be dangerous to divert it; but during the intervals of the diſeaſe, cold bathing may be employed with ſafety and advantage; and in thoſe who are liable to a prolapſus ani, the frequent waſhing of the anus with cold water may be uſeful.

When the flux has actually come on, we are to moderate it as much as poſſible, by cauſing the patient lie in a horizontal poſture on a hard bed; by avoiding exerciſe in an erect poſture, uſing a cool diet, and avoiding external heat. But with reſpect to the further cure of this diſeaſe, we muſt obſerve, that there are only two caſes in which it is common for hæmorrhoidal perſons to call for medical aſſiſtance. The one is, when the affection is accompanied with much pain; and the other, when the piles are accompanied with exceſſive bleeding. In the firſt caſe, we muſt conſider whether the piles are external or internal. The pain of the external piles happens eſpecially when a conſiderable protruſion of the rectum has happened; and while it remains unreduced, it is ſtrangled by the conſtriction of the ſphincter; and at the ſame time no bleeding happens to take off the ſwelling of the protruded portion of the inteſtine; and ſometimes an inflammation ſupervenes, which greatly aggravates the pain. In this caſe, emollient fomentations and poultices are ſometimes of ſervice, but the application of leeches is generally to be preferred.

In caſe of exceſſive bleeding, we are on all occaſions to endeavour to moderate the flux, even where the diſeaſe has occurred as a critical diſcharge; for if the primary diſeaſe ſhall be entirely and radically cured, the preventing any return of the hæmorrhois ſeems entirely ſafe and proper. It is only when the diſeaſe ariſes from a plethoric habit, and from a ſtagnation of blood in the hypochondriac region, or when, though originally topical, it hath by frequent repetition become habitual, and has thereby acquired a connection with the ſyſtem, that any doubt can ariſe about curing it entirely. In any of theſe caſes, however, Dr Cullen is of opinion that it will be proper to moderate the bleeding, leſt, by its continuance or repetition, the plethoric ſtate of the body, and the particular determination of the blood into the hæmorrhoidal veſſels, be increaſed, and the return of the diſeaſe be too much favoured. Dr Stahl is of opinion, that the hæmorrhoidal flux is never to be accounted exceſſive excepting when it occaſions great debility or leucophlegmatia: but Dr Cullen is of opinion, that the ſmalleſt approach towards producing either of theſe effects ſhould be conſidered as an exceſs which ought to be prevented from going farther; and even in the caſes of congeſtion and plethora, if the plethoric habit and tendency can be obviated and removed, the hæmorrhoidal flux may then with ſafety be entirely ſuppreſſed. In all caſes therefore of exceſſive bleeding, or any approach to it, aſtringents both internal and external may be ſafely and properly applied; not indeed to induce an immediate and total ſuppreſſion; but to moderate the hæmorrhage, and by degrees to ſuppreſs it altogether; while at the ſame time meaſures are taken for the removing the neceſſity of its recurrence. In caſe of a connection between the hæmorrhoidal affection and the ſtate of the ſtomach, the ſame method is to be uſed in the atonic gout.

GENUS XLI. MENORRHAGIA, or *Immoderate Flow* of the MENSES.

Menorrhagia, *Sauv.* 244. *Lin.* 202. *Vog.* 96.
Metrorrhagia, *Sag.* gen. 179.
Uteri hæmorrhagia. *Hoffm.* II. 224.
Hæmorrhagia uterina, *Junk.* 14.
Leucorrhœa, *Sauv.* gen. 267. *Lin.* 201. *Vog.* 119. *Sag.* gen. 202.
  Cachexia uterina, ſive fluor albus, *Hoffm.* III. 348.
  Fluor albus, *Junck.* 133.
Abortus, *Sauv.* gen. 245. *Lin.* 204, *Sag.* gen. 180. *Junck.* 92.
Abortio, *Vog.* 97.
  Fluor uterini ſanguinis, *Boerh.* 1303.
  Convulſio uteri, ſive abortus, *Hoffm.* III. 176.

XCII. The *Immoderate Flow* of the MENSES, properly ſo called. Sp. I. 359

Menorrhagia immodica, *Sauv.* ſp. 3.
Menorrhagia ſtillatitia, *Sauv.* ſp. 2.

Deſcription. The quantity of the menſtrual flux is different in different women, and likewiſe in the ſame woman at different times. An unuſual quantity therefore is not always to be conſidered as morbid: but when a larger flow of the menſes has been preceded by head-ach, giddineſs, or dyſpnœa; has been uſhered in by a cold ſtage, and is attended with much pain of the back and loins, with a frequent pulſe, heat and thirſt; it may then be conſidered as preternaturally large. On the other hand, when the face becomes pale, the pulſe weak, an unuſual debility is felt in exerciſe, and the brathing is hurried by little labour; when the back becomes pained from any continuance in an erect poſture, when the extremities become frequently cold, and when at night the feet appear affected with œdematous ſwelling; from all theſe ſymptoms we may conclude, that the flow of the menſes hath been immoderate, and has already induced a dangerous ſtate of debility.—The debility, induced in this caſe, often appears alſo by affections of the ſtomach, an anorexia, and other ſymptoms of dyſpepſia; by a palpitation of the heart, and frequent faintings; by a weakneſs of mind, liable to ſtrong emotions from ſlight cauſes, eſpecially thoſe preſented by ſurpriſe. A flow of the menſes attended with barrenneſs in married women, may generally be conſidered as preternatural and morbid. Generally, alſo, that flow of the menſes may be conſidered as immoderate, which is preceded and followed by a leucorrhœa.

Cauſes, &c. The proximate cauſe of the menorrhagia is either the effort of the uterine veſſels preternaturally increaſed, or a preternatural laxity of the extremities of the uterine arteries.—The remote cauſes may be, 1. Thoſe which increaſe the plethoric ſtate of the uterine veſſels; as a full and nouriſhing diet, much ſtrong liquor, and frequent intoxication. 2. Thoſe which determine the blood more copiouſly and forcibly into the uterine veſſels; as violent ſtrainings of the whole body; violent ſhocks from falls; ſtrokes or contuſions on the lower belly; violent exerciſe, particularly in dancing; and violent paſſions of the mind. 3. Thoſe which particularly irritate the veſſels of the uterus; as exceſs in venery; the exerciſe of venery in the time of menſtruation; a coſtive habit, giving occaſion to violent ſtraining at ſtool; and cold applied to the feet. 4. Thoſe which have forcibly overſtrained the extremities of the uterine veſſels; as frequent abortions, frequent child-bearing without nurſing, and difficult tedious labours. Or, laſtly, thoſe which induce a general laxity; as living much in warm chambers, and drinking much of warm enervating liquors, ſuch as tea, coffee, &c.

Cure. The treatment and cure of the menorrhagia, muſt be different, according to the different cauſes of the diſeaſe.

In all caſes, the firſt attention ought to be given to avoiding the remote cauſes, whenever that can be done; and by ſuch attention the diſeaſe may be often entirely cured. When the remote cauſes cannot be avoided, or when the avoiding them has been neglected, and a copious menſtruation has come on, it ſhould be moderated as much as poſſible, by abſtaining from all exerciſe at the coming on or during the continuance of the menſtruation; by avoiding even an erect poſture as much as poſſible; by ſhunning external heat, and therefore warm chambers and ſoft beds; by uſing a light and cool diet; by taking cold drink, at leaſt as far as former habits will allow; by avoiding venery; by obviating coſtiveneſs, or removing it by laxatives which give little ſtimulus. The ſex are commonly negligent, either in avoiding the remote cauſes, or in moderating the firſt beginnings of this diſeaſe. It is by ſuch neglect that it ſo frequently becomes violent and of difficult cure; and the frequent repetition of a copious menſtruation may be conſidered as a cauſe of great laxity in the extreme veſſels of the uterus.

When the coming on of the menſtruation has been preceded by ſome diſorder in other parts of the body, and is accompanied with pains of the back, ſomewhat like parturient pains, with febrile ſymptoms, and when at the ſame time the flow ſeems to be copious, a bleeding at the arm may be proper, but is not often neceſſary; and it will in moſt caſes be ſufficient to employ, with great attention and diligence, thoſe means already mentioned for moderating the diſcharge.

When the immoderate flow of the menſes ſhall ſeem to be owing to a laxity of the veſſels of the uterus, as may be concluded from the general debility and laxity of the perſon's habit; from the remote cauſes that have occaſioned the diſeaſe; from the abſence of the ſymptoms which denote increaſed action in the veſſels of the uterus; from the frequent recurrence of the diſeaſe; and particularly from this, that the perſon in the intervals of menſtruation is liable to a leucorrhœa: in ſuch a caſe, the diſeaſe is to be treated, not only by employing all the means abovementioned for moderating the hæmorrhagy, but alſo by avoiding all irritation, every irritation having the greater effect in proportion as the veſſels are more lax and yielding. If, in ſuch a caſe of laxity, it ſhall appear that ſome degree of irritation concurs, opiates may be employed to moderate the diſcharge; but in uſing theſe much caution is requiſite. If, notwithſtanding theſe meaſures having been taken, the diſcharge ſhall prove very large, aſtringents, both external and internal, may be employed. In ſuch caſes, Dr Cullen aſks, May ſmall doſes of emetics be of ſervice?

When the menorrhagia depends on the laxity of the uterine veſſels, it will be proper, in the intervals of menſtruation, to employ tonic remedies; as cold bathing, and chalybeates. The exerciſes of geſtation alſo may be very uſeful, both for ſtrengthening the whole ſyſtem, and for taking off the determination of the blood to the internal parts.

Theſe remedies may be employed in all caſes of menorrhagia, from whatever cauſe it may have proceeded, if it ſhall have already induced a conſiderable degree of debility in the body.

XCIII. Abortion. Sp. II. 361

Menorrhagia gravidarum, *Sauv.* ſp. 6.

Abortus effluxio, *Sauv.* ſp. 1.
  a. Abortus ſubſtrimeſtris.
  b. Abortus ſobſemeſtris.
  c. Abortus octimeſtris.
Abortus ab uteri laxitate, *Sauv.* ſp. 2.

XCIV. *Immoderate Flux* of the Lochia. Sp. III. 362

Menorrhagia lochialis, *Sauv.* ſp. 8.

For the deſcription, treatment, and cure, of theſe two laſt diſeaſes, ſee the article Midwifery.

XCV. *Immoderate Flow* of the Menses from ſome Local Diſorder. Sp. IV. 363

Menorrhagia ex hyſteroptoſi, *Sauv.* ſp. 5.
Menorrhagia ulceroſa, *Sauv.* ſp. 9.

XCV. The *Leucorrhœa*, *Fluor Albus*, or *Whites*. Sp.V. and VI. 364

Leucorrhœa, G. *ut ſupra.*
Menorrhagia decolor, *Sauv.* ſp. 7.
Leucorrhœa Americana, *Sauv.* ſp. 5.
Leucorrhœa Indica, *Sauv.* ſp. 6.
Leucorrhœa Nabothi, *Sauv.* ſp. 9.
Leucorrhœa gravidarum, *Sauv.* ſp. 8.

Deſcription. The *fluor albus*, female weakneſs, or *whites*, as commonly called, is a diſeaſe of the womb and its contiguous parts; from which a pale coloured, greeniſh or yellow fluid is diſcharged, attended with loſs of ſtrength, pain in the loins, bad digeſtion, and a wan ſickly aſpect.*

Cauſes, &c. The quantity, colour, and conſiſtence of the diſcharge chiefly depend upon the time of its duration, the patient's habit of body, and the nature of the cauſe by which it was produced. Taking cold, ſtrong liquor, immoderate heat and moiſture, or violent exerciſe, are all obſerved to produce a bad effect, as to its quantity and quality.

Weakly women of lax ſolids, who have had many children, and long laboured under ill health, are of all others the moſt ſubject to this diſagreeable diſeaſe; from which they unfortunately ſuffer more ſevere penance than others, as the niceſt ſenſations are often connected with ſuch a delicacy of bodily frame as ſubjects them to it.

In Holland it is very frequent, and in a manner peculiar to the place, from the dampneſs of its ſituation; the ſurrounding air being ſo overcharged with moiſture as to relax the body, ſtop perſpiration, and throw it upon the bowels, or womb; producing in the firſt, a diarrhœa or flux; in the laſt, the *fluor albus* or female weakneſs.

The diſcharge proceeds from the veſſels ſubſervient to menſtruation; becauſe, in delicate habits, where thoſe veſſels are weak, and conſequently remain too long uncontracted, the *fluor albus* ſometimes immedifollows the menſes, and goes off by degrees as they gradually cloſe. It alſo comes from the mucous glands of the womb, as is particularly evident in very young females of eight and ten years old; in whom, though very rarely, it has been obſerved, and where it muſt then neceſſarily have eſcaped from thoſe parts; for the uterine veſſels are not ſufficiently enlarged for its paſſage at ſo early a period.

Sometimes, as in women with child, it proceeds from the paſſage to the womb, and not from the womb itſelf; which, during pregnancy, is cloſely ſealed up, ſo that nothing can paſs from thence till the time of labour. The application of thoſe inſtruments called *peſſaries*, from the pain and irritation they occaſion, are alſo apt to bring on this diſcharge. Hence we may conclude, that this diſeaſe may happen although the blood is in a pure ſtate. Here the fault ſeems to be placed in the veſſels or ſtrainers, by which the fluids are vitiated and changed from their natural qualities.

The *fluor albus* has been ſuppoſed to ſupply the want of the menſes; becauſe, where the firſt prevails, the laſt is generally either irregular, or totally wanting: but it might more properly be ſaid, that the preſence of the *fluor albus*, which is a preternatural evacuation, occaſions the abſence of that which is natural; as is evident from the return of the menſes after the *fluor albus* has been taken away. Indeed, when this diſcharge appears about the age of 13 or 14, and returns once a month, with ſymptoms like thoſe of the menſes, then it may be deemed ſtrictly natural, and therefore ought not to be ſtopped.

Prognoſis. The *fluor albus* may be diſtinguiſhed into two kinds. The firſt ariſes from a ſimple weakneſs, or the relaxation of the ſolids; which may either be *general*, where the whole bodily ſyſtem is enervated and unſtrung; or *partial*, where the womb only is thus affected, in conſequence of hard labour, frequent miſcarriages, a ſuppreſſion or immoderate quantity of the menſes, or a ſprain of the back or loins.

In the firſt caſe, the diſcharge being generally mild, may be ſafely taken away. In the ſecond, it may proceed from a vitiated, or impure blood, where the body, from thence, is loaded with groſs humours, which nature for her own ſecurity and relief thus endeavours to carry off. In ſuch caſes, the diſcharge is often of a reddiſh colour, like that from old ulcerous ſores; being ſometimes ſo ſharp as to excoriate the contiguous parts, and occaſion a ſmarting and heat of urine.

A deep-ſeated, darting pain, with a forcing down, attending ſuch a diſcharge, is a very dangerous and alarming ſign, and indicates an ulceration or cancerous ſtate of the womb. This malignant ſtate of the diſeaſe, if of long continuance, is extremely difficult of cure; and diſpoſes the patient to barrenneſs, a bearing down, the dropſy, or a conſumption.

Cure, &c. The cauſes of thoſe two kinds of this diſeaſe being different, ſo they will require a very different method of cure. To anſwer this intention; in the firſt caſe, nothing will be more proper than nouriſhing ſimple food, ſuch as veal broths, jellies, freſh eggs, and milk diet. The acid fruits will alſo be proper; and the patient may take a reſtorative, ſtrengthening infuſion, which will give firmneſs to the body, and aſſiſt the weakened fibres of the womb in returning to their natural ſtate.

The ſame method may be uſed with ſucceſs, where the *fluor albus* follows the menſes, as already obſerved.

The Tunbridge or Spa-waters may be drank at the ſame time; and if neceſſary, an infuſion of green tea, or pure ſmith's-forge-water, may be uſed with a womb-ſyringe as an injection twice a-day. Should the diſeaſe prove uncommonly obſtinate; the patient may go into the cold bath every other day; and alſo drink lime-water with milk, which will expedite the cure, and prevent a relapſe. A volatile liniment, and afterwards a ſtrengthening plaſter, may be applied to the ſmall of the back.

By way of caution, ſhe ſhould abſtain from the immoderate uſe of tea; and be removed into a dry clear air; or if ſhe is obliged to remain in one leſs proper, ſhe may apply the fleſh-bruſh, and wear a flannel ſhift next her ſkin, impregnated with the fumes of burning frankincenſe, or any of the grateful aromatic gums. Cold ſpring-water pumped on the loins, or a bliſtering plaſter applied to the bottom of the ſpine or back, are both very powerful in their effects, and have ſometimes ſucceeded after other remedies had been tried in vain.

In the ſecond ſort of the diſeaſe, where the diſcharge is ſharp and of long ſtanding, it would be extremely dangerous to ſuppreſs it ſuddenly, either by aſtringents internally taken, or applied as injections, until the blood is freed from its impurities by proper purgatives, and otherwiſe corrected by ſuch medicines as not only carry off the ſharp ſcorbutic ſalts and putrid juices, but alſo impart to it that ſoft balmy quality of which it had been deprived.

A purging potion may be taken twice a-week, and in the intervals an alterative pill night and morning. After this courſe has been continued a fortnight or three weeks, ſhe may begin with the ſtrengthening, bitter infuſion, or other tonic, in the quantity of a tea-cupful twice a-day, or more, as her ſtomach will allow.

The ſame ſort of food and regimen will here be proper as in the firſt kind of the diſeaſe. The patient ſhould abſtain from malt liquors, and drink rice-water, in each pint of which half an ounce of gum arabic has been diſſolved; or if ſhe is weak, and of a cold bloated habit of body, a little French brandy may be added occaſionally.

When ſhe begins to take the bitter infuſion, it will be proper to uſe the Tunbridge or Pyrmont water for common drink; but if thoſe cannot conveniently be had, the *artificial Spa water*, impregnated with iron and fixed air *, will make an excellent ſubſtitute. If it ſhould render her coſtive, and occaſion the headach; ſhe may deſiſt, and drink imperial water or a little ſenna-tea ſweetened with manna, till thoſe complaints are removed.

In ſhort, as this is a malady of the moſt diſagreeable kind, which, by long continuance or neglect, becomes difficult of cure, and often produces an *ulceration of the womb*, *bearing down*, *barrenneſs*, a *dropſy*, or *conſumption*; it were to be wiſhed, that women, on ſuch occaſions, would be more attentive to their own ſafety, by uſing all poſſible means, in due time, to prevent thoſe diſorders

Dr Leake ſays he has attended more patients labouring under the *fluor albus* in the autumn than at any other ſeaſon of the year, eſpecially when the weather was uncommonly moiſt and cold: moſt of them were cured by change of diet, an increaſed perſpiration, and the proper uſe of Peruvian bark with aromatics. He obſerved, that ſeveral about this time who eſcaped the diſorder, were viſited with bad colds, a defluxion of rheum on the throat, or a diarrhœa, which were removed by a ſimilar treatment.

As women are ſometimes connected with thoſe who do not conſcientiouſly regard their ſafety, it is a circumſtance of the utmoſt conſequence *to diſtinguiſh a freſh venereal infection from the fluor albus or whites*: for, if the firſt is miſtaken for the laſt, and is either neglected or treated accordingly, the diſorder may unfortunately end in a confirmed *lues* or pox.

The following ſigns will beſt inform the patient whether there is occaſion for her doubts or not.

A freſh infection, called *gonorrhœa*, is malignant and inflammatory; the *fluor albus* moſt commonly ariſes from relaxation and bodily weakneſs: and therefore, the remedies proper in the firſt diſorder would render the laſt more violent, by locking up and confining the infectious matter.

In the gonorrhœa, the diſcharge chiefly proceeds from the parts contiguous to the urinary paſſage, and continues whilſt the menſes flow; but in the *fluor albus*, it is ſupplied from the cavity of the womb and its paſſage, and then the menſes are ſeldom regular.

In the gonorrhœa, an itching, inflammation, and heat of urine, are the fore-runners of the diſcharge; the orifice of the urinary paſſage is prominent and painful, and the patient is affected with a frequent irritation to make water. In the *fluor albus*, pains in the loins, and loſs of ſtrength, attend the diſcharge; and if any inflammation or heat of urine follow, they happen in a leſs degree, and only after a long continuance of the diſcharge, which, becoming ſharp and acrimonious, excoriates the ſurrounding parts.

In the gonorrhœa, the diſcharge ſuddenly appears without any evident cauſe; but in the *fluor albus*, it comes on more ſlowly, and is often produced by irregularities of the menſes, frequent abortion, ſprains, or long-continued illneſs.

In the gonorrhœa, the diſcharge is greeniſh or yellow, leſs in quantity, *and not attended with the ſame ſymptoms of weakneſs*. In the *fluor albus*, it is alſo often of the ſame colour, eſpecially in bad habits of body, and after long continuance; but is uſually more offenſive, and redundant in quantity.

All the other kinds of hæmorrhage enumerated by medical writers, are by Dr Cullen reckoned to be ſymptomatic; as,

Stomacace, *Sauv.* gen. 241. *Lin.* 175. *Vog.* 85. *Sag.* gen. 176.

Species: Scorbutica, Purulenta, &c.

Hæmatemesis, *Sauv.* gen. 242. *Lin.* 184. *Vog.* 89. gen. 177.

Species: Plethorica, Catamenialis, Scorbutica, &c.

Hæmaturia, *Sauv.* gen. 233. *Lin.* 198. *Vog.* 92. *Sag.* gen. 178.

Species: Purulenta, Calculoſa, Hæmorrhoidalis, &c.

Order V. PROFLUVIA.

Genus XLII. The CATARRH.

Catarrhus, *Sauv.* gen. 186. *Vog.* 98. *Sag.* gen. 145.
Coryza, *Lin.* 174. *Vog.* 100. *Sag.* gen. 196.
Rheuma, *Sauv.* gen. 142.
Tuſſis, *Sauv.* gen. 142. *Lin.* 155. *Vog.* 205. *Sag.* gen. 245. 255. *Junck.* 30.
Tuſſis catarrhalis et rheumatica, *Hoffm.* III. 109.

XCVII. *Catarrh* from Cold. Sp. I. 365

Catarrhus benignus, *Sauv.* ſp. 1.
Catarrhus pectoreus, *Sauv.* ſp. 6.
Coryza catarrhalis, *Sauv.* ſp. 1.
Coryza phlegmatorrhagia, *Sauv.* ſp. 2. *Salmuth.* Obſ. cent. 1. 37. *Junck.* 28. *Morgagn.* de ſed. xiv. 21.
Coryza febricoſa, *Sauv.* ſp. 6.
Tuſſis catarrhalis, *Sauv.* ſp. 1. *N. Roſen* Diſſ. apud *Haller*, Diſput. Pract. tom. II.
Rheuma catarrhale, *Sauv.* ſp. 1.
Amphimerina catarrhalis, *Sauv.* ſp. 2.
Amphimerina tuſſiculoſa, *Sauv.* ſp. 13.
Cephalalgia catarrhalis, *Sauv.* ſp. 10.

Catarrh from Contagion. Sp. II. 366

Catarrhus epidemicus, *Sauv.* ſp. 3.
Rheuma epidemicum, *Sauv.* ſp. 2.
Synocha catarrhalis, *Sauv.* ſp. 5.

There are ſeveral ſymptomatic ſpecies: as, Catarrhus Rubeoloſus; Tuſſis Varioloſa, Verminoſa, Calculoſa, Phthiſica, Hyſterica, a Dentitione, Gravidarum, Metallicorum, &c.

Deſcription. The catarrh is an increaſed excretion of mucus from the mucous membrane of the noſe, fauces, and bronchiæ, attended with pyrexia.

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* See Air, n° 52.

Practical writers and noſologiſts have diſtinguiſhed the diſeaſe by different appellations, according as it happens to affect thoſe different parts of the mucous membrane, the one part more or leſs than the other: but Dr Cullen is of opinion that the diſeaſe in thoſe different parts is always of the ſame nature, and proceeds from the ſame cauſe in the one as in the other. Very commonly indeed thoſe different parts are affected at the ſame time; and therefore there is little room for the diſtinction mentioned. The diſeaſe has been frequently treated of under the title of *tuſſis*, or *cough*; and a cough, indeed, always attends the chief form of catarrh, that is, the increaſed excretion from the bronchiæ; but it is ſo often alſo a ſymptom of many other affections, which are very different from one another, that it is improperly uſed as a generic title.

The diſeaſe generally begins with ſome difficulty of breathing through the noſe, and with a ſenſe of ſome fulneſs ſtopping up that paſſage. This again is often attended with ſome dull pain and a ſenſe of weight in the forehead, as well as a ſtiffneſs in the motion of the eyes. Theſe feelings, ſometimes at their very firſt beginning, and always ſoon after, are attended with the diſtillation of a thin fluid from the noſe, and ſometimes from the eyes; and theſe fluids are often found to be ſomewhat acrid, both by their taſte and by their fretting the parts over which they paſs. Theſe ſymptoms conſtitute the coryza and gravedo of authors, and are commonly attended with a ſenſe of laſſitude over the whole body. Sometimes cold ſhiverings are felt; at leaſt the body is more ſenſible than uſual to the coldneſs of the air; and with all this the pulſe is more frequent than ordinary, eſpecially in the evenings.

Theſe ſymptoms have ſeldom continued long before they are accompanied with ſome hoarſeneſs, and a ſenſe of roughneſs and ſoreneſs in the trachea, with ſome difficulty of breathing, expreſſed by a ſenſe of ſtraitneſs in the cheſt, and with a cough which ſeems to ariſe from ſome irritation felt at the glottis. This cough is generally at firſt dry and painful, occaſioning pains about the cheſt, and more eſpecially in the breaſt; ſometimes, together with theſe ſymptoms, pains reſembling thoſe of the rheumatiſm are felt in ſeveral parts of the body, particularly about the neck and head. With all theſe ſymptoms, the appetite is impaired, ſome thirſt ariſes, and a feveriſh laſſitude is felt all over the body. Theſe ſymptome mark the height and violence of the diſeaſe; but commonly it does not continue long. By degrees the cough becomes attended with a more copious excretion of mucus; which is at firſt thin, but gradually becoming thicker, is brought up with leſs frequent and leſs laborious coughing. The hoarſeneſs and ſoreneſs of the trachea are alſo relieved or removed; and the febrile ſymptoms abating, the expectoration becomes again leſs, and the cough leſs frequent, till at length they ceaſe altogether.

Such is generally the courſe of this diſeaſe, neither tedious nor dangerous; but it is ſometimes in both reſpects otherwiſe. The body affected with catarrh ſeems to be more than uſually liable to be affected by cold air; and if the body affected with catarrh be expoſed to cold, the diſeaſe, which ſeemed to be yielding, is often brought back with greater violence than before, and is rendered not only more tedious than otherwiſe it would be, but alſo more dangerous by the ſupervening of other diſeaſes. Some degree of the cynanche tonſillaris often accompanies the catarrh; and when this is aggravated by a freſh application of cold, the cynanche alſo becomes more violent and dangerous from the cough, which is preſent at the ſame time. When a catarrh has been occaſioned by a violent cauſe, when it has been aggravated by improper management, and eſpecially when it has been rendered more violent by freſh and repeated applications of cold, it often paſſes into a pneumonic inflammation, attended with the utmoſt danger.

Unleſs, however, ſuch accidents as thoſe happen, a catarrh, in ſound perſons not far advanced in life, is always a ſlight and ſafe diſeaſe: but, in perſons of a phthiſical diſpoſition, a catarrh may readily produce a hemoptyſis, or perhaps form tubercles in the lungs; and, more certainly in perſons who have tubercles already formed in the lungs, an accidental catarrh may occaſion the inflammation of theſe tubercles, and in conſequence produce a phthiſis pulmonalis.

In elderly perſons, a catarrh ſometimes proves a dangerous diſeaſe. Many perſons, as they advance in life, and eſpecially after they have arrived at old age, have the natural mucus of the lungs poured out in greater quantity, and requiring a frequent expectoration. If, therefore, a catarrh happen to ſuch perſons, and increaſe the afflux of fluids to the lungs, with ſome degree of inflammation, it may produce the peripneumonia notha, which in ſuch caſes is very often fatal.

Cauſes, &c. The proximate cauſe of catarrh ſeems to be an increaſed afflux of fluids to the mucous membrane of the noſe, fauces, and bronchiæ, along with ſome degree of inflammation affecting the ſame. The latter circumſtance is confirmed by this, that, in the caſe of catarrh, the blood drawn from a vein commonly exhibits the ſame inflammatory cruſt which appears in the caſe of phlegmaſiæ. The remote cauſe of catarrh is moſt commonly cold applied to the body. This application of cold producing catarrh is generally evident and obſerved; and Dr Cullen is of opinion that it would always be ſo, were men acquainted with and attentive to the circumſtances which determine cold to act upon the body.

The application of cold which occaſions a catarrh, probably operates by ſtopping the perſpiration uſually made by the ſkin, and which is therefore determined to the mucous membrane of the parts above-mentioned. As a part of the weight which the body daily loſes by inſenſible evacuation, is owing to an exhalation from the lungs, there is probably a connection between this exhalation and the cutaneous reſpiration, ſo that the one may be increaſed according as the other is diminiſhed; and therefore we may underſtand how the diminution of cutaneous perſpiration, by the application of cold, may increaſe the afflux of fluids to the lungs, and thereby produce a catarrh.

Dr Cullen obſerves that there are ſome obſervations of Dr James Keil which may render this matter doubtful; but ſays there is a fallacy in thoſe obſervations. The evident effects of cold in producing coryza, leave the matter, in general, without doubt; and there are ſeveral other obſervations which ſhew a connection between the lungs and the ſurface of the body.

Whether from the ſuppreſſion of perſpiration, a catarrh be produced merely by an increaſed afflux of fluids, or whether further the matter of perſpiration be at the ſame time determined to the mucous glands, and there excites a particular irritation, may be uncertain; but our author thinks the latter ſuppoſition is moſt probable.

Although, in the caſe of a common catarrh, which is in many inſtances ſporadic, it may be doubtful whether any morbific matter be applied to the mucous glands; we are, however, certain that the ſymptoms of a catarrh do frequently depend upon ſuch a matter being applied to theſe glands, as appears from the caſe of meaſles, chincough, and eſpecially from the frequent occurrence of contagious and epidemical catarrh.

The phenomena of contagious catarrhs have been much the ſame with thoſe of the others; and the diſeaſe has always been particularly remarkable for this, that it has been the moſt widely and generally ſpreading epidemic known. It has ſeldom appeared in any one country of Europe, without appearing ſucceſſively in every different part of it; and, in ſome inſtances, it has been alſo transferred to America, and has been ſpread there in like manner, ſo far as we have had opportunities of being informed.

The catarrh from contagion appears with nearly the ſame ſymptoms as thoſe above-mentioned. It ſeems often to come on in conſequence of the application of cold. It comes one with more cold ſhivering than the catarrh ariſing from cold alone; and the former does alſo not only ſooner ſhew febrile ſymptoms, but to a more conſiderable degree. Accordingly, it more ſpeedily runs its courſe, which is commonly finiſhed in a few days. It ſometimes ends by a ſpontaneous ſweat; and this, in ſome perſons, produces a miliary eruption. It is, however, the febrile ſtate of this diſeaſe eſpecially, that is finiſhed in a few days; for the cough and other catarrhal ſymptoms do frequently continue longer, and often when they appear to be going off they are renewed by any freſh application of cold.

Prognoſis. Conſidering the number of perſons who are affected with catarrh, of either the one ſpecies or the other, and eſcape from it quickly without any hurt, it may be allowed to be a diſeaſe very free from danger; but it is not always to be treated as ſuch, for in ſome perſons it is accompanied with pneumonic inflammation. In the pthiſically diſpoſed, it often accelerates the coming on of phthiſis; and in elderly perſons it often proves fatal in the manner we have explained above.

Cure. The cure of catarrh is nearly the ſame, whether it proceeds from cold or contagion; only in the latter caſe remedies are commonly more neceſſary than in the former. In the caſes of a moderate diſeaſe, it is commonly ſufficient to avoid cold, or to abſtain from animal-food for ſome days, or perhaps for the ſame time to lie a-bed, and, by taking frequently ſome mild and diluent drink, a little warmed, to promote a very gentle ſweat, and after this to take care to return very gradually only to the uſe of the free air. When the diſeaſe is more violent, not only the antiphlogiſtic regimen, exactly obſerved, but various remedies alſo, become neceſſary. To take off the phlogiſtic diatheſis, which always attends this diſeaſe, blood-letting, more or leſs, according as the ſymptoms ſhall require, is the proper remedy. After blood-letting for reſtoring the determination of the fluids to the ſurface of the body, and at the ſame time for expediting the ſecretion of mucus in the lungs, which may take off the inflammation of its membrane, vomiting is the moſt effectual means. For the laſt-mentioned purpoſe, it has been ſuppoſed that ſquills, gum-ammoniac, the volatile alkali, and ſome other medicines, might be uſeful; but their efficacy has never been found conſiderable: and if ſquills have ever been very uſeful, it ſeems to have been rather by their emetic than by their expectorant powers. When the inflammatory affections of the lungs ſeem to be conſiderable, it is proper, beſides blood-letting, to apply bliſters to the back or ſides.

As a cough is often the moſt troubleſome circumſtance of this diſeaſe, ſo demulcents may be employed to alleviate it. But after the inflammatory ſymptoms are much abated, if the cough ſtill remains, opiates afford the moſt effectual means of relieving it; and, in the circumſtances juſt now mentioned, they may be very ſafely employed. After the inflammatory and febrile ſtates of this diſeaſe are very much gone, the moſt effectual means of diſcuſſing all remains of the catarrhal affection, is by ſome exerciſe of geſtation diligently employed.

Beſides the remedies above-mentioned, Mr Mudge, in a treatiſe on this diſeaſe, recommends the ſteam of warm water as a moſt efficacious and ſafe remedy for a catarrh, and which indeed he ſeems to conſider as little leſs than *infallible.* The method of breathing in theſe ſteams is deſcribed under the word INHALER; but he gives a caution to people in health, who may accidentally ſee his machine, not to make the experiment of breathing through cold water with it, or they will be almoſt certain of catching a ſevere cold with it. His directions for thoſe troubled with the catarrh are as follow:

“ In the evening, a little before bed-time, the patient, if of adult age, is to take three drachms, or as many tea-ſpoonfuls, of elixir paregoricum, in a glaſs of water: if the ſubject is younger, for inſtance, under five years old, one tea-ſpoonful; or within that and ten years, two. [Each tea-ſpoonful contains ſomewhat leſs than one quarter of a grain of opium.] About three quarters of an hour after, the patient ſhould go to bed, and, being covered warm, the inhaler three parts filled with water nearly boiling, (which, from the coldneſs of the metal, and the time it ordinarily takes before it is uſed by the patient, will be of a proper degree of warmth,) and being wrapped up in a napkin, but ſo that the valve in the cover is not obſtructed by it, is to be placed at the arm-pit, and the bed clothes being drawn up and over it cloſe to the throat, the tube is to be applied to the mouth, and the patient ſhould inſpire and expire through it about twenty minutes or half an hour.

“ It is very evident, as the whole act of reſpiration is performed through the machine, that in inſpiration the lungs will be filled with air which will be hot, and loaded with vapour, by paſſing through the body of water; and in exſpiration, all that was contained in the lungs will, by mixing with the ſteam on the ſurface of the water, be forced thro' the valve in the cover, and ſettle on the ſurface of the body under the bed cloaths.

“ The great uſe of this particular conſtruction of the inhaler is this. Firſt, as there is no neceſſity, at the end of every inſpiration, to remove the tube from the mouth, in order to exſpire from the lungs the vapour which had been received into them, this machine may therefore be uſed with as much eaſe by children as older people. And, ſecondly, as a feveriſh habit frequently accompanies the diſorder, the valve in that reſpect alſo is of the utmoſt importance: for a ſweat, or at leaſt a free perſpiration, not only relieves the patient from the reſtleſs anxiety of a hot, dry, and ſometimes parched ſkin, but is alſo, of all others, the moſt eligible evacuation for removing the fever; and it will be generally found, that, after the inhaler ſo conſtructed hath been uſed a few minutes, the warm vapour under the cloaths will, by ſettling upon the trunk, produce a ſweat, which will gradually extend itſelf to the legs and feet.

“ In a catarrhous fever, or any feveriſh habit attending this cough, it would be proper to take a draught of warm thin whey a few minutes before the inhaler is uſed; and after the proceſs is over, the ſweat which it has produced may be continued by occaſional ſmall draughts of weak warm whey or barley-water. The ſweating is by no means ſo neceſſary to the cure of the catarrhous cough, as that the ſucceſs of the inhaler againſt that complaint at all depends upon it; yet I cannot help once more remarking, that when this diſorder happens to be accompanied with a feveriſh habit, the advantages of this particular conſtruction will be very important.

“ After this reſpiratory proceſs is over, the patient uſually paſſes the night without the leaſt interruption from the cough, and feels no farther moleſtation from it than once or twice in the morning to throw off the trifling leakage which, unperceived, had dripped into the bronchiæ and veſicles during the night; the thinner parts of which being evaporated, what remains is ſoon got rid of with a very gentle effort.

“ I cannot, however, take leave of this part of my ſubject, without pointedly obſerving, that if the patient means not to be diſappointed by my aſſurances or his own expectations, it is eſſentially neceſſary that the following remarks, with regard to the time and manner of uſing this proceſs, ſhould be ſtrictly attended to.

“ Firſt, That as tender valetudinary people are but too well acquainted with the firſt notices of the diſorder, the remedy muſt, or ought to be, uſed the ſame evening; which will, in an ordinary ſeizure, be attended with an immediate cure: but if the ſoreneſs of the reſpiratory organs, or the petulance of the cough, ſhew the cold which has been contracted to have been very ſevere, the inhaler, without the opiate, ſhould be again repeated for the ſame time the next morning.

“ Secondly, if the uſe of the inhaler, &c. is delayed till the ſecond night, it will be always right to repeat it again the next morning without the opiate, but with it if the ſeizure has been violent.

“ And, laſtly, if the cough is of ſome days ſtanding, it will be always neceſſary to employ both parts of the proceſs at night and the ſucceeding morning, as the firſt ſimple inflammatory miſchief is now moſt probably aggravated by an additional one of a chronic tendency.

“ But if, through the want of a timely application, or a total neglect of this or any other remedy, the cough ſhould continue to harraſs the patient, it is, particularly in delicate and tender conſtitutions, of the utmoſt conſequence to attempt the removal of it as ſoon as poſſible, before any floating acrimony in the conſtitution (from the perpetual irritation) receives an habitual determination to an organ ſo eſſential to life as the lungs.

“ If the patient expectorates with eaſe and freedom a thick and well-digeſted inoffenſive phlegm, there is generally but little doubt of his ſpitting off the diſorder, with common care, in a few days; and till that is accompliſhed, a proper doſe of elixir paregoricum for a few ſucceſſive nights will be found very uſeful in ſuppreſſing the fatiguing irritation and ineffectual cough, occaſioned by a matter which, dripping in the early ſtate of the diſeaſe into the bronchiæ during the night, is commonly at that time too thin to be diſcharged by thoſe convulſive efforts.

“ If, however, notwithſtanding a free and copious expectoration, the cough ſhould ſtill continue, and the diſcharge, inſtead of removing the complaint, ſhould itſelf, by becoming a diſeaſe, be a greater expence than the conſtitution can well ſupport, it is poſſible that a tender patient may ſpit off his life through a weak relaxed pair of lungs, without the leaſt appearance of purulence, or any ſuſpicion of ſuppuration. In thoſe circumſtances, beſides, as was mentioned before, increaſing the general perſpiration by the ſalutary friction of a flannel waiſtcoat, change of ſituation, and more eſpecially long journeys on horſeback, conducted as much as poſſible through a thin, ſharp, dry air, will ſeldom fail of removing the complaint.

“ But, on the contrary, if the cough ſhould, at the ſame time that it is petulant and fatiguing to the breaſt, continue dry, huſky, and without expectoration; provided there is reaſon to hope that no tubercles are forming, or yet actually formed, there is not perhaps a more efficacious remedy for it than half a drachm of gum ammoniacum, with 18 or 20 drops of laudanum, made into pills, and taken at bed-time, and occaſionally repeated. This excellent remedy Sir John Pringle did me the honour to communicate to me; and I have accordingly found it, in a great many inſtances, amazingly ſucceſsful, and generally very expeditiouſly ſo; for it ſeldom fails to produce an expectoration, and to abate the diſtreſſing fatigue of the cough. In thoſe circumſtances I have likewiſe found the common remedy of ʒſs or ℈ij of *balſ. ſulph. aniſat.* taken twice a-day, in a little powdered ſugar or any other vehicle, a very efficacious one. I have alſo, many times, known a ſalutary revulſion made from the lungs by the ſimple application of a large plaſter, about five or ſix inches diameter, of *pix Burgund.* between the ſhoulders; for the perſpirable matter, which is locked up under it, becomes ſo ſharp and acrid, that in a few days it ſeldom fails to produce a very conſiderable itching, ſome little tendency to inflammation, and very frequently a great number of boils. This application ſhould be continued (the plaſter being occaſionally changed), for three weeks or a month, or longer, if the complaint is not ſo ſoon removed.

"And here I cannot help obſerving, that, though ſeemingly a trifling, it is however by no means a uſeleſs caution to the tender patient, not to expoſe his ſhoulders in bed, and during the night, to the cold; but when he lies down to take care they are kept warm, by drawing the bed-cloaths up cloſe to his back and neck.

"If, however, notwithſtanding theſe and other means, the cough, continuing dry or unattended with a proper expectoration, ſhould perſevere in harraſſing the patient; if, at laſt, it ſhould produce, together with a ſoreneſs, ſhooting pains through the breaſt and between the ſhoulders, attended alſo with ſhortneſs of the breath; and if, added to this, fluſhes of the cheeks after meals, ſcalding in the hands and feet, and other ſymptoms of a hectic, ſhould accompany the diſorder; there is certainly no time to be loſt, as there is the greateſt reaſon to apprehend that ſome acrimony in the habit is determined to the tender ſubſtance of the lungs, and that conſequently tubercular ſuppurations will follow. In this critical and dangerous ſituation, I think I can venture to ſay from long experience, that, accompanied with change of air and occaſional bleedings, the patient will find his greateſt ſecurity in a drain from a large ſcapulary iſſue, aſſiſted by a diet of aſſes milk and vegetables."

367 XCV. DYSENTERIA, the DYSENTERY. Genus XLIII.

Dyſenteria, *Sauv.* gen. 248. *Lin.* 191. *Vog.* 107. *Sag.* 183. *Hoffm.* III. 151. *Junck.* 76.

Deſcription. The dyſentery is a diſeaſe in which the patient has frequent ſtools, accompanied with much griping, and followed by a teneſmus. The ſtools, though frequent, are generally in ſmall quantity; and the matter voided is chiefly mucus, ſometimes mixed with blood. At the ſame time, the natural fæces ſeldom appear; and, when they do, it is generally in a compact and hardened form.—This diſeaſe occurs eſpecially in ſummer and autumn, at the ſame time with autumnal, intermittent, and remittent fevers; and with theſe it is often complicated. It comes on ſometimes with cold ſhiverings, and other ſymptoms of pyrexia; but more commonly the ſymptoms of the topical affection appear firſt. The belly is coſtive, with an unuſual flatulence in the bowels. Sometimes, though more rarely, ſome degree of diarrhœa is the firſt appearance. In moſt caſes, the diſeaſe begins with griping, and a frequent inclination to go to ſtool. In indulging this, little is voided, but ſome teneſmus attends it. By degrees the ſtools become more frequent, the griping more ſevere, and the teneſmus more conſiderable. With theſe ſymptoms there is a loſs of appetite, and frequently ſickneſs, nauſea, and vomiting, alſo affecting the patient. At the ſame time there is always more or leſs of pyrexia preſent. It is ſometimes of the remittent kind, and obſerves a tertian period. Sometimes the pyrexia is manifeſtly inflammatory, and very often of a putrid kind. Theſe febrile ſtates continue to accompany the diſeaſe during its whole courſe, eſpecially when it terminates ſoon in a fatal manner. In other caſes, the febrile ſtate almoſt entirely diſappears, while the proper dyſenteric ſymptoms remain for a long time after. —In the courſe of the diſeaſe, whether for a ſhorter or a longer time, the matter voided by ſtool is very various. Sometimes it is merely a mucous matter, without any blood, exhibiting that diſeaſe which is named by ſome the *morbus mucoſus*, and by others the *dyſenteria alba*. For the moſt part, however, the mucus diſcharged is more or leſs mixed with blood. This ſometimes appears only in ſtreaks amongſt the mucus; but at other times is more copious, tinging the whole; and upon ſome occaſions a pure and unmixed blood is voided in conſiderable quantity. In other reſpects, the matter voided is variouſly changed in colour and conſiſtence, and is commonly of a ſtrong and unuſually fetid odour. It is probable, that ſometimes a genuine pus is voided, and frequently a putrid ſanies, proceeding from gangrenous parts. There are very often mixed with the liquid matter, ſome films of a membranous appearance, and frequently ſome ſmall maſſes of a ſeemingly ſebaceous matter. While the ſtools voiding theſe various matters are, in many inſtances, exceedingly frequent, it is ſeldom that natural fæces appear in them; and when they do appear, it is, as we have ſaid, in the form of ſcybala, that is, in ſomewhat hardened, ſeparate balls. When theſe are voided, whether by the efforts of nature or as ſolicited by art, they procure a remiſſion of all the ſymptoms, and more eſpecially of the frequent ſtools, griping, and teneſmus.

Accompanied with theſe circumſtances, the diſeaſe proceeds for a longer or a ſhorter time. When the pyrexia attending it is of a violent inflammatory kind, and more eſpecially when it is of a very putrid nature, the diſeaſe often terminates fatally in a very few days, with all the marks of a ſupervening gangrene. When the febrile ſtate is more moderate, or diſappears altogether, the diſeaſe is often protracted for weeks, and even for months; but, even then, after a various duration, it often terminates fatally, and generally in conſequence of a return and conſiderable aggravation of the inflammatory and putrid ſtates. In ſome caſes, the diſeaſe ceaſes ſpontaneouſly; the frequency of ſtools, the griping, and teneſmus, gradually diminiſhing, while natural ſtools return. In other caſes, the diſeaſe, with moderate ſymptoms, continues long, and ends in a diarrhœa, ſometimes accompanied with lienteric ſymptoms.

Cauſes, &c. The remote cauſes of this diſeaſe have been variouſly judged of. It generally ariſes in ſummer or autumn, after conſiderable heats have prevailed for ſome time, and eſpecially after very warm and at the ſame time very dry ſtates of the weather; and the diſeaſe is much more frequent in warm, than in cooler climates. It happens, therefore, in the ſame circumſtances and ſeaſons which conſiderably affect the ſtate of the bile in the human body: but the cholera is often without any dyſenteric ſymptoms, and copious diſcharges of bile have been found to relieve the ſymptoms of dyſentery: ſo that it is difficult to determine what connection the diſeaſe has with the ſtate of the bile.

It has been obſerved, that the effluvia from very putrid animal-ſubſtances readily affect the alimentary canal, and, upon occaſion, they certainly produce a diarrhœa; but whether they ever produce a genuine dyſentery, is not certain.

The dyſentery does often manifeſtly ariſe from the application of cold, but the diſeaſe is always contagious; and, by the propagation of ſuch contagion, independent of cold, or other exciting cauſes, it becomes epidemic in camps and other places. It is, therefore, to be doubted if the application of cold ever produces the diſeaſe, unleſs where the ſpecific contagion has been previouſly received into the body: and, upon the whole, it is probable that a ſpecific contagion is to be conſidered as always the remote cauſe of this diſeaſe.

Whether this contagion, like many others, be of a permanent nature, and only ſhews its effects in certain circumſtances which render it active, or if it be occaſionally produced, we cannot determine. Neither, if the latter ſuppoſition be received, can we ſay by what means it may be generated. As little do we know any thing of its nature, conſidered in itſelf; or at moſt, only this, that, in common with many other contagions, it is very often ſomewhat of a putrid nature, and capable of inducing a putreſcent tendency in the human body. This, however, does not at all explain the peculiar effect of inducing thoſe ſymptoms which properly and eſſentially conſtitute the diſeaſe of dyſentery. Of theſe ſymptoms the proximate cauſe is ſtill obſcure. The common opinion has been, that the diſeaſe depends upon an acrid matter thrown upon or ſomehow generated in the inteſtines, exciting their periſtaltic motion, and thereby producing the frequent ſtools which occur in this diſeaſe. But this ſuppoſition cannot be admitted; for, in all the inſtances known, of acrid ſubſtances applied to the inteſtines, and producing frequent ſtools, they at the ſame time produce copious ſtools, as might be expected from acrid ſubſtances applied to any length of the inteſtines. This, however, is not the caſe in dyſentery, in which the ſtools, however frequent, are generally in very ſmall quantity, and ſuch as may be ſuppoſed to proceed from the lower parts of the rectum only. With reſpect to the ſuperior portions of the inteſtines, and particularly thoſe of the colon, it is probable they are under a preternatural and conſiderable degree of conſtriction: for, as we have ſaid above, the natural fæces are ſeldom voided; and when they are, it is in a form which gives reaſon to ſuppoſe they have been long retained in the cells of the colon, and conſequently that the colon had been affected with a preternatural conſtriction. This is confirmed by almoſt all the diſſections which have been made of the bodies of dyſenteric patients; in which, when gangrene had not entirely deſtroyed the texture and form of the parts, conſiderable portions of the great guts have been found affected with a very conſiderable conſtriction.

The proximate cauſe of dyſentery, or at leaſt the chief part of the proximate cauſe, ſeems to conſiſt in a preternatural conſtriction of the colon, occaſioning, at the ſame time, thoſe ſpaſmodic efforts which are felt in ſevere gripings, and which efforts, propagated downwards to the rectum, occaſion there the frequent mucous ſtools and teneſmus. But, whether this explanation ſhall be admitted or not, it will ſtill remain certain, that hardened fæces, retained in the colon, are the cauſe of the griping, frequent ſtools, and teneſmus: for the evacuation of theſe fæces, whether by nature or by art, gives relief from the ſymptoms mentioned; and it will be more fully and uſefully confirmed by this, that the moſt immediate and ſucceſsful cure of dyſentery is obtained by an early and conſtant attention to the preventing the conſtriction, and the frequent ſtagnation of fæces in the colon.

Cure. The moſt eminent of our late practioners, and of greateſt experience in this diſeaſe, ſeem to be of opinion, that it is to be cured moſt effectually by purging, aſſiduouſly employed. The means may be various: but the moſt gentle laxatives are uſually ſufficient; and, as the medicine muſt be frequently repeated, theſe are the moſt ſafe, the more eſpecially as an inflammatory ſtate ſo frequently accompanies the diſeaſe. Whatever laxatives produce an evacuation of natural faeces, and a conſequent remiſſion of the ſymptoms, will be ſufficient to effectuate the cure. But, if the gentle laxatives ſhall not produce the evacuation now mentioned, ſomewhat more powerful muſt be employed; and Dr Cullen hath found nothing more proper or convenient than tartar emetic, given in ſmall doſes, and at ſuch intervals as may determine their operation to be chiefly by ſtool. Rhubarb, ſo frequently employed, is, in ſeveral reſpects, amongſt the moſt unfit purgatives.

Vomiting has been held a principal remedy in this diſeaſe; and may be uſefully employed in the beginning of the diſeaſe, with a view to both the ſtate of the ſtomach and of the fever: but it is not neceſſary to repeat it often; and, unleſs the emetics employed operate alſo by ſtool, they are of little ſervice. Ipecacuanha is by no means a ſpecific; and it proves only uſeful when ſo managed as to operate chiefly by ſtool.

For relieving the conſtriction of the colon, and evacuating the retained faeces, glyſters may ſometimes be uſeful; but they are ſeldom ſo effectual as laxatives, given by the mouth; and acrid glyſters, if they be not effectual in evacuating the colon, may prove hurtful by ſtimulating the rectum too much.

The frequent and ſevere griping attending this diſeaſe, leads almoſt neceſſarily to the uſe of opiates; and they are very effectual for the purpoſe of relieving from the gripes: but, by occaſioning an interuption of the action of the ſmall guts, they favour the conſtriction of the colon, and thereby aggravate the diſeaſe; and if, at the ſame time, the uſe of them ſuperſede in any meaſure the employing purgatives, it is doing much miſchief; and the neglect of purging ſeems to be the only thing which renders the uſe of opiates very neceſſary.

When the gripes are both frequent and ſevere, they may ſometimes be relieved by the employment of ſemicupium, or by a fomentation of the abdomen continued for ſome time. In the ſame caſe, the pains may be relieved, and the conſtriction of the colon may be taken off, by bliſters applied to the lower belly.

At the beginning of this diſeaſe, when the fever is any way conſiderable, blood-letting, in patients of tolerable vigour, may be proper and neceſſary; and, when the pulſe is full and hard, with other ſymptoms of an inflammatory diſpoſition, blood-letting ought to be repeated. But, as the fever attending dyſentery is often of a putrid kind, or does, in the courſe of the diſeaſe, become ſoon of that nature, blood-letting muſt be cautiouſly employed.

From our account of the nature of this diſeaſe, it will be ſufficiently obvious, that the uſe of aſtringents in the beginning of it muſt be abſolutely pernicious. Whether an acrid matter be the original cauſe of the dyſentery may be uncertain; but, from the indigeſtion, and the ſtagnation of fluids, which attend the diſeaſe, we may ſuppoſe that ſome acrid matters are conſtantly preſent in the ſtomach and inteſtines, and therefore that demulcents may be always uſefully employed. At the ſame time, from this conſideration that mild oily matters thrown into the inteſtines in conſiderable quantity always prove laxative, Dr Cullen is of opinion that the oleaginous demulcents are the moſt uſeful.

As this diſeaſe is ſo often of an inflammatory or of a putrid nature, it is evident that the diet employed in it ſhould be vegetable and aceſcent. Milk, in its entire ſtate, is of doubtful quality in many caſes; but ſome portion of the cream is often allowable, and whey is always proper.—In the firſt ſtages of the diſeaſe, the ſweet and ſubacid fruits are allowable, and even proper. It is in the more advanced ſtages only that any morbid acidity ſeems to prevail in the ſtomach, and to require ſome reſerve in the uſe of aceſcents. At the beginning of the diſeaſe, abſorbents ſeem to be ſuperfluous; and, by their aſtringent and ſeptic powers, they may be hurtful.

When this diſeaſe is complicated with an intermittent, and is protracted from that circumſtance chiefly, it is to be treated as an intermittent, by adminiſtering the Peruvian bark, which in the earlier periods of the diſeaſe is hardly to be admitted.

CLASS II. NEUROSES.

ORDER I. COMATA.

COMATA, *Sauv.* Claſs VI. Ord. II. *Sag.* Claſs IX. Ord. V.
Soporoſi, *Lin.* Claſs VI. Ord. II.
Adynamiæ, *Vog.* Claſs VI.
Nervorum reſolutiones, *Hoffm.* III. 194.
Affectus ſoporoſi, *Hoffm.* III. 209.
Motuum vitalium defectus, *Junck.* 114.

GENUS XLIV. APOPLEXY.

Apoplexia, *Sauv.* gen. 182. *Lin.* 101. *Vog.* 229. *Boerh.* 1007. *Junck.* 117. *Sag.* gen. 288. *Wepfer.* Hiſt. apoplecticorum.
Carus, *Sauv.* gen. 181. *Lin.* 100. *Vog.* 231. *Boerh.* 1045. *Sag.* gen. 287.
Cataphora, *Sauv.* gen. 180. *Lin.* 99. *Vog.* 232. *Boerh.* 1048. *Sag.* gen. 286.
Coma, *Vog.* 232. *Boerh.* 1048.
Hæmorrhagia cerebri, *Hoffm.* II. 240.

To this genus alſo Dr Cullen reckons the following diſeaſes to belong.

Catalepſis, *Sauv.* gen. 176. *Lin.* 129. *Vog.* 230. *Sag.* gen. 281. *Boerh.* 1036. *Junck.* 44.
Affectus cerebri ſpaſmodico-ecſtaticus, *Hoffm.* III. 44.
Ecſtaſis, *Sauv.* gen. 177. *Vog.* 333. *Sag.* gen. 283.

The following he reckons ſymptomatic.

Typhomania, *Sauv.* gen. 178. *Lin.* 97. *Vog.* 23. *Sag.* gen. 284.
Lethargus, *Sauv.* gen. 179. *Lin.* 98. *Vog.* 22. *Sag.* gen. 285.

XCVI. The *Sanguineous* APOPLEXY. Sp. I. 368

Deſcription. IN this diſeaſe the patients fall ſuddenly down, and are deprived of all ſenſe and voluntary motion, but without convulſions. A giddineſs of the head, noiſe in the ears, coruſcations before the eyes, and redneſs of the face, uſually precede. The diſtinguiſhing ſymptom of the diſeaſe is a deep ſleep, attended with violent ſnorting; if any thing is put into the mouth, it is returned through the noſe; nor can any thing be ſwallowed without ſhutting the noſtrils; and even when this is done, the perſon is in the utmoſt danger of ſuffocation. Sometimes apoplectic patients will open their eyes after having taken a large doſe of an emetic; but if they ſhew no ſign of ſenſe, there is not the leaſt hope of their recovery. Sometimes the apoplexy terminates in an hemiplegia; in which caſe it comes on with a diſtortion of the mouth towards the ſound ſide, a drawing of the tongue the ſame way, and ſtammering of the ſpeech. Diſſections ſometimes ſhew a rupture of ſome veſſels of the meninges, or of the brain itſelf; though ſometimes, if we may believe Dr Willis, no defect is to be obſerved either in the cerebrum or cerebellum.

Cauſes, &c. The general cauſe of a ſanguineous apoplexy is a plethoric habit of body, with a determination to the head. The diſeaſe therefore may be brought on by whatever violently urges on the circulation of the blood; ſuch as ſurfeits, intoxication, violent paſſions of the mind, immoderate exerciſe, &c. It takes place, however, for the moſt part, when the venous plethora hath ſubſiſted for a conſiderable time in the ſyſtem. For that reaſon it commonly does not attack people till paſt the age of 60; and that whether the patients are corpulent and have a ſhort neck, or whether they are of a lean habit of body. Till people are paſt the age of childhood, apoplexy never happens.

Prognoſis. This diſeaſe very often kills at its firſt attack; and few ſurvive a repetition of the fit; ſo that thoſe who make mention of people who have ſurvived ſeveral attacks of the apoplexy, have probably miſtaken the epilepſy for it. In no diſeaſe is the prognoſis more fatal; ſince thoſe who ſeem to be recovering from a fit, are frequently and ſuddenly carried off by its return, without either warning of its approach, or poſſibility of preventing it. The good ſigns are when the diſeaſe apparently wears off, and the patient evidently begins to recover; the bad ones are when all the ſymptoms continue and increaſe.

Cure. This is to be attempted, in the firſt place, by large and repeated bleedings; after which, the ſame remedies are to be uſed as in the ſerous apoplexy,

plexy, aftermentioned. The body is to be bept in a ſomewhat erect poſture, and the head kept up.

369 XCVII. The *Serous* Apoplexy. Sp. II.

Apoplexia pituitoſa, *Sauv.* ſp. 7. Apoplexia ſeroſa, *Preyſinger*, ſp. 4. *Morg.* de cauſis, &c. IV. LX.
Carus a hydrocephalo, *Sauv.* ſp. 16.
Cataphora hydrocephalica, *Sauv.* ſp. 6.
Cataphora ſomnolenta, *Sauv.* ſp. 1.
Lethargus literatorum, *Sauv.* 7. *Van Swieten* in Aphor. 1010. 2 γ and 3 α.

Deſcription. In this ſpecies the pulſe is weak, the face pale, and there is a diminution of the natural heat. On diſſection, the ventricles of the brain are found to contain a larger quantity of fluid than they ought; the other ſymptoms are the ſame as in the former.

Cauſes, &c. This may ariſe from any thing which induces a debilitated ſtate of the body, ſuch as depreſſing paſſions of the mind, much ſtudy, watching, &c. It may alſo be brought on by a too plentiful uſe of diluting, acidulated drinks. It doth not, however, follow, that the extravaſated ſerum abovementioned in the ventricles of the brain is always the cauſe of the diſeaſe, ſince the animal-humours are very frequently obſerved to ooze out in plenty through the coats of the containing veſſels after death, though no extravaſation took place during life.

Prognoſis. This ſpecies is equally fatal with the other; and what hath been ſaid of the prognoſis of the ſanguineous, may alſo be ſaid of that of the ſerous, apoplexy.

Cure. In this ſpecies veneſection can ſcarcely be admitted: acrid purgatives, emetics, and ſtimulating clyſters, are recommended to carry off the ſuperabundant ſerum; but in bodies already debilitated, they may perhaps be liable to the ſame exceptions with veneſection itſelf. Volatile ſalts, cephalic elixirs, and cordials, are alſo preſcribed; and in caſe of a hemiplegia ſupervening, the cure is to be attempted by aperient ptiſans, cathartics, and ſudorifics; gentle exerciſe, as riding in a carriage; with ſuch ſtimulating medicines as are proper in a palſy. See below.

370 XCVIII. *Hydrocephalic* Apoplexy, or *Dropſy* of the *Brain.* Sp. III.

Hydrocephalus interior, *Sauv.* ſp. 1.
Hydrocephalus internus, *Whytt's* works, pag. 725. London Med. Obſ. vol. iv. art. 3, 6, and 25. *Gaudelius* de hydrocephalo, apud *Sandifort* Theſaur. vol. ii.
Hydrocephalus acutus, *Quin, Diſſ.* de hydrocephalo, 1779.
Aſthenia a hydrocephalo, *Sauv.* ſp. 3.

Hiſtory and deſcription. This diſeaſe has been accurately treated within theſe few years by ſeveral eminent phyſicians, particularly the late Dr Whytt, Dr Fothergill, and Dr Watſon; who concur in opinion with reſpect to the ſeat of the complaint, the moſt of its ſymptoms, and its general fatality. Out of twenty patients that had fallen under Dr Whytt's obſervation, he candidly owns that he had been ſo fortunate as to cure only one who laboured under the characteriſtic ſymptoms of the hydrocephalus; and he ſuſpects that thoſe who imagine they have been more ſucceſsful, had miſtaken another diſtemper for this. It is by all ſuppoſed to conſiſt in a dropſy of the ventricles of the brain; and this opinion is fully eſtabliſhed by diſſections. It is obſerved to happen more commonly to healthy, active, lively children, than to thoſe of a different diſpoſition.

Dr Whytt ſuppoſes that the commencement of this diſeaſe is obſcure; that it is generally ſome months in forming; and that, after ſome obvious urgent ſymptoms render aſſiſtance neceſſary, it continues ſome weeks before its fatal termination. This, in general, differs from what has hitherto been obſerved by Dr Fothergill; the latter informing us, that he has ſeen children, who, from all appearance, were healthy and active, ſeized with this diſtemper, and carried off in about fourteen days. He has ſeldom been able to trace the commencement of it above three weeks.

Though the hydrocephalus be moſt incident to children, it has been ſometimes obſerved in adults; as appears from a caſe related by Dr Huck, and from ſome others.

Thoſe who are ſeized with this diſtemper, uſually complain firſt of a pain in ſome part below the head; moſt commonly about the nape of the neck and ſhoulders; often in the legs; and ſometimes, but more rarely, in the arms. The pain is not uniformly acute, nor always fixed to one place; and ſometimes does not affect the limbs. In the latter caſe, the head and ſtomach have been found to be moſt diſordered; ſo that when the pain occupied the limbs, the ſickneſs or head-ach was leſs conſiderable; and when the head became the ſeat of the complaint, the pain in the limbs was ſeldom or never mentioned. Some had very violent ſickneſſes and violent head-achs, alternately. From being perfectly well and ſportive, ſome were in a few hours ſeized with thoſe pains in the limbs, or with ſickneſs, or head-ach, in a ſlight degree, commonly after dinner; but ſome were obſerved to droop a few days before they complained of any local indiſpoſition. In this manner they continued three, four, or five days, more or leſs, as the children were healthy and vigorous. They then commonly complain of an acute deep-ſeated pain in the head, extending acroſs the forehead from temple to temple; of which, and a ſickneſs, they alternately complain in ſhort and affecting exclamations; doſing a little in the intervals, breathing irregularly, and ſighing much while awake. Sometimes their ſighs, for the ſpace of a few minutes, are inceſſant.

As the diſeaſe advances, the pulſe becomes ſlower and irregular, the ſtrokes being made both with unequal force and in unequal times, till within a day or two of the fatal termination of the diſorder, when it becomes exceeding quick; the breathing being at the ſame time deep, irregular, and laborious. After the firſt acceſs, which is often attended with feveriſh heats, eſpecially towards evening, the heat of the body is for the moſt part temperate, till at laſt it keeps pace with the increaſing quickneſs of the pulſe. The head and præcordia are always hot from the firſt attack. The ſleeps are ſhort and diſturbed, ſometimes interrupted by watchfulneſs; beſides which there are ſtartings, the pupils of the eyes are much dilated, and during ſleep great part of the white of them is ex-

expoſed to view. The patients are averſe to light, unwilling to be diſturbed for any purpoſe, and can bear no poſture but that of lying horizontally. One or both hands are moſt commonly about their heads. The urine and ſtools come away inſenſibly. At length the eyelids become paralytic, great heat accompanied with ſweat overſpreads the whole body, reſpiration is rendered totally ſuſpirious, the pulſe increaſe in its trembling undulations beyond the poſſibility of counting, till the vital motions entirely ceaſe; and ſometimes a ſpaſm concludes the ſcene.

Many of the ſymptoms above enumerated are ſo common to worm-caſes, teething, and other irritating cauſes, that it is difficult to fix upon any which particularly characterize this diſeaſe. The moſt peculiar ſeem to be the pains in the limbs, with ſickneſs and inceſſant head-ach; which, though frequent in other diſeaſes of children, are neither ſo uniformly nor ſo conſtantly attendant as in this. Another circumſtance obſerved to be familiar, if not peculiar to this diſtemper, is, that the patients are not only coſtive, but it is likewiſe with the greateſt difficulty that ſtools can be procured. Theſe are generally of a very dark greeniſh colour, with an oilineſs or a glaſſy bile, rather than the ſlime which accompanies worms; and they are, for the moſt part, extremely offenſive. No poſitive concluſion can be drawn from the appearance of the urine; it being various, in different ſubjects, both in its colour and contents, according to the quantity of liquor they drink, and the time between the diſcharges of the urine. From their unwillingneſs to be moved, they often retain their water twelve or fifteen hours, and ſometimes longer. In complaints ariſing from worms, and in dentition, ſpaſms are more frequent than in this diſorder. Children ſubject to fits are ſometimes ſeized with them a few days before they die. Sometimes theſe continue twenty-four hours inceſſantly, and till they expire.

Cauſes. The cauſes of internal hydrocephalus are very much unknown, though ſome ſuppoſe it to proceed from a rupture of ſome of the lymphatic veſſels of the brain. In many caſes it ſeems to be hereditary; and as it attacks children rather than adults, it would ſeem to be occaſioned by a laxity, rather than a rupture, of the veſſels.

Prognoſis and Cure. Till very lately this diſorder was reckoned totally incurable; but now it is found that mercury, if applied in time, will remove every ſymptom. This remedy was firſt thought of by Dr Percival of Mancheſter, afterwards by Dr Dobſon of Liverpool, and its efficacy is now aſcertained beyond a doubt. The method of exhibiting this medicine in order to effect a cure, as well as the inutility of other medicines, will fully appear from the following caſes.

Case I. By Dr Percival.

"September 4. 1777. Maſter H. a child at the breaſt, aged ſeven months, has laboured about a fortnight under a ſlow irregular fever. His eyes have been now and then a little diſtorted; he has been affected with ſome degree of ſtupor; his gums have been inflamed and tender; and his mouth uncommonly dry. No tooth has yet made its appearance. An emetic has been adminiſtered; a bliſter applied to his back; and his belly has been kept ſoluble by repeated ſmall doſes of magneſia. During the action of the bliſter, he was thought to be much better, but he ſoon relapſed into his former ſtate.

"About three o'clock this morning, he was convulſed: at nine, I ſaw him; and, from his countenance, inſtantly ſuſpected a dropſy of the brain. The ſymptoms confirmed my apprehenſions. His ſkin was hot; yet his pulſe beat only 78 ſtrokes in a minute, which were irregular. The pupils of his eyes were conſiderably, but unequally, dilated; nor did they contract much when a lighted candle was ſuddenly held before them. He often ſquinted, eſpecially with the right eye, and ſeemed to take no notice of any objects around him. He refuſed the breaſt, and ſeldom ſwallowed till the lips and tongue had been ſtimulated with a feather. During ſeveral days paſt, he had been frequently obſerved to rub the end of his noſe when his hand was at liberty; and, notwithſtanding his ſtupor, he had been uncommonly watchful. I examined his head, and found a manifeſt tumour of the bregma, which had never before been noticed. Convinced by all theſe circumſtances that the child laboured under the hydrocephalus internus, and that he was now in the ſecond ſtage of that diſorder, I directed ten grains of the *unguentum mercuriale mitius* to be rubbed into his thighs every three hours, till the mouth ſhould be affected, and a tea-ſpoonful of the following mixture to be given whenever the convulſive ſymptoms recurred.

℞ *Salis ammon. vol.* ℈i. *Succi Lemon.* ʒvi. *Moſch. opt. mucilagine gum. Arabic. ſolut.* gr. vi. *Sacch. alb.* q. ſ. *ad gratiam. M.*

"Small bliſters were applied on each ſide of the head, juſt below the bregma; and a folded rag, frequently moiſtened with brandy, was laid upon the tumour, to promote abſorption. An emetic had been given early in the morning, by which a large quantity of bile was diſcharged; and a veſicatory had alſo been applied to his leg.

"September 5. nine o'clock. The child has had frequent convulſions in the night; his right eye is much diſtorted; and it has been remarked, that he ſeldom moves the right-hand. The pulſe beat 120 ſtrokes in a minute. Two ſcruples of the mercurial ointment have been uſed, and he has taken five grains of muſk. A large diſcharge of ſerum has been produced by the bliſters. Five o'clock, P. M. the tumour of the head is ſenſibly diminiſhed; the child's mouth is now moiſt, and often filled with ſaliva; and his tongue appears to be ſwolen. His pulſe beat 146 ſtrokes in a minute. I directed another bliſter to be applied to the head.

"September 6. His convulſions have been much ſlighter; his eye is frequently diſtorted; and the pupils of each are more contracted. The ſtupor is conſiderably abated; the child ſeems to take ſome notice, diſtinguiſhes taſte, and ſwallows freely. The muſk has been continued; and half a dram more of the mercurial ointment has been conſumed. A clyſter was injected laſt night, but ineffectually: I therefore preſcribed a grain of jalap, mixed with an equal quantity of ſugar, to be given every three hours, till a motion to ſtool ſucceeded.

"September 7. The child has paſſed the night more comfortably, but not free from convulſions. His head has ſweated profuſely, and the bliſters have run much. The tumour of the bregma is conſiderably reduced. The jalap operated gently laſt night, and the mercurial unction has been twice repeated. There is an evident mitigation of all the ſymptoms.

“ September 8. About eleven o'clock laſt night, the child was attacked with ſevere convulſions, which recurred frequently till ſix o'clock this morning. He has had a ſhort ſleep, and is now compoſed. His pulſe beats 140 ſtrokes in a minute; his heat is moderate; and his ſkin ſoft and perſpirable. The mercurial ointment has been again uſed; but, tho' his gums and tongue are ſore and very moiſt, his breath is not offenſive. I directed a grain of calomel to be immediately given, to procure a ſtool; and a bliſter to be applied to the occiput.

“ September 10. He has paſſed two nights almoſt entirely free from convulſions. Ten grains of the mercurial ointment have been again rubbed into his thighs. The doſe of calomel occaſioned three very offenſive ſtools; and directions are given to repeat it, as he is again coſtive. The bliſter applied to the occiput, like the others, has produced a very copious diſcharge. The tumour of the head is now ſcarcely perceptible. Pulſe 120.

“ September 12. At 12 o'clock laſt night, the convulſions recurred with greater violence than ever, and ſtill continue. Two teeth have almoſt protruded through the upper, and the ſame number through the lower gum. Pulſe 160, tremulous and irregular. I directed that the child ſhould be immediately put into a warm bath, and that the following remedies ſhould be adminiſtered.

℞ *Infuſ. rad. valer. fortiſſimi* ℥ii.
Aſæfœtid. electæ ℈ß. M. f. *Enema ſtatim injiciendum.*

℞ *Tinct. valer. volat.* ʒii. *Dentur guttæ* jii. *Subinde e cochleari parvulo infuſi rad. valer. ſylv. ſub forma theæ parati.*

“ The convulſions continued, but with leſs violence; and the child expired about one o'clock in the afternoon.”

On this caſe the Doctor makes the following obſervations.

“ The deplorable caſe which I have related appears to have originated from the irregular action produced in the ſyſtem by dentition, and from the want of a due ſecretion of ſaliva in the mouth, by which the fluid diſcharges were probably increaſed in the ventricles of the brain. That theſe diſcharges were diminiſhed, and that the extravaſated water was abſorbed, by the powerful action of the mercury, may be preſumed from the mitigation of all the ſymptoms which ſucceeded the ſalivation. And I am inclined to believe, that the convulſions under which the child expired were more owing to the irritation of his gums by the protruſion of four teeth, than to any remaining water in the brain; for the tumour of the head had entirely diſappeared, and after death there was a manifeſt depreſſion of the bregma. During the ſpace of a week, 110 grains of the unguentum mercuriale mitius, which contains about 22 grains of mercury, was conſumed, in the uſual way of friction. Perhaps half of this quantity might be abſorbed, and carried into the courſe of circulation; to which may be added, part of the two grains of the calomel adminiſtered internally. The ſymptoms of the ſalivation were not violent; and the effects of the mercury did not appear formidable or alarming, even to the parents of the child, who were appriſed of the nature of the diſorder, and fully approved of the trial of this new method of treating it.”

Case II. By Dr Dobson.

“ On the 13th of February 1775, I was called to the only ſon of Mr C. a gentleman of this place: the child was between three and four years of age; had been indiſpoſed about eight days; and had frequently complained of pain in his head and wearineſs, and pains in his limbs; had been ſick by fits, and ſometimes vomited; was feveriſh, and could not bear the light.

“ I was much alarmed on hearing this account, as the *hydrocephalus internus* had already proved fatal to three children of this family, who had all been under my care. And that this had been the diſeaſe was evident, both from the ſymptoms and the appeartnces on diſſection. But my alarm was much farther increaſed on examining the little patient. The pulſe I found very frequent and irregular. The head hot, the cheeks fluſhed, the pupils dilated, and a great degree of ſtrabiſmus. There remained no doubt with reſpect to the nature of the diſeaſe.

“ An emetic, ſome calomel powders, and a purgative, had been adminiſtered, without affording any relief. I directed the pediluvium, and emetic tartar to be given in ſuch doſes as to excite nauſea.

“ February 14th. The ſymptoms the ſame, with frequent ſtartings, diſturbed ſleep, and toſſing from ſide to ſide on the pillow. A bliſter was applied between the ſhoulders, the pediluvium repeated, and the emetic tartar continued.

“ 15th. Comatoſe, reſtleſs, and ſhrieking by fits. The pulſe ſlower than in health, and the eyes inſenſible even to the impreſſions of ſtrong light.

“ As I had no hope of doing any thing effectual for the recovery of my patient, I paid my viſits, preſcribed, and gave directions with a foreboding and heavy heart. Anxiouſly, however, conſidering the caſe in different points of view, and fully convinced that it was vain to purſue the uſual line of practice, it occurred to me, that mercurials, ſo far urged as to enter the courſe of circulation, and affect the ſalivary glands, might poſſibly reach the ſyſtem of abſorbents in the ventricles of the brain, and thus remove the extravaſated fluid.

“ The ſhort continuance of the diſeaſe, and the apparent ſtrength of my patient, were favourable to the trial of this method. No time, however, was to be loſt. The parents were conſulted, and readily gave their ſanction to the propoſal; for they were convinced, that, unleſs ſome powerful ſteps were taken, this their only ſon muſt be numbered with thoſe of their children who had already fallen a ſacrifice to the diſeaſe.

“ The mercurial courſe, therefore, was commenced, and urged on with caution and expedition. In 48 hours the breath began to be offenſive; the gums were reddiſh and ſwelled; and the ſymptoms of the diſeaſe, ſo far as could be diſtinguiſhed, were ſomewhat abated. In 48 hours more the ptyaliſm came on, and the diſeaſe was evidently declining. Between the 15th and 22d he took 20 grains of calomel, and one drachm of the ſtrongeſt mercurial ointment was likewiſe rubbed in well upon the legs and thighs. The doſe of calomel was one grain, mixed with a little ſugar, and repeated at ſuch intervals as the circumſtances of the caſe pointed out.

"After the 22d no more mercurials were adminiſtered; a moderate ptyaliſm continued for five or ſix days, then gradually ceaſed, and the diſeaſe was entirely removed. The bark was then given, as the beſt tonic remedy after the mercurial courſe, and as the beſt preſervative againſt a relapſe. The ſtrabiſmus I obſerved was the laſt ſymptom which diſappeared.

"From the 15th, no other medicines were uſed except mercurials. The three ſiſters of the above patient, who all died of this diſeaſe, were treated with bliſters; and to one of them they were applied in ſucceſſion to the head, behind the ears, and between the ſhoulders."

CASE III. By Dr PERCIVAL.

"ONE of my own children, a girl, aged three years and three months, has lately been a ſevere ſufferer under this alarming malady. As ſoon as the characteriſtic ſymptoms of the diſeaſe clearly manifeſted themſelves, I laid aſide all other remedies, convinced, by repeated obſervation, of their inſufficiency; and truſted ſolely, though with much ſolicitude, to the internal and external uſe of mercury. In 48 hours, ſigns of amendment appeared, and her recovery was perfected in ſix days. During this ſpace of time, thirteen grains of calomel were adminiſtered, and ſeven ſcruples of *unguentum mercuriale fortius* carefully rubbed into her legs."

CASE IV. By Mr JOHN MACKIE Surgeon in Huntington.

JOHN ALGOOD, aged 27, of a thin habit of body, accuſtomed for four or five years paſt to work in a tan-yard in a very ſtooping poſture, was attacked in the beginning of May with an irregular intermitting fever, accompanied with much pain in his joints. Theſe complaints continued till about the middle of June, when he was ſeized with a violent and conſtant pain in the back-part of his head, attended with great giddineſs, noiſe in his head and ears, dimneſs of ſight, &c. and his fever became more continued. He lay in this ſtate upwards of a month, without receiving any benefit from ſome medicines which he took during this period.

Mr Mackie was called to him in the middle of July, and found him labouring under the following ſymptoms: A fixed pain on the right ſide and back part of his head, which was frequently ſo acute as to make him quite outrageous, crying out, tearing his hair, beating himſelf on the head, &c. He had ſuch a giddineſs, that, unleſs ſtrongly held, he could not ſupport himſelf a moment in an upright poſture. He could not bear the light; and, when he did venture to open his eyes, could not ſee objects diſtinctly. His pupils were uncommonly dilated; and his right eye ſeemed drawn outward, and rather contracted in its volume. He complained of a ſtrange palpitating noiſe in his head and ears; and ſaid, he felt at times as if there was a weight of water falling from one ſide of his head to the other. He was, in general, ſenſible; but, on aſking him two or three queſtions together, he became confuſed, and, like a perſon with an oppreſſed brain, anſwered with heſitation, quite wide of the queſtion, and often oppoſite to what he meant. Along with theſe, he had a hot ſkin, ſmall quick pulſe, thirſt, a foul tongue, urine in ſmall quantity and high-coloured; he was emaciated, ſick, coſtive, and ſweated much; had often a kind of ſtupor, but very little ſleep. Once in the 24 hours he had generally a remiſſion (of three or four hours continuance) of the febrile ſymptoms, but of none of the other complaints.

July 16th. Ordered three or four leeches to be applied to each temple immediately; an emetic to be taken in the evening, and a cooling purge to-morrow morning.

17th. In the evening found the leeches had taken away a good deal of blood, and the vomit and purge operated well. No change in the complaints, except that the ſickneſs is a little abated. He ſcreamed greatly on attempting to raiſe his head from the pillow.

Ordered his head to be ſhaved, and a ſharp bliſter to be applied all over the occiput, large enough to cover the nape of the neck; alſo one on the inſide of the leg. Internally,—℞. *Nitri puri*, dr. ſs. *Gum. camphor*, gr. iv. M. f. *pulvis; quarta quaque hora ſumendus durante febrili calore.* ℞. *Pulv. cort. Peruvian*, dr. i. *Pulv. rad. valerian, ſylv.* dr. ſs. M. f. *pulvis, exhibendus quamprimum remiſſio appareat, & repentendus ſi ultra horas tres pergat.* Thin milk-gruel and barley-water for drink.

July 19th. The bliſters have diſcharged much, and he has taken the medicines punctually; but the fever and other complaints remain as before. Pulſe very irregular; pain in the head, and reſtleſſneſs, extreme.

Left off the camphire; and in its ſtead added to each nitrous powder, tartar emetic, gr. $\frac{1}{4}$. Dreſſed the bliſters with the *unguent. ad veſicatoria.*

21ſt. Two doſes of the bark and valerian were given during the two laſt remiſſions of the fever, which were full four hours each; but to-day there appears no kind of amendment. All the ſymptoms continue much the ſame. Shrieked out much, and talked incoherently. Has had no ſtool ſince he took his phyſic. Ordered a laxative glyſter to be thrown up directly, and the medicines to be continued as on the 19th.

23d. The glyſter procured two motions. Has ſweated profuſely through the laſt 48 hours. Bliſters have run freely. The two laſt diurnal remiſſions not quite ſo diſtinct. No abatement of the other complaints. The pain, gidddineſs, ſtupor, contortion of the eyes, &c. remain in as great a degree as ever. Mr Mackie now left off all other medicines, and ordered ten grains of calomel, made into a bolus with conſerve of roſes, to be taken at bed-time: at the ſame time, a dram of the ſtrong mercurial ointment was directed to be rubbed into the ankles; and both to be repeated every night.

25th. Found no alteration. Fever and other ſymptoms the ſame. Bliſters heal, having been dreſſed theſe two days with baſilicon. The calomel, and mercurial friction, ordered to be continued as on the 23d.

26th. Mr Mackie found him complaining much of being griped. Had two purging ſtools in the laſt

24 hours. His gums were a little tender, and his breath beginning to be tainted. In other reſpects as uſual. Left off the calomel, and ordered a double quantity of the mercurial ointment to be rubbed into his thighs every night.

28th. He had had a calmer night than any theſe two months paſt. For the firſt time, he ſaid the pain of his head was abated; he looked more compoſed; his ſkin felt cooler; his pulſe more full, and not ſo quick. He complained of his mouth being ſore, and his tongue ſwelled; and had diſcharged a good deal of ſaliva in the night. Only one dram of the ointment to be rubbed in, for the two next nights.

30th. He ſpit about three quarts during the laſt 48 hours, and complains of much heat in his mouth; but all his other complaints better. Pain in his head almoſt gone, excepting now and then a ſhoot. Giddineſs much abated. He ſaid he often felt a trickling kind of motion, as of water running along the inſide of his temples; but this ſenſation was without pain. He could ſit up in bed, and feed himſelf; was ſenſible, and in ſpirits. Pulſe regular, and not above 70 in a minute. He has had a remiſſion of upwards of ſix hours to-day; ordered the ointment to be left off.

Aug. 1ſt. Continues to ſpit freely. Had yeſterday a ſmart return of the fever; which, however, only held him about 12 hours. To-day there is a perfect remiſſion, and he is in every reſpect greatly mended. Has had ſome hours good ſleep. Complains very little of pain. Got out of bed for the firſt time; ſat up three hours; and could even bear the light without being diſturbed by it. Complained of being hungry. Allowed plenty of milk-porridge and ſmall broth.

3d. The ſpitting keeps up to about a quart in the 24 hours. Found him out of bed to-day, and almoſt without complaints. He ſaid his head was well; and that he only wanted ſtrength, and to get rid of his fever and ſore mouth. The remiſſions were now almoſt as long as the paroxyſms, being about 12 hours each. Has taken no medicine internally ſince he left off the calomel, and was coſtive. Ordered a doſe of rhubarb; and, after its operation, a dram of the bark every four hours during the remiſſions.

6th. The ſpitting begins to decline. He has had no fever for the laſt 24 hours. He ſleeps well; and has an appetite, if the ſoreneſs of his mouth would let him eat. Headach and giddineſs gone; but his pupils ſtill continue much dilated. Ordered him another rhubarb-purge, and the bark to be continued every ſix hours.

9th. Has had no fever, or other complaints. Spitting inconſiderable; mouth better; aſpect more natural; is able to walk about, and mends daily. Allowed him a more generous and ſubſtantial diet, and continued the bark twice a-day for another week.

From this time, he continued to get ſtrength apace; had good nights, good appetite, a perfect freedom from headach and fever; and, on the 23d, went to work, being in every reſpect quite well, and has continued ſo ever ſince.

This patient did not ſeem to receive the ſmalleſt benefit from the bliſters, or any thing elſe; till he took the mercury, which acted like a ſpecific; and the fever ſeemed to be altogether ſymptomatic, as it eaſily yielded after the other complaints were removed.

XCIX. Apoplexy from *Atrabilis*. Sp. IV. 371

Apoplexia atrabiliaria, *Sauv.* ſp. 12. *Preyſinger*, ſp. 6.

This takes place in the laſt ſtage of the diffuſion of bile through the ſyſtem, i. e. of the black jaundice, and in ſome caſes the brain hath been found quite tinged brown. It cannot be thought to admit of any cure.

C. Apoplexy from *External Violence*. Sp. V. 372

Apoplexia traumatica, *Sauv.* ſp. 2.
Carus traumaticus, *Sauv.* ſp. 5.

The treatment of this diſeaſe, as it ariſes from ſome external injury, properly falls under the article Surgery.

CI. Apoplexy from *Poiſons*. Sp. VI. 373

Apoplexia temulenta, *Sauv.* ſp. 3.
Carus a narcoticis, *Sauv.* ſp. 14.
Lethargus a narcoticis, *Sauv.* ſp. 3.
Carus a plumbagine, *Sauv.* ſp. 10.
Apoplexia mephitica, *Sauv.* ſp. 14.
Aſphyxia a mephitide, *Sauv.* ſp. 9.
Aſphyxia a muſto, *Sauv.* ſp. 3.
Catalepſis a fumo, *Sauv.* ſp. 3.
Aſphyxia a fumis, *Sauv.* ſp. 2.
Aſphyxia a carbone, *Sauv.* ſp. 16.
Aſphyxia foricariorum, *Sauv.* ſp. 11.
Aſphyxia ſideratorum, *Sauv.* ſp. 10.
Carus ab inſolatione, *Sauv.* ſp. 12.
Carus a frigore, *Sauv.* ſp. 15.
Lethargus a frigore, *Sauv.* ſp. 6.
Aſphyxia congelatorum, *Sauv.* ſp. 5.

The poiſons which bring on an apoplexy when taken internally are thoſe of the ſtimulant and ſedative kind, as ſpirituous liquors, opium, and the more virulent kinds of vegetable poiſons. The vapours of mercury, or of lead, in great quantity, will ſometimes produce a ſimilar effect; though commonly they produce rather a paralyſis, and operate ſlowly. The vapours of charcoal, or fixed air, in any form, breathed in great quantity, alſo produce an apoplexy, or a ſtate very ſimilar to it; and even cold itſelf produces a fatal ſleep, though without the apoplectic ſnorting.—To enumerate all the different ſymptoms which affect the unhappy perſons who have ſwallowed opium, or any of the ſtronger vegetable poiſons, is impoſſible, as they are ſcarce to be found the ſame in any two patients. The ſtate induced by them ſeems to differ ſomewhat from that of a true apoplexy; as it is commonly attended with convulſions, but hath the particular diſtinguiſhing ſign of apoplexy, namely, a very difficult breathing or ſnorting, more or leſs violent according to the quantity of poiſonous matter ſwallowed.

Of the poiſonous effects of fixed air, Dr Percival gives the following account. "All theſe noxious vapours, whether ariſing from burning charcoal, the fermenting grape, the Grotti di Cani, or the cavern of Pyrmont, operate nearly in the ſame manner. When accumulated and confined, their effects are often inſtantaneous; they immediately deſtroy the action of the brain and nerves, and in a moment arreſt the vital motions. When more diffuſed, their effects are ſlower, but ſtill evidently mark out a direct affection of the nervous ſyſtem.

"Thoſe who are expoſed to the vapours of the fermenting grape, are as inſtantly deſtroyed as they would be by the ſtrongeſt electrical ſhock. A ſtate of inſenſibility is the immediate effect upon thoſe animals which are thruſt into the Grotti di Cani, or the cavern of Pyrmont: the animal is deprived of motion, lies as if dead; and if not quickly returned into the freſh air, is irrecoverable. And if we attend to the hiſtories of thoſe who have ſuffered from the vapours of burning charcoal, we ſhall in like manner find, that the brain and moving powers are the parts primarily affected.

"A cook who had been accuſtomed to make uſe of lighted charcoal more than his buſineſs required, and to ſtand with his head over theſe fires, complained for a year of very acute pain in the head; and after this, was ſeized with a paralytic affection of the lower limbs, and a ſlow fever.

"A perſon was left reading in bed with a pan of charcoal in a corner of the room. On being viſited early the next morning, he was found with his eyes ſhut, his book open and laid on one ſide, his candle extinguiſhed, and to appearance like one in a deep ſleep. Stimulants and cupping-glaſſes gave no relief; but he was ſoon recovered by the free acceſs of freſh air.

"Four priſoners, in order to make their eſcape, attempted to deſtroy the iron work of their windows, by the means of burning charcoal. As ſoon as they commenced their operations, the fumes of the charcoal being confined by the cloſeneſs of the priſon, one of them was ſtruck dead; another was found pale, ſpeechleſs, and without motion; afterwards he ſpoke incoherently, was ſeized with a fever, and died. The other two were with great difficulty recovered.

"Two boys went to warm themſelves in a ſtove heated with charcoal. In the morning they were found deſtitute of ſenſe and motion, with countenances as compoſed as in a placid ſleep. There were ſome remains of pulſe; but they died in a ſhort time.

"A fiſherman depoſited a large quantity of charcoal in a deep cellar. Some time afterwards, his ſon, a healthy ſtrong man, went down into the cellar with a pan of burning charcoal and a light in his hand. He had ſcarcely deſcended to the bottom, when his candle went out. He returned, lighted his candle, and again deſcended. Soon after, he called aloud for aſſiſtance. His mother, brother, and a ſervant, haſted to give him relief; but none of them returned. Two others of the village ſhared the ſame fate. It was then determined to throw large quantities of water into the cellar; and after two or three days, they had acceſs to the dead bodies.

"Cœlius Aurelianus ſays, that thoſe who are injured by the fumes of charcoal become cataleptic. And Hoffman himſelf, in another part of his works, enumerates a train of ſymptoms which in no reſpect correſpond with his idea of ſuffocation. Thoſe who ſuffer from the fumes of burning charcoal, ſays he, have ſevere pains in the head, great debility, faintneſs, ſtupor, and lethargy.

"It appears from the above hiſtories and obſervations, that theſe vapours exert their noxious effects on the brain and nerves. Sometimes they occaſion ſudden death; at other times, the various ſymptoms of a debilitated nervous ſyſtem, according as the poiſon is more or leſs concentrated. The olfactory nerves are firſt and principally affected, and the brain and nervous ſyſtem by ſympathy or conſent of parts. It is well known, that there is a ſtrong and ready conſent between the olfactory nerves and many other parts of the nervous ſyſtem. The effluvia of flowers and perfumes, in delicate or irritable habits, produce a train of ſymptoms, which, though tranſient, are analogous to thoſe which are produced by the vapours of charcoal; viz. vertigo, ſickneſs, faintneſs, and ſometimes a total inſenſibility. The female malefactor, whom Dr Mead inoculated by putting into the noſtrils doſſils of cotton impregnated with variolous matter, was, immediately on the introduction, afflicted with a moſt excruciating headach, and had a conſtant fever till after the eruption.

"The vapours of burning charcoal, and other poiſonous effluvia, frequently produce their prejudicial, and even fatal effects, without being either offenſive to the ſmell or oppreſſive to the lungs. It is a matter of importance therefore, that the common opinion ſhould be more agreeable to truth; for where ſuffocation is ſuppoſed to be the effect, there will be little apprehenſion of danger, ſo long as the breaſt keeps free from pain or oppreſſion.

"It may be well to remember, that the poiſon itſelf is diſtinct from that groſs matter which is offenſive to the ſmell; and that this is frequently in its moſt active ſtate when undiſtinguiſhed by the ſenſe. Were the following cautions generally attended to, they might in ſome inſtances be the happy means of preſerving life. Never to be confined with burning charcoal in a ſmall room, or where there is not a free draught of air by a chimney or ſome other way. Never to venture into any place in which air has been long pent up, or which from other circumſtances ought to be ſuſpected; unleſs ſuch ſuſpected place be either previouſly well ventilated, or put to the teſt of the lighted candle. For it is a ſingular and well-known fact, that the life of flame is in ſome circumſtances ſooner affected and more expeditiouſly extinguiſhed by noxious vapours, than animal-life. A proof of which I remember to have received from a very intelligent clergyman, who was preſent at a muſical entertainment in the theatre at Oxford. The theatre was crouded; and during the entertainment, the candles were obſerved to burn dim, and ſome of them went out. The audience complained only of faintneſs and languor; but had the animal effluvia been ſtill further accumulated or longer confined, they would have been extinguiſhed as well as the candles.

"The moſt obvious, effectual, and expeditious means of relief to thoſe who have unhappily ſuffered from this cauſe, are ſuch as will diſlodge and waſh away the poiſon, reſtore the energy of the brain and nerves, and renew the vital motions. Let the patient therefore be immediately carried into the open air, and let the air be fanned backwards and forwards to aſſiſt its action: let cold water be thrown on the face; let the face, mouth, and noſtrils, be repeatedly waſhed; and as ſoon as practicable, get the patient to drink ſome cold water. But if the caſe is too far gone to be thus relieved, let a healthy perſon breathe into the mouth of the patient; and gently force air into the mouth, throat, and noſtrils. Frictions, cupping, bleeding, and bliſters, are likewiſe indicated. And if, after the inſtant danger is removed, a fever be excited, the method of cure muſt be adapted to the nature and prevailing ſymptoms of the fever."

With regard to the poiſon of opium, Dr Mead recommends the following method of cure. Beſides evacuations by vomiting, bleeding, and bliſtering, acid medicines and lixivial ſalts are proper. Theſe contract the relaxed fibres, and by their diuretic force make a depletion of the veſſels. Our author ſays he hath given repeated doſes of a mixture of ſalt of wormwood and juice of lemons, with extraordinary ſucceſs.

Of a kind ſomewhat akin to the poiſon of opium ſeems to be that of laurel-water, a ſimple water diſtilled from the leaves of the lauro-ceraſus or common laurel. The bad effects of this were firſt obſerved in Ireland, where it had been cuſtomary to mix it with brandy for the ſake of the flavour; and thus two women were ſuddenly killed by it. This gave occaſion to ſome experiments upon dogs, in order to aſcertain the malignant qualities of the water in queſtion; and the event was as follows: All the dogs fell immediately into totterings and convulſions of the limbs, which were preſently followed by a total paralyſis, ſo that no motion could be excited even by pricking or cutting them. No inflammation was found, upon diſſection, in any of the internal membranes. The moſt remarkable thing was a great fulneſs and diſtenſion of the veins, in which the blood was ſo fluid, that even the lymph in its veſſels was generally found tinged with red. The ſame effects were produced by the water injected into the inteſtines by way of clyſter.

To make the experiment more fully, Dr Nicholls prepared ſome of this water ſo ſtrong, that about a drachm of heavy eſſential oil remained at the bottom of three pints of it, which by frequent ſhaking was again quite incorporated with it. So virulent was this water, that two ounces of it killed a middle-ſized dog in leſs than half a minute, even while it was paſſing down his throat. The poiſon appeared to reſide entirely in the above-mentioned eſſential oil, which comes over by diſtillation, not only from the leaves of laurel, but from ſome other vegetables; for ten drops of a red oil diſtilled from bitter almonds, when mixed with half an ounce of water, and given to a dog, killed him in leſs than half an hour.

Volatile alkalies are found to be an antidote to this poiſon; of which Dr Mead gives the following inſtance. About an ounce of ſtrong laurel-water was given to a ſmall dog. He fell immediately into the moſt violent convulſions, which were ſoon followed by a total loſs of his limbs. When he ſeemed to be expiring, a vial of good ſpirit of ſal ammoniac was held to his noſe, and a ſmall quantity of the ſame forced down his throat: he inſtantly felt its virtue; and by continuing the uſe of it for ſome time, he by degrees recovered the motion of his legs; and in two hours walked about with tolerable ſtrength, and was afterwards quite well.

With regard to the pernicious effects of cold, there is no other way of counteracting them but by the application of external heat. We are apt to imagine, that the ſwallowing conſiderable quantities of ardent ſpirits may be a means of making us reſiſt the cold, and preventing the bad effects of it from ariſing to ſuch an height as to deſtroy life; but theſe do not appear to be in the leaſt poſſeſſed of any ſuch virtue in thoſe countries liable to great exceſſes of cold. The Peruvian bark, by ſtrengthening the ſolids, as well as increaſing the motion of the fluids, is found to anſwer better than any other thing as a preſervative: but when the pernicious effects have already begun to diſcover themſelves, nothing but increaſing by ſome means or other the heat of the body can poſſibly be depended upon: and even this muſt be attempted with great care; for as, in ſuch caſes, there is generally a tendency to mortification in ſome of the extremities, the ſudden application of heat will certainly increaſe this tendency to ſuch a degree as to deſtroy the parts. But for the external treatment of ſuch mortifications, ſee the article SURGERY.

CIII. APOPLEXY from *Paſſions* of the *Mind*. 374
Sp. VII.

Carus a pathemate, *Sauv.* ſp. 11.
Aſphyxia a pathemate, *Sauv.* ſp. 7.
Ecſtaſis catoche, *Sauv.* ſp 1.
Ecſtaſis reſoluta, *Sauv.* ſp. 2.

APOPLEXIES from violent paſſions may be either ſanguineous or ſerous, though more commonly of the former than the latter ſpecies. The treatment is the ſame in either caſe. Or they may partake of the nature of catalepſy; in which caſe the method of treatment is the ſame with that of the genuine catalepſy. See below.

CIV. The *Cataleptic* APOPLEXY. Sp. VIII. 375

Catalepſis, *Sauv.* gen. 176. *Lin.* 129. *Vog.* 230.
Sag. gen. 281. *Boerh.* 1036. *Junck.* 44.

Dr CULLEN ſays he has never ſeen the catalepſy except when counterfeited; and is of opinion that many of thoſe caſes related by other authors have alſo been counterfeited. It is ſaid to come on ſuddenly, being only preceded by ſome langour of body and mind; and to return by paroxyſms. The patients are for ſome minutes, ſometimes (though rarely) for ſome hours, deprived of their ſenſes, and all power of voluntary motions; but conſtantly retaining the poſition in which they were firſt ſeized, whether lying or ſitting; and if the limbs are put into any other poſture during the fit, they will keep the poſture in which they are placed. When they recover from the paroxyſm, they remember nothing of what paſſed during the time of it, but are like perſons awaked out of ſleep.—Concerning the cure of this diſorder we find nothing which can be depended upon among medical writers.

CV. APOPLEXY from *Suffocation*. Sp. IX. 37

Aſphyxia ſuſpenſorum, *Sauv.* ſp. 4.
Aſphyxia immerſorum, *Sauv.* ſp. 1.

THIS is the kind of apoplexy which takes place in thoſe who are hanged or drowned. For the treatment of thoſe perſons, ſee the articles **Drowning** and **Hanging**.

Beſides the ſpecies above-mentioned, the apoplexy is a ſymptom in many other diſtempers, ſuch as fevers both continued and intermitting, exanthemata hyſteria, epilepſy, gout, worms, iſchuria, and ſcurvy.

Genus XLV. PARALYSIS, the Palsy.

Paralyſis, *Boerh.* 1057.
Hemiplegia, *Sauv.* gen. 170. *Lin.* 103. *Vog.* 228.
Paraplexia, *Sauv.* gen. 171.
Paraplegia, *Lin.* 102. *Vog.* 227.
Paralyſis, *Sauv.* gen. 169. *Lin.* 104. *Vog.* 226. *Junck.* 115.
Atonia, *Lin.* 120.

377 CVI. The *Partial* Palsy. Sp. I.

Paralyſis, *Sauv.* gen. 169. *Lin.* 104. *Vog.* 226. *Junck.* 115.
Paralyſis plethorica, *Sauv.* ſp. 1.
Paralyſis ſeroſa, *Sauv.* ſp. 12.
Paralyſis nervea, *Sauv.* ſp. 11.
Mutitas a gloſſolyſi, *Sauv.* ſp. 1.
Aphonia paralytica, *Sauv.* ſp. 8.

378 CVII. Hemiplegia, or *Palſy of one ſide* of the Body. Sp. II.

Hemiplegia, *Sauv.* gen. 170. *Lin.* 108. *Vog.* 228. *Sag.* gen. 276.
Hemiplegia ex apoplexia, *Sauv.* ſp. 7.
Hemiplegia ſpaſmodica, *Sauv.* ſp. 2.
Hemiplegia ſeroſa, *Sauv.* ſp. 10.

379 CVIII. Paraplegia, or *Palſy of one half* of the Body taken *traſverſely*. Sp. III.

Paraplexia, *Sauv.* gen. 171. *Sag.* gen. 277.
Paraplegia, *Lin.* 102. *Vog.* 227.
Paraplexia ſanguinea, *Sauv.* ſp. 2.
Paraplexia a ſpina bifida, *Sauv.* ſp. 3.
Paraplexia rheumatica, *Sauv.* ſp. 1.

Deſcription. The palſy ſhows itſelf by a ſudden loſs of tone and vital power in a certain part of the body. In the ſlighter degrees of the diſeaſe, it only affects a particular muſcle, as the ſphincter of the anus or bladder, thus occaſioning an involuntary diſcharge of excrements or of urine; of the muſcles of the tongue, which occaſions ſtammering, or loſs of ſpeech; of the muſcles of the laxynx, by which the patient becomes unable to ſwallow ſolids, and ſometimes even liquids alſo.—In the higher degrees of the diſeaſe, the paralytic affection is diffuſed over a whole limb, as the foot, leg, hand, or arm; and ſometimes it affects a whole ſide of the body, in which caſe it is called *hemiplegia*; and ſometimes, which is the moſt violent caſe, it affects all the parts below the waſte, or even below the head, though this laſt is exceedingly rare. In theſe violent caſes, the ſpeech is either very much impeded, or totally loſt. Convulſions often take place in the ſound ſide, with the cynic ſpaſm or involuntary laughter, and other diſtortions of the face. Sometimes the whole paralytic part of the body becomes livid, or even mortifies before the patient's death; and ſometimes the paralytic parts gradually decay and ſhrivel up, ſo as to become much leſs than before.

Cauſes, &c. Palſies muſt commonly ſupervene the different ſpecies of coma, eſpecially the apoplexy. They are alſo occaſioned by any debilitating power applied to the body, eſpecially by exceſſes in venery. Sometimes they are a kind of criſis to other diſtempers, as the colic of Poictou, and the apoplexy. The hemiplegia eſpecially often follows the laſt mentioned diſeaſe. Aged people, and thoſe who are by any other means debilitated, are ſubject to palſy; which will ſometimes alſo affect even infants, from the repulſion of exanthemata of various kinds. Palſies are alſo the infallible conſequences of injuries of the large nerves.

Prognoſis. Except in the ſlighter caſes of palſy, we have little room to hope for a cure; however, death doth not immediately follow even the moſt ſevere paralytic affections. In an hemiplegia it is not uncommon to ſee the patients live ſeveral years; and even in the paraplegia, if death does not enſue within two or three weeks, it may not take place for a conſiderable time. It is a promiſing ſign when the patient feels a ſlight degree of painful itchineſs in the affected parts; and if a fever ſhould ariſe, it bids fair to cure the palſy. When the ſenſe of feeling remains, there is much more room to hope for a cure than where it is gone, as well as the power of motion. But when we obſerve the fleſh to waſte, and the ſkin to appear withered and dry, we may look upon the diſeaſe to be incurable. Convulſions ſupervening on a palſy are a fatal ſign.

Cure. Many remedies have been recommended in palſies: but it muſt be confeſſed, that, except in the ſlighter caſes, medicines ſeldom prove effectual; and before any ſcheme of cure can be laid down, every circumſtance relative to the patient's habit of body and previous ſtate of health ſhould be carefully weighed. If an hemiplegia or paraplegia ſhould come on after an apoplexy, attended with thoſe circumſtances which phyſicians have ſuppoſed to denote a viſcid ſtate of the blood, a courſe of the attenuant gums, with fixed alkaline ſalts, and chalybeate waters, may do ſervice; to which it will be proper to add frictions with the volatile liniment all down the ſpine: but in habits where the blood is rather inclined to the watery ſtate, it will be neceſſary to give emetics from time to time; to apply bliſters, and cut iſſues.

The natural hot baths are often found uſeful in paralytic caſes; and where the patients cannot avail themſelves of theſe, an artificial bath may be tried by diſſolving ſalt of ſteel in water, and impregnating the water with fixed air. Frictions of the parts, and ſcourging them with nettles, have alſo been recommended, and may do ſervice, as well as volatile and ſtimulating medicines taken inwardly.

CIX. The Palsy from *Poiſons*. Sp. IV. 380

Paralyſis metallariorum, *Sauv.* ſp. 22.
Hemiplegia ſaturnina, *Sauv.* ſp. 14.

This kind of palſy ariſes moſt frequently from lead taken into the body, and is a conſequence of the colica pictonum, under which it is particularly treated. See below.

381 CX. TREMOR, or TREMBLING.

Tremor, *Sauv.* gen. 129. *Lin.* 139. *Vog.* 184. *Sag.* 236.

This by Dr Cullen is reckoned to be always ſymptomatic either of palſy, aſthenia, or convulſions; and therefore cannot be treated of by itſelf.

ORDER II. ADYNAMIÆ.

ADYNAMIÆ, *Vog.* Claſs VI.
Defectivi, *Lin.* Claſs VI. Order I.
Leipopſychiæ, *Sauv.* Claſs VI. Order IV. *Sag.* Claſs IX. Order IV.

GENUS XLVI. SYNCOPE, or FAINTING.

Syncope, *Sauv.* gen. 174. *Sag.* 94. *Vog.* 274. *Sag.* 280. *Junck.* 119.
Leipothymia, *Sauv.* gen. 173. *Lin.* 93. *Vog.* 273. *Sag.* 279.
Aſphyxia, *Sauv.* gen. 175. *Lin.* 95. *Vog.* 275. *Sag.* 281.
Virium lapſus et animi deliquia. *Hoffm.* III. 267.

382 CX. The *Cardiac* SYNCOPE. Sp. I.

Syncope plethorica, *Sauv.* ſp. 5. *Senac.* Tr. de Cœur, p. 540.
Syncope a cardiogmo, *Sauv.* ſp. 7. *Senac.* de Cœur, 414. *Morgagn.* de Sed. XXV. 2. 3. 10.
Syncope a polypo, *Sauv.* ſp. 8. *Senac.* p. 471.
Syncope ab hydrocardia, *Sauv.* ſp. 12. *Senac.* 533. *Schreiber* Almag. L. III. § 196.
Syncope lanzoni, *Sauv.* ſp. 18. *Lanzon.* Op. II. p. 462.
Aſphyxia valſalviana, *Sauv.* ſp. 13.

383 CXI. *Occaſional* SYNCOPE. Sp. II.

Leipothymia a pathemate, *Sauv.* ſp. 1. *Senac.* p. 544.
Syncope pathetica, *Sauv.* ſp. 21.
Aſphyxia a pathemate, *Sauv.* ſp. 7.
Syncope ab antipathia, *Sauv.* ſp. 9. *Senac.* p. 554.
Syncope a veneno, *Sauv.* ſp. 10. *Senac.* p. 546.
Syncope ab apoſtematis, *Sauv.* ſp. 11. *Senac.* p. 554.
Syncope a ſphacelo, *Sauv.* ſp. 14. *Senac.* p. 553.
Syncope ab inanitione, *Sauv.* ſp. 1. *Senac.* p. 536.
Syncope a phlebotomia, *Sauv.* ſp. 4.
Syncope a dolore, *Sauv.* ſp. 2. *Senac.* p. 583.
Aſpyxia traumatica, *Sauv.* ſp. 14.
Aſphyxia neophytorum, *Sauv.* ſp. 17.

Deſcription. A ſyncope begins with a remarkable anxiety about the heart; after which follows a ſudden extinction, as it were, not only of the animal-powers and actions, but alſo of the vital powers, ſo that the patients are deprived of pulſe, ſenſe, and motion, all at once. In thoſe caſes which phyſicians have diſtinguiſhed by the name of *leipothymia*, the patient does not entirely loſe his ſenſes, but turns cold and pale; and the pulſe continues to beat, though weakly; the heart alſo ſeems to tremble rather than beat; and the reſpiration is juſt perceptible. But in the true ſyncope or full aſphyxia, not the ſmalleſt ſign of life can be perceived; the face hath a death-like paleneſs, the extremities are cold, the eyes ſhut, or at leaſt troubled; the mouth ſometimes ſhut, and ſometimes gaping wide open; the limbs flaccid, and the ſtrength quite gone; as ſoon as they begin to recover, they fetch deep and heavy ſighs.

Cauſes, &c. Fainting is occaſioned moſt commonly by profuſe evacuations, eſpecially of blood; but it may happen alſo from violent paſſions of the mind, from ſurfeits, exceſſive pain, &c. People of delicate conſtitutions are very ſubject to it from ſlight cauſes; and ſometimes it will ariſe from affections of the heart and large veſſels not eaſy to be underſtood. Fainting is alſo a ſymptom of many diſorders, eſpecially of that fatal one called a *polypus of the heart*, of the plague, and many putrid diſeaſes.

Prognoſis. When fainting happens in the beginning of any acute diſtemper, it is by no means a good omen; but when it takes place in the increaſe or at the height of the diſeaſe, the danger is ſomewhat leſs; but in general, when fainting comes on without any evident cauſe, it is to be dreaded. In violent hæmorrhages it is favourable; as the bleeding veſſels thus have time to contract and recover themſelves, and thus the patient may eſcape.

Cure. When perſons of a full habit faint through exceſs of paſſion, they ought to be blooded without delay, and ſhould drink vinegar or lemon-juice diluted with water; and, after the bowels are emptied by a clyſter, take a paregoric draught, and go to bed.

The paſſion of anger, in a peculiar manner, affects the biliary ſecretion, cauſes an oppreſſion at the ſtomach, with nauſea and retching to vomit, and a bitter taſte in the mouth, with giddineſs: theſe ſymptoms ſeem to indicate an emetic; which, however, in theſe caſes muſt be carefully avoided, as it might endanger the patient, by bringing on an inflammation of the ſtomach.

The general effects of a ſudden fright have been mentioned on a former occaſion. When theſe are ſo violent as to require medical aid, our firſt endeavours muſt be to take off the ſpaſmodic conſtriction, and reſtore freedom to the circulation; by bleeding, if the habit be at all inclined to fulneſs; and by giving a mixture, with equal parts of the vinum antimoniale and elixir paregoricum, in ſome agreeable vehicle, which will bring on ſleep and encourage perſpiration. It was formerly mentioned, that convulſions, or even an epilepſy, may be brought on by frights; which ſhould make people cautious of playing fooliſh tricks in this way.

When a ſurfeit, or any ſpecies of ſaburra, occaſions a leipothymia, an emetic is the immediate remedy, as ſoon as the patient, by the help of acrid ſtimulants, ſhall be ſo far rouſed as to be able to ſwallow one: in theſe caſes, tickling the fauces with a feather dipt in ſpirit of hartſhorn, will be proper, not only to rouſe the patient, but alſo to bring on vomiting.

A ſyncope is moſt commonly brought on by profuſe diſcharges or evacuations, either of the blood or of the ſecreted humours.

In order to revive the patients, they ought to be laid along in a horizontal poſture, in an airy place; the legs, thighs, and arms, are to be rubbed with hot flannels; very ſtrong vinegar, or ſalt of hartſhorn, or the ſpirit of this or of ſal ammoniac are to be held to the noſtrils, and rubbed into them, or, being properly diluted, poured down the throat; cold water is to be ſprinkled on the face and neck; and when by theſe means the patient ſhall be ſufficiently revived, wine boiled up with ſome grateful aromatic, is to be given in the proper quantity.

In the fainting conſequent upon profuſe uterine hæmorrhages, it will be a ſafer practice to abſtain from all heating and ſtimulant things; as life, in theſe caſes, is preſerved by the coagulation of the blood in the extremities of the open veſſels; which might be prevented, by the pouring in hot wine or volatile alkaline ſpirits.

When a ſyncope is the conſequence of the too violent operation of either an emetic or cathartic, the tinctura thebaica, mixed with ſpiced wine, is the moſt efficacious remedy; but the opiate muſt be given gradually, and in very ſmall doſes.

A ſyncope, or even aſphyxia, wherein the patient ſhall lie for ſeveral hours, is frequent in hyſteric conſtitutions; and during the fit requires fetid antiſpaſmodics, together with acrid ſtimulants: to prevent returns, nothing anſwers better than the bark joined with chalybeates.

384 CXI. DYSPEPSIA, or *Difficulty* of DIGESTION.

Genus XLVI.

Dyſpepſia, *Vog*. 277.
Apepſia, *Vog*. 276.
Diaphora, *Vog*. 278.
Anorexia, *Sauv*. gen. 162. *Lin*. 116. *Sag*. gen. 268.
Cardialgia, *Sauv*. gen. 202. *Lin*. 48. *Vog*. 157. *Sag*. gen. 160.
Gaſtrodynia, *Sauv*. gen. 203. *Sag*. gen. 161.
Soda, *Lin*. 47. *Vog*. 161.
Nauſea, *Sauv*. gen. 250. *Lin*. 182. *Vog*. 159. *Sag*. gen. 185.
Vomitus, *Sauv*. gen. 251. *Lin*. 183. *Vog*. 214. *Sag*. gen. 186.
Flatulentia, *Sauv*. gen. 271. *Lin*. 165. *Vog*. 127. *Sag*. gen. 207.

The idiopathic Species are,

Anorexia pituituoſa, *Sauv*. ſp. 2.
Anorexia a ſaburra, *Sauv*. ſp. 9.
Anorexia exhauſtorum, *Sauv*. ſp. 8.
Anorexia paralytica, *Sauv*. ſp. 1.
Nauſea ex cacochylia, *Sauv*. ſp. 11.
Vomitus pituitoſus, *Sauv*. ſp. 26.
Vomitus ruminatio, *Sauv*. ſp. 6.
Vomitus a ſaburra, *Sauv*. ſp. 2.
Vomitus a crapula, *Sauv*. ſp. 1.
Vomitus lacteus, *Sauv*. ſp. 3.
Flatulentia infantilis, *Sauv*. ſp 5.
Flatulentia acida, *Sauv*. ſp. 1.
Flatulentia nidroſa, *Sauv*. ſp. 2.
Cardialgia bradypepta, *Sauv*. ſp. 9.
Cardialgia a ſaburra, *Sauv*. ſp. 2.
Cardialgia lactantium, *Sauv*. ſp. 11.
Cardialgia flatulenta, *Sauv*. ſp. 3.
Cardialgia paralytica, *Sauv*. ſp. 7.
Gaſtrodynia ſaburralis, *Sauv*. ſp. 1.
Gaſtrodynia flatulenta, *Sauv*. ſp. 2.
Gaſtrodynia periodynia, *Sauv*. ſp. 7.
Gaſtrodynia aſtringens, *Sauv*. ſp. 9.
Gaſtrodynia atterens, *Sauv*. ſp. 10.
Gaſtrodynia a frigore, *Sauv*. ſp. 18.

Beſides theſe there are a great number of ſymptomatic Species.

Deſcription. It is by no means eaſy to define exactly the diſtemper called *dyſpepſia*, when conſidered as an original diſeaſe, ſeeing there are very few maladies which ſome way or other do not ſhew themſelves by an affection of the ſtomach; and much more difficult ſtill muſt it be to enumerate all its ſymptoms. The moſt remarkable, however, and the moſt common, are the following: Want of appetite; diſtenſion of the ſtomach when no food hath been taken for ſome time before; ſlight dejection of ſpirits; a gradual decay of the muſcular ſtrength; languor, and averſion from motion; the food which is taken without appetite is not well digeſted; the ſtomach and inteſtines are much diſtended with flatus, whence the patients are tormented with ſpaſms, gripes, and ſickneſs: frequently a limpid water, having an acid or putrid taſte, is brought up; ſometimes the food itſelf is thrown up by mouthfuls; and ſometimes, though rarely, the ſame is ſwallowed again, after the manner of ruminating animals. While matters are in this ſituation, the heart ſometimes palpitates, and the breath is quick, and drawn with difficulty; the head achs and is giddy; and ſometimes both theſe ſymptoms are continual, and very violent, inſomuch that the patient is not only tormented with pain, but ſtaggers as if he was drunk. By reaſon of the too great aceſcency or putrefaction of the aliment, a cardialgia or heartburn comes on, and in this ſituation a ſpontaneous diarrhœa ſometimes carries off the diſeaſe; but in other caſes there is an obſtinate coſtiveneſs, attended with colic-pains. Frequently the pulſe is quick, ſometimes ſlow, but always weak: the circulation is ſo languid that the blood can ſcarce reach the extreme veſſels, or at leaſt ſtagnates in them, ſo that the face becomes livid, ſwelled, and has an unuſual appearance: and at the ſame time that the circulation and nervous power are in this languid ſtate, the perſpiration becomes leſs copious; the ſkin becomes dry and corrugated; the natural heat, eſpecially of the extremities, is much diminiſhed; the tongue is white; and an uninverſal laxity takes place, inſomuch that the uvula and velum pendulum palati are ſometimes enlarged to ſuch a degree as to become extremely troubleſome. The patient is either deprived of reſt, or wakes ſuddenly out of his ſleep, and is diſturbed by frightful dreams; at the ſame time that the mind ſeems to be affected as well as the body, and the perſon becomes peeviſh, fretful, and incapable of paying attention to any thing as uſual. At laſt hectic ſymptoms come on, and the whole frame becomes ſo irritable, that the ſlighteſt cauſe excites an univerſal tremor, and ſometimes violent vomiting and diarrhœa. Sometimes the ſalivary glands are ſo relaxed, that a ſalivation comes on as if excited by mercury; the ſerum is poured out into the cavity of the abdomen and cellular ſubſtance of the whole body, and the patient becomes affected with anaſarca or aſcites.

Cauſes, &c. The cauſes of dyſpepſia may be any thing which debilitates the ſyſtem in general, but in a particular manner affects the ſtomach. Such are opium taken in immoderate quantities, which hurts by its ſedative and relaxing powers; ſpirituous liquors drunk to exceſs; tobacco, tea, coffee, or any warm relaxing liquor, taken in too great quantity; acid, unripe fruits; vomits or purges too frequently taken; an indolent ſedentary life, &c. &c. All theſe act chiefly upon people of a weak and delicate habit; for the robuſt and hardy ſeldom labour under a dyſpepſia, or at moſt a very ſlight one.

Prognoſis. When a dyſpepſia firſt occurs, it is frequently removed without great difficulty; when it is ſymptomatic, we muſt endeavour to cure the primary diſeaſe; but when it frequently returns with ſymptoms of great debility, hectic, or dropſy, we have great reaſon to dread the event.

Cure. A radical cure of dyſpepſia is only to be expected from tonic medicines, which can remove from the ſtomach and ſyſtem that debility on which the diſeaſe depends. But, previous to their uſe, it will be neceſſary to evacuate the contents of the alimentary canal by vomits or purgatives. If there is a tendency to putreſcency, antiſeptics muſt then be exhibited; but more frequently there is a prevailing acidity, which creates an intolerable heart-burn. To palliate this ſymptom, magneſia alba may be given; which is much preferable to the common teſtaceous powders, as being purgative when diſſolved in an acid, while the others are rather aſtringent. In the third volume of the Medical Obſervations, we have an account of two caſes of dyſpepſia attended with a very uncommon degree of cardialgia, in which magneſia was ſo ſucceſsful, that we can ſcarce doubt of its efficacy in ſlighter degrees of the diſorder. They were communicated by Dr Watſon.

“ A woman, aged 34, the mother of ſeveral children, was taken, in the fourth month of her pregnancy with violent vomitings; which growing daily worſe, notwithſtanding the endeavours of her apothecary to reſtrain them, brought on at the end of a month ſuch ſevere pains in the ſtomach, and ſpaſms in her abdomen, as to occaſion abortion. The vomitings were not leſſened by this event, but grew worſe, and frequently brought on general convulſions to ſuch a degree, that ſhe was many times ſuppoſed to be at the point of death.

“ Scarce any medicine ſtaid with her, ſhe brought up almoſt inſtantly whatever was given her as nouriſhment, either in a ſolid or liquid form. She was exceedingly pale, and very much emaciated; her fleſh was cold to the touch; and, though her urine was little in quantity, it was perfectly limpid. She had a continual thirſt, and was, in a conſiderable degree, coſtive. Her pulſe was ſlow and quick, and ſhe was frequently tormented with the hiccough. The pain in her ſtomach was ſevere and conſtant, and whatever ſhe brought up was ſharp to ſuch a degree, as to make her mouth and throat very ſore. Theſe parts upon examination appeared high-coloured, and in many places excoriated; and the pain ſhe felt in her ſtomach upon ſwallowing any liquor, that had the leaſt degree of acrimony, or was more than luke-warm, made it probable the ſtomach itſelf, in its internal ſurface, was affected in the ſame manner.

“ In this wretched ſtate I was conſulted; and muſt confeſs that I was much at a loſs how to relieve a patient ſo debilitated, and whoſe ſtomach was in ſo diſeaſed a ſtate, that it ſeemed incapable of retaining any appropriated remedies long enough to correct the acrimony of the juices, and reſtore the ſecretions to a more mild and natural ſtate. Anti-emetics of various kinds had been tried without effect, particularly ſaturated ſolutions of alkaline ſalt in juice of lemons. Stomachic medicines of the warm and aromatic kind ſhe could not bear, on account of their poignancy; and, tho' nothing could ſo ſpeedily correct the almoſt cauſtic acid of the gaſtric juice as ſolutions of alkaline ſalts, neither the fauces or gullet could bear their acrimony.

My expectations of relieving this patient, ſmall as they were, depended upon my being able to neutralize, and thereby leſſen, the ſtimulus of the acid of the ſtomach. To accompliſh this was not very eaſy, as no medicine in ſmall doſes could in any conſiderable degree correct ſo intenſe an acid; and, in the preſent ſituation, it was difficult to get any medicine to ſtay long enough to exert its effects. To diſcharge however what acid matter might be already accumulated in the ſtomach, I directed that the patient ſhould drink plentifully of ſmall, warm, unſalted mutton-broth, and vomit with it ſo long that it ſhould be diſcharged with no other taſte than that of broth. This was complied with, and a large quantity drank. The pain in her ſtomach ceaſed upon this for more than two hours, and was after that time apparently coming on with the ſame violence as before. Upon which I ordered a drachm of magneſia to be given in two ounces of veal-broth. This kept down, and eaſed her; I therefore directed the ſame doſe to be repeated as often as the pain returned, without any regard to the quantity that the whole might amount to, ſuppoſing that the pain continued ſevere. This was done: and in three days ſhe took three ounces of magneſia, of which very few doſes were vomited up, and ſhe was purged conſiderably.

“ This medicine was continued in a ſomewhat leſs quantity for three days longer, in which ſhe took two ounces more of magneſia; by this time the vomitings ceaſed, the convulſions left her, ſhe had no pains in the ſtomach, and her mouth and fauces loſt their intenſely red colour and ſoreneſs; nor did even her eructations longer indicate any acidity.

“ Beſides veal-broth ſhe was allowed boiled rice, and now then ſome rice gruel with a ſmall quantity of brandy; and after a few days more ſhe could retain boiled chicken, and other light, ſolid, animal-food.

“ When her ſtomach was in this ſtate, ſhe took liberally of *decoct. cort. Peruvian.* with a ſmall portion of French brandy, by which and her nouriſhment, ſhe recovered her ſtrength ſurpriſingly. To this medicine, as ſhe was during the latter part of her illneſs conſiderably anaſarcous, were added ſome preparations of ſteel; and in about a month ſhe perfectly recovered.

“ When this patient's ſtomach was relieved, the thirſt, the general and partial ſpaſms, and other complaints, which were merely ſymptomatic, ſoon ceaſed; and what remained of her cure was by no means difficult.

“ Since the above-recited caſe, I was conſulted in another

Practice another, in almoſt every reſpect ſimilar, except that the former began in pregnancy. The vomitings attended with acidity had continued more than a month; the patient's ſtomach rejected every kind of food and medicine; ſhe was debilitated to a great degree, and univerſally anaſarcous.

"Upon being ſent for, I directed for her magneſia, much in the ſame manner as for the former patient; and in a very few days her vomitings ceaſed, her ſtomach became ſtronger, and in leſs than a fortnight the anaſarca diſappeared. But it was a conſiderable time, as this perſon was more advanced in years than the former, before ſhe recovered her ſtrength, notwithſtanding my beſt endeavours for that purpoſe. She at length however perfectly recovered."

385 CXII. HYPOCHONDRIASIS, the Hypochondriac Affection. Genus XLVII.

Hypochondriaſis, *Sauv.* gen. 220. *Lin.* 76. *Vog.* 218. *Sag.* 332.
Morbus hypochondriacus, *Boerh.* 1098.
Malum hypochondriacum, *Hoffm.* III. 64. *Junck.* 36.
Hypochondriaſis melancholica, *Sauv.* ſp. 3.

Deſcription. The ſymptoms of hypochondriaſis are, ſtretching, preſſing, griping, and tormenting pains under the ribs, and chiefly in the left ſide; which ſometimes are exaſperated, and become pungent, burning, or lancinating. Frequently there is an inflation of the left hypochondriacum, which ſometimes becomes ſtationary, and by Hippocrates was taken for a ſymptom of an enlarged ſpleen. When theſe ſymptoms takes place in the right hypochondrium, they are commonly attended with colic-pains, uncertain flying heats, eſpecially in the head, with a tranſient redneſs of the face, and very frequently an œdematous ſwelling of the feet ſucceeds; and beſides theſe, all the other ſymptoms of dyſpepſia occur, together with limpid urine, and thoſe unaccountable affections of mind common in hyſteric patients, though generally in a ſomewhat leſs degree than in them.

Cauſes, &c. The general cauſes of the hypochondriac affection are ſaid to be a plethora, and preternatural thickneſs of the blood; ſuppreſſions of cuſtomary evacuations; high and full diet, together with a ſparing quantity of drink; an hereditary diſpoſition; indolence; atony of the inteſtines; violent paſſions of the mind, &c.

Prognoſis. The hypochondriac affection, when left to itſelf, is more troubleſome than dangerous; but, if improperly treated, may bring on various diſeaſes of a more dangerous nature, ſuch as the hypochondriac melancholy; bloody urine and nephritis, jaundice, vertigo, palſy, apoplexy, &c.

Cure. This is to be attempted by ſuch medicines as attenuate the viſcid juices, and reſtore the tone of the ſyſtem, and which may be all comprehended under bleeding, gentle evacuants, chalybeates, the Peruvian bark, and exerciſe, eſpecially riding on horſeback, which in this diſeaſe is greatly preferable to any other. When the circumſtances of the patient can afford it, a voyage to Spain, Portugal, or ſome of the warmer countries in Europe, will be of great ſervice.

CXIII. CHLOROSIS, the Green-sickness.

Genus XLVIII.

Chloroſis, *Sauv.* gen. 309. *Lin.* 223. *Vog.* 305. *Sag.* gen. 135. *Boerh.* 1285. *Hoffm.* iii. 311. *Junck.* 86.
Chloroſis virginea, *Sauv.* ſp. 1.
a. Chloroſis amatoria.

Deſcription. This diſeaſe uſually attacks girls a little after the time of puberty, and firſt ſhews itſelf by ſymptoms of dyſpepſia. But a diſtinguiſhing ſymptom is, that the appetite is entirely vitiated, and the patient will eat lime, chalk, aſhes, ſalt, &c. very greedily; while at the ſame time there is not only a total inappetence to proper food, but it will even excite nauſea and vomiting. In the beginning of the diſeaſe, the urine is pale, and afterwards turbid; the face becomes pale, and then aſſumes a greeniſh colour; ſometimes it becomes livid or yellow: the eyes are ſunk, and have a livid circle round them; the lips loſe their fine red colour; the pulſe is quick, weak, and low, though the heat is little ſhort of a fever, but the veins are ſcarcely filled; the feet are frequently cold, ſwell at night, and the whole body ſeems covered with a ſoft ſwelling; the breathing is difficult: nor is the mind free from affection as well as the body; it becomes irritated by the ſlighteſt cauſes; and ſometimes the patients love ſolitude, become ſad and thoughtful. There is a retention of the menſes thoughout the whole courſe of the diſorder; and at laſt, all the the bad ſymptoms increaſing, a leucophlegmaſia, anaſarca, atrophy, and death, ſucceed.

Cauſes. The cauſe of chloroſis is thought to be an atony of the muſcular fibres of the alimentary canal, eſpecially of the ſtomach, joined with a ſimilar atony of the perſpiratory veſſels over the whole ſurface of the body, and the whole depending on an atony of thoſe ſmall arteries which pour out the menſtrual blood. This atony may be occaſioned by the ſame cauſes which bring on dyſpepſia and hypochondriaſis, but very frequently ariſes from love and other paſſions of the mind.

Prognoſis. The chloroſis in all caſes is tedious, though it doth not generally prove fatal; but we can never promiſe a certain cure unleſs the menſes make their appearance.

Cure. The remedies here in general are the ſame as in the dyſpepſia and hypochondriaſis; only in the chloroſis ſtronger purgatives may be made uſe of: thoſe which ſtimulate the rectum are uſeful by ſtimulating alſo the veſſels of the uterus; and for this reaſon alſo venery is to be indulged where it can lawfully be done. The cold bath is alſo extremely proper.

Order III. SPASMI.

Spasmi, *Sauv.* Claſs IV. *Vog.* Claſs V. *Sag.* Claſs VIII.
Motorii, *Lin.* Claſs. VII.
Morbi ſpaſmodici et convulſivi, *Hoffm.* III. 9.
Spaſmi et convulſiones, *Junck.* 45, 54.
Epilepſia, *Boerh.* 1071, 1088.

CXIV. The TETANUS. Genus XLIX.

387 Tetanus, *Sauv.* gen. 122. *Lin.* 127. *Vog.* 180. *Sag.* gen. 228.
Catochus, *Sauv.* gen. 123. *Lin.* 128. *Vog.* 183. *Sag.* gen. 229.
Opiſthotonos, *Vog.* 181.
Epiſthotonos, *Vog.* 182.

On this diſtemper Dr Lionel Chalmers hath publiſhed a diſſertation in the firſt volume of the Medical Obſervations, which being ſuperior to any thing that hath appeared in other medical writers on the ſubject, we ſhall here lay before the reader.

"Of all the diſeaſes to which man is ſubject, none deſerves more to be conſidered than the opiſthotonos and tetanus, either with regard to the variety of painful ſymptoms which almoſt without intermiſſion diſtract the ſick, or the danger of the diſeaſes themſelves, from which few recover, in compariſon of the number they attack. In both, the vital actions are very imperfectly performed, moſt of thoſe which are called *natural*, being as it were ſuſpended at once, and ſo far is the patient from being able to execute any voluntary motion, that the whole machine undergoes the moſt excruciating diſtortions, from the violent and unnatural contractions of the muſcles. Happy it is for the inhabitants of the more temperate climates, that ſuch diſeaſes appear rarely among them; but in thoſe countries which lie in the more ſouthern and warmer latitudes, they are endemic, eſpecially to negro ſlaves. In South-Carolina, they ſhew themſelves at all ſeaſons, but not ſo often in winter, more frequently in ſpring and autumn; and are moſt common in the ſummer, when people work abroad and are alternately expoſed to the ſcorching heat of the ſun and heavy ſhowers, which often happen ſuddenly, and greatly alter the temperature of the air. Others are ſeized with the opiſthotonos, after ſleeping without doors, that they may enjoy the deceitful refreſhment of the cool night-air, when the weather is warm: one youth choſe to cut off his hair and ſhave his head on a warm day in March, and went to bed without a cap; but the weather changed, and became cold in the night, and he was found rigid with that diſeaſe next morning.

"Theſe diſeaſes ſo rarely appear as originals in Europe, that a good hiſtory of them cannot be expected from the phyſicians who practiſe in that part of the world; nor has any thing like a full deſcription been given of them by any ancient or modern author which I have ſeen. Hippocrates indeed takes notice of them in many places, and ſeems to regard them only as conſequences of other diſeaſes, or of wounds or ulcers of the nervous or tendinous parts, of which ſymptomatic kind of opiſthotonos he gives three remarkable caſes in *lib.* V. § VII. *de Morb. vulg.* and repeats them in another place; but the few ſymptoms he recounts do not ſhew themſelves with us. Galen, Cœlius Aurelianus, Aretæus, &c. ſeem only to have copied Hippocrates, with the addition of ſome ſuppoſititious ſymptoms, which really do not appear; and the little that Bontius ſays of it, is very faulty.

"Among the numerous claſs of ſpaſmodic diſeaſes, there are three which diſtinguiſh themſelves in a very particular manner, on which the names of *emproſthotonos*, *opiſthotonos*, and *tetanus*, have been juſtly enough beſtowed, as being expreſſive of the poſture into which they throw and confine the patient. When therefore thoſe muſcles which bend the head, neck, and body forwards, ſuffer ſuch involuntary, violent, and continued contractions, as fix the chin to the breaſt, incurvate the ſpine and body, and retain the ſick in this painful and prone poſture, the diſeaſe is called *emproſthotonos*. When the poſterior muſcles are ſimilarly affected, ſo that the head is drawn towards the ſpine, and the ſpine itſelf is recurvated, it has then the name of *opiſthotonos;* although in fact, in this, all thoſe muſcles which act in deglutition, bend the head forwards, or turn it to either ſide, are equally contracted with thoſe which raiſe the head and ſpine. The *tetanus* differs from, or rather is compounded of, both the others; for in this the patient is found rigid and inflexible, being as it were braced between the oppoſite contractions of the anterior and poſterior muſcles; yet even here the head is much retracted.

"I never ſaw the *emproſthotonos;* and ſhall only ſpeak of the *opiſthotonos* and *tetanus*, the firſt being by far the moſt common, and in the laſt ſtage of which the tetanus frequently ſupervenes. And let it be obſerved, that the following deſcription by no means reſpects ſuch ſymptomatic contractions as often happen immediately before death, both in acute and chronic diſeaſes; neither will it agree with that ſpurious *opiſthotonos* or *tetanus*, which appear ſometimes in the firſt and ſecond ſtages of quotidian intermittents in this country, however they may emulate the true diſeaſes in ſome of their ſymptoms.

"Stad. I. The *opiſthotonos*, contrary to what Bontius aſſerts, often comes on gradually and by ſlighter approaches, the patient complaining rather of an uneaſy ſtiffneſs in the back-part of the neck and about the ſhoulders, than of any acute pain, with ſome degree of a general laſſitude. Theſe increaſe, and become ſo troubleſome when he attempts to turn his head, or to bend it forward, as to oblige him to walk very erect; for he can by no means look downward, nor to either ſide, without turning his whole body. He cannot open his jaws without pain; and has ſome difficulty in ſwallowing, which diſcourages him from attempting to eat. At times he feels a ſudden and painful traction under the *cartilago enſiformis*, which ſtrikes thro' to the back, and inſtantly increaſes the rigidity about the neck and ſhoulders, draws the head backward a little, and ſhuts the jaws cloſer. The pain under the *ſternum* returns more frequently and with greater violence; and the other contractions become ſo ſtrong, that the head from this time continues much retracted, and he now refuſes nouriſhment, as ſwallowing is attended with great pain, and occaſions a return of the ſpaſm; which extends along the ſpine quite to the lower extremities, ſo that they will no longer ſupport him, and he is under the neceſſity of going to bed.

"In this manner paſſes over the firſt ſtage of the *opiſthotonos*, which ſometimes takes up three or four days; the patient, as well as thoſe about him, miſtaking the firſt appearances of it for that rheumatic complaint, which is commonly called a *crick in the neck:* but it ſometimes forms itſelf much quicker, and in-

invades the unfortunate perſon with the whole train of its miſchievous ſymptoms, in a few hours: in which caſe, the danger may truly be eſtimated from the violence of the firſt attack; for ſuch generally die in 24, 36, or 48 hours, and very rarely ſurvive the third day. But when it is leſs acute, few are loſt after the ninth or eleventh; which number of days it would not be poſſible for them to complete, unleſs the violence of the diſeaſe was in a good meaſure ſubdued; although I had one who recovered, after having been ſubject to its tyrannical attacks daily for ſix weeks. In this ſtage the pulſe is ſlow, and very hard, and the belly is bound; blood taken away ſeems not to be altered from the natural ſtate, ſo that no indication can be deduced therefrom, and only varies with regard to laxity or compaction, according to the age of the perſon and ſeaſon of the year.

“ Stad. II. The ſpaſm under the ſternum (which is the pathognomic ſymptom of this diſeaſe) becomes more violent, returning every 10 or 15 minutes; and never fails to be inſtantly ſucceeded by a ſtronger retraction of the head, with great rigidity, and pain all round the neck, and along the ſpine to the lower extremities which are ſuddenly put to the ſtretch. The countenance is very pale and contracted; the jaws are that moment ſnapped together, and cannot afterwards be opened ſo wide as to receive the end of one's little finger, an attempt to do which, by way of experiment, ſurely hurries on the ſpaſm. The maſtoid, coracohyoid and ſternohyoid muſcles, as well as all the others concerned in deglutition, and the deltoid and pectorals, are moſt violently contracted, ſo that the ſhoulders are ſtrongly raiſed forward, and the arms are ſtretched out or drawn acroſs the body; but the wriſts and fingers ſeemed not to be affected.

“ Such is the condition of the patient in the time of the ſpaſm, which ceaſes in a few ſeconds: after which the ſhoulders and arms recline, and the inferior extremities relax; yet not ſo entirely, but that ſuch a degree of rigidity for the moſt part remains, as will not permit them to bend, when this is attempted by another perſon; for as to the ſick himſelf, he cannot at all move them. The muſcles on the ſides and forepart of the neck continue ſtill contracted, altho' not ſo ſtrongly; but their action is overcome by the number and ſtrength of the poſterior ones; ſo that the retraction of the head conſtantly remains. He breathes quick for ſome minutes, as if he had been exceſſively exerciſed; and the pulſe is ſmall, fluttering, and irregular, but both become more calm and ſlow. The face is ſometimes pale in the intervals, but oftener fluſhed; and the whole countenance expreſſes ſtrong appearances of the moſt melancholy diſtreſs, as well becauſe of the dread he has of a return of the ſpaſm, which he is ſure will ſoon happen, as from the pain he ſuffers by the preſent contractions, and the more general and ſevere ones which he has ſo lately ſuſtained. The tongue is ſtiff and torpid; but ſo far as it can be ſeen, is not foul. The belly is always bound, and cannot eaſily be looſened. In drinking, the liquid paſſes with great difficulty to the ſtomach, even in the ſmalleſt quantity; and if the ſpaſm ſhould ſeize him at that time, which an attempt to ſwallow for the moſt part occaſions, the liquor returns through the noſe with ſome force. The patients deſire to lie ſtill as much as poſſible; and avoid drinking, ſpeaking, or being moved, either of which are apt to occaſion a return of the ſpaſm.

“ Stad. III. In this laſt ſtage, the patient is reduced to the moſt calamitous and diſtreſsful circumſtances; for he is on a continual rack, according to the moſt literal meaning of that word, the ſpaſm returning oftener than once in a minute, is much more violent, and holds him longer, ſo that he has ſcarcely any remiſſion. The anterior muſcles of the whole body now ſuffer equal contractions with the poſterior; but the laſt overcome the force of the others, ſo that the ſpine is ſtrongly recurvated, and forms a hollow arch with the bed, and he reſts on the back part of the head and the heels. The belly is flat, and is drawn inward; and the muſcles are ſo rigidly contracted, that they will not give way to preſſure, and do not ſeem in the leaſt to yield to the deſcent of the diaphragm in inſpiration, the ſeveral muſcles about the neck, ſides, and abdomen, being plainly diſtinguiſhable from each other. Although the lower extremities are always rigid in this ſtate, yet are they ſo ſuddenly and violently diſtended in the time of the ſpaſms, that were it not for the ſtanders-by, he would be projected feet foremoſt off the bed; while others again are as it were puſhed upward with ſuch a ſpring, that the head is ſtruck with great force againſt whatever happens to be in the way, the thighs and legs being in this caſe no leſs rigid than the other parts. The tongue is ſpaſmodically darted out, and is often miſerably torn, as the teeth are that moment ſnapped together, ſo that it is neceſſary to prevent this by keeping the handle of a ſpoon, wrapped round with ſoft rags, between the teeth, when this can be done. At the time that the tongue is thus thruſt out, the muſcular fleſh, which lies between the arch of the lower jaw and head of the trachea, ſeems to be drawn upwards within the throat. The countenance is very much contracted, and he is in a foam of ſweat, the heat being very great; and the pulſe between the ſpaſms is exceeding quick, ſmall, and irregular, although the heart throbs ſo ſtrongly, that its motions may be plainly ſeen, and a palpitating ſubſultory kind of undulation may not only be felt, but perceived all over the epigaſtric region. The eyes are watery and languid, and a pale or bloody froth bubbles out from between the lips. The jaws are for the moſt part locked faſt, ſo that it is impoſſible to give drink or nouriſhment, nor could he ſwallow if any thing was put into his mouth. In this ſtate they are commonly delirious: and as they cannot ſubſiſt many hours, under ſo great a ſuſpenſion of the vital and natural functions, a mortal anxiety enſues and releaſes them; oftener a continued and ſevere ſpaſm finiſhes the tragedy, when it was before almoſt at an end: but moſt frequently a general convulſion puts a period to their ſufferings; and whichever way this happens, they for the moſt part relax juſt before death.

“ In the *tetanus*, the general ſymptoms are nearly the ſame as in the opiſthotonos, except that from the firſt attack, the lateral, abdominal, and other anterior muſcles, are equally contracted with the poſterior ones; and the arms become rigid as well as the lower extremities. The abdomen is always flat and rigid as in the laſt ſtage of the opiſthotonos, and its contents ſeem to be thruſt up into the thorax, which at the ſame time appears to be much dilated. There are here alſo ſome intervals between the ſpaſms, in the time of which the cheeks are drawn towards the ears, ſo that all the teeth may be ſeen as in the ſpaſmus cynicus. Deglutition is more free in this than in the other diſeaſe; yet ſo far is the ſick from being equally balanced between the contractions of the oppoſite muſcles, that the head is retracted and the ſpine is recurvated, although not quite ſo much as in the opiſthotonos. And the ſpaſm, which commences under the ſternum, is likewiſe common to the tetanus, which terminates as the other, and on the ſame fatal days. But whoever recovers from either, labours long under a general atonia; and they cannot for ſome months raiſe themſelves from a ſupine or recumbent poſture without pain, nor without help for ſome time."

Prognoſis and *Cure*. There has never been any thing like a criſis obſerved in theſe frightful caſes, or favourable termination from the mere efforts of nature, and therefore all the phyſician's dependence muſt be upon art. Fortunately it has been found, that opium is capable of giving ſome relief, if adminiſtered in proper time, and the diſeaſe happens not to be in the moſt violent degree: the warm bath muſt alſo be brought in aid; and the patients ſhould lie horizontally in the bath, and while in it have the whole body extremely well rubbed: when taken out, they are not to be dried, but immediately put to bed wrapt in the ſofteſt blankets; and while they remain there, the belly ought either to be ſtuped, or two or three bladders filled with warm water kept conſtantly lying on it. The bowels at the ſame time muſt, if poſſible, be kept open, by ſolutions of manna and *ſal polychreſt*, or ſome other purging ſalt, mixed with *oleum ricini;* or if that ſhould not be at hand, with oil of ſweet almonds and a little tincture of ſena. The opiates are to be given in large and frequently repeated doſes; ſuch as a grain of the *extractum Thebaicum*, or 20 drops of the tincture, every ſecond or third hour; and it will be ſafeſt not to truſt to the Thebaic tincture which is kept ready prepared in the ſhops, but order the neceſſary doſe of ſolid opium, and either give it in pills, or diſſolve it in ſome convenient liquid. If ſwallowing ſhould be difficult, or the jaws cloſed up, the opium muſt be given in clyſters; for during the whole courſe of the diſeaſe it will be of ſervice to order emollient clyſters to be injected from time to time, ſince theſe will anſwer not only as a relaxing fomentation, but alſo contribute to keep the inteſtinal canal perfectly free.

When the patients recover, they continue for a long time very relaxed and weak; and no wonder, ſince it is the nature of all ſpaſmodic affections to leave behind them extreme weakneſs and relaxation of the muſcular fibres. In order to perfect the recovery, a courſe of the cortex and the Peruvian balſam is be tried; and the ſpine may be rubbed with ſpirituous liniments, or with a mixture of rum and Barbadoes tar: but theſe and all other ſtimulating things, either internally or externally, during the violence of the ſpaſms, muſt be omitted, ſince all of them, as well as bliſters, are found to exaſperate the diſeaſe.

This, in general, is the plan of treatment recommended by Dr Chalmers.

The ſame dreadful diſorders frequently attack young children in the warm climates. Dr Hillary tells us, that they will there ariſe from the ſame cauſes which uſually produce convulſions in them in Britain, viz. a retention of the meconium or firſt excrement after birth; or from a glutinous matter which is too often found in the inteſtines of young children ſoon after the other is diſcharged; or from a cheeſy matter from the coagulation of the milk by an acid in the ſtomach; or from hard excrements; or from ſomething taken in by the mouth which is over acrid, or too hard to digeſt, which irritates their tender bowels, and ſo produces ſtartings and convulſive ſpaſms, with all the other ſymptoms which precede and accompany convulſions in young children in England; and ſhews how much more readily and eaſily the nerves are affected and irritated in that warm climate, and the *tetanus* produced from a much leſs cauſe there, than it is in England, where it is but ſeldom ſeen. But theſe cauſes not being timely removed, their acrimony is increaſed, partly by the heat of the climate, and partly by the fever which they produce, which ſtill renders them more acrid, and ſo increaſes the irritation of their bowels, that it firſt brings on ſtartings, then convulſive ſpaſms, and regular convulſion-fits; which, if not ſoon removed, uſually end in a perfect *tetanus* there, and the diſeaſe is but ſeldom cured in ſuch young children when it arrives at that ſtate: For when the child lies in this miſerable, rigid, immoveable condition, upon moving its hands or feet in the moſt gentle manner, or ſoftly touching any part of its body, or giving it the leaſt motion, even feeling its pulſe in the moſt gentle, tender manner, or the leaſt noiſe, or even touching its clothes, will bring on the convulſive ſpaſms, and cauſe it to be ſtrongly convulſed backwards, or drawn into a rigid ſtraight line, ſtrongly extended and immoveable like a ſtatue, and will ſo remain immoveable out of either of thoſe poſtures for a conſiderable time, a minute or two; and when the diſeaſe is arrived at this degree, our author thinks it is never cured. But if the phyſician is called in time, before the *tetanus* has come on, (which is too ſeldom the caſe there,) though he finds ſtrong convulſive ſpaſms have ſeized the child, or that it has had a convulſive fit or two, it may moſt commonly be relieved, the coming of the *tetanus* be prevented, and the life of the babe ſaved, as Dr Hillary has more than once ſeen, by removing and carrying off the irritating cauſe which ſtimulates their tender bowels, by ſuch gentle evacuations as are ſuitable to their age; and then quieting and compoſing the irritation of their nerves with ſuitable anodynes, and correcting the remaining acrimony of the nutritious juices in the *primæ viæ*.

To anſwer which intentions, the following method, with variations *pro re nata et pro ratione ætatis*, as the cauſe is different, hath been found to anſwer the deſired effect the beſt: ℞ *Seri lactis* ℥ij. *Sapon. Venet.* ℈j. *Mannæ chalab.* ʒij. *vel* iij. *Ol. amigd. dul.* ℥ſs. *Fæniculi dul. gut.* ij. *Balſ. Peruv. gut.* v. *Miſce, fi. enema quam primum injicienda.*

And if the ſymptoms of the approaching *tetanus* will permit, he gives ſomething of the following nature to aſſiſt the operation of the clyſter, and to carry off the acrimony the ſooner: ℞ *Aq. ſem. fæniculi* ℥iij. *Magneſ. albæ* ʒſs. *Ocul. cancr. præp.* ʒj. *Syr. e cichor.*

cum rheo, roſar. ſolut. ana ʒiij. *Miſce.* Or, ℞ *Aq. ſem. fœniculi* ʒiij. *Sapon. amigdal.* ʒſs. *Magneſ. albæ* ʒſs. *Syr. e cichor. cum rheo, mannæ opt. ana* ʒij. *Ol. amigd. dul.* ʒiij. *Miſce: Exhibe cochl. parv. vel duo pro ratione ætatis omni ſemihora, vel omni hora, donec reſpond. alvus.*

Two or three ſtools being obtained by theſe, the following is exhibited in order to abate the convulſive twitchings, and prevent the *tetanus* from coming on: ℞ *Aq. ſem. fæniculi* ℥iij. *Magneſ. albæ* ʒſs. *Ocul. cancr. præp.* ʒj. *Moſchi orient. gr.* iij. *Spir. C. C. ver. gut.* xv. *Syr. e mecon.* ℥ſs. *Miſce: Exhibe cochl. parv.* (a child's ſpoonful) *ter quaterve de die, vel ſæpius, urgent .convulſ. vel ſpaſm.*

But if the ſymptoms ſhew that the *tetanus* is more immediately coming on, ſo that we have no time to wait till the operation of the clyſter and opening laxative be over, ſomething of the following nature muſt be immediately given; or the *tetanus* will come on, and moſt probably prove fatal to ſuch tender babes. ℞ *Aq. fæniculi* ʒiiij. *Moſchi orient. gr.* j. *Tinct. Thebaic. gut.* iiij. *Syr. e mecon.* ʒij. *Miſce pro duobus doſ. de quibus exhibe unam quam primum, et alteram ſi convul. ſpaſm. redeunt.*

This may be thought a bold attempt, to give *tinct. Thebaica* to ſuch a tender young infant: but it is to be conſidered that the little patient will certainly die if the *tetanus* ſeize it, and that it will come on if this do not prevent it; and our author has known a bold ignorant old midwife give four or five drops of that tincture to a very young infant without any prejudice more than its doſing three or four hours, though not in this caſe, but in one much leſs violent.

The clyſter may be given at the ſame time, and the opening laxative not long after it: though it may retard the operation of that for ſome time, yet it operates ſoon after, and gives relief; after which the other medicines, and fomenting the body and anointing it as before, may be uſed, if the phyſician finds it neceſſary; alſo a little of the laxative mixture may be given once or twice a-day, if the above julep does not anſwer that intention of keeping the child's body open for a few days afterwards, which in this caſe is generally found neceſſary to be obſerved.

Theſe methods and medicines may be varied according to circumſtances. For neither the ſame method, nor ſame medicines, will anſwer in all caſes, tho' the diſeaſe be the ſame; but they muſt be changed as the cauſes differ, or the conſtitution of the ſick, or the time of the diſeaſe, or as ſome other circumſtances may require: which is a thing of great importance, not only in this, but in the cure of moſt other diſeaſes; wherefore it is mentioned here, chiefly to caution the practitioners in the Weſt-Indies.

When proper medicines are thus timely and judiciouſly given in this caſe, they ſeldom fail to carry off the irritating cauſe, quieten and eaſe the nerves, remove the convulſions and ſpaſms; and conſequently prevent the *tetanus*'s coming on, and the death of the patient. But if calling in the phyſician be deferred till the *tetanus* has already ſtrongly ſeized the child, as is too often the caſe here, neither warm bathing, fomenting, nor any other methods or medicines whatever, will remove it or its cauſes, nor ſave the life of the little tender patient.

Dr Chalmers gives an account of his having cured one child ſeized with a *tetanus*, by purging with an infuſion of rhubarb; to which a few grains of muſk, and a little *ol. tartar. per deliq.* were added, together with the warm bath, and the frequent injection of glyſters made with an infuſion of camomile-flowers, to each of which was added a ſmall portion of Caſtile ſoap. It is much to be regretted, however, that in thoſe caſes where the aſſiſtance of the medical art is moſt wanted, it moſt generally fails. We have been aſſured by a gentleman who practiſed for ſome time in the warm parts of America, that out of 30 caſes of the *tetanus* he had ſeen, not one of the patients recovered, though he had given opium to the quantity of 20 grains thrice a-day; and others, he was aſſured, had taken 30 grains thrice a-day. In the beginning of the diſeaſe, the medicine produced a violent head-ach; but towards the end, it had no manner of effect whatever. In two patients, the diſeaſe came on from the ſlighteſt cauſes imaginable. The one accidentally fell in attempting to avoid a loaded cart, and put the heel of his ſhoe upon one of his thumbs in riſing; the other, in avoiding the ſame cart, ſlightly ruffled the ſkin of his noſe. Both were ſeized with the *tetanus*; and both died, notwithſtanding all poſſible aſſiſtance was given. The former had his thumb amputated, without effect.

In the Edinburgh Phyſical and Literary Eſſays, Vol. III. Dr Donald Monro, deſcribes a new method of cure, communicated to him by a gentleman who was formerly a practitioner in Jamaica. While this gentleman practiſed in that iſland, he had under his care a great number of caſes of *tetanus* attended with the locked-jaw. At firſt, he uſed to give very freely of opium, muſk, and other medicines of this claſs; to bleed, and make other evacuations; while he uſed baths, fomentations, embrocations, and other external applications, but all without the leaſt ſucceſs; and, as he had loſt a great many patients without being ſo lucky as to make one cure, he began to believe that this diſorder always proved fatal, and was not to be cured by medicine, notwithſtanding what ſome practitioners had alleged. However, having received an unexpected hint concerning the good effects of the mercurial ointment in ſuch caſes, he reſolved to try it; and ordered the firſt patient that offered to be put into a warm room, and to be rubbed two or three times a-day with the ointment, till ſuch time as a ſalivation was raiſed; when he with pleaſure obſerved, that, as ſoon as the mercury began to affect the mouth, the convulſions of the muſcles of the jaws, as well as all the other ſpaſms and convulſions, ceaſed, and the patient was freed of all his complaints. After this, he treated every caſe of this kind which came under his care in the ſame manner, and cured twelve, which were all who applied to him for advice ſo early in the diſorder that there was time to bring the mercury to the mouth before the fatal period was expected. A few died, in whom the diſeaſe was ſo far advanced before he ſaw them that there was not time to raiſe a ſalivation. None of the caſes which were under this gentleman's care in the Weſt Indies were the conſequences of wounds or capital operations; nor has he had any opportunity of trying it ſince in caſes of the locked jaw, which ſometimes follows capital operations, owing to his having given over practice: but he thinks, that, from the ſimilarity of the complaint, there is no doubt but that the mercurial frictions would be equally efficacious in ſuch caſes, as when the diſorder comes from catching cold or other ſuch cauſes.

In the ſecond volume of the Medical Tranſactions, we have an account of a cure performed by means very different from any of thoſe above related, by Dr William Carter at Canterbury.—On the 17th of May 1767, the doctor was called to a ſtrong healthy man, in the 21ſt year of his age, and who had been confined to his bed for three weeks. What gave riſe to his preſent diſorder was a wound on the inner ancle of his right leg, which he had received ſix weeks before from a joiner's chiſel. At that time his mouth was ſo far cloſed, as to admit only the moſt liquid nouriſhment, which he conſtantly ſucked through his teeth: but his legs and jaw, and the whole length of the ſpina dorſi, were quite immovable, being as ſtiff and rigid as thoſe of a perſon long dead; his head was drawn backward, and he was frequently ſtrongly convulſed. The motion indeed of both his arms was but a little impaired. From the beginning to the end, his ſight, hearing, and memory, continued perfect; his appetite was good; and his ſenſes, in the day-time, entire, though ſometimes wandering in the night. As to his pulſe, that was regular; if it deviated at all from the pulſe of a perſon in health, it was rather ſlow than quick, and ſomewhat fuller than natural. Such was the ſituation of his patient; a detail of which had been given before the doctor ſet out on his journey, which he undertook with a determined reſolution to make uſe of the method recommended by Dr Silveſter, in the firſt vol. of Medical Obſervations and Inquiries, publiſhed in the year 1757, (and which has been related from Dr Chalmers and Dr Hillary.) But, on his arrival at the houſe, he found great quantities of the *extractum thebaïcum* diſſolved had been already given him; and that, for the five laſt days, he had taken no leſs than 28 grains of that medicine, with 50 grains of muſk, in the ſpace of 24 hours, without any ſenſible effect, except the bringing on a confuſed ſleep, out of which he frequently awoke in great hurries, attended with a violent pain in the head, which almoſt deprived him of his ſenſes. The doctor was afraid to extend the doſe; and ſoon determined to take ſome other method, though at a loſs what method to purſue, as, during a courſe of almoſt 30 years practice, nothing of the ſame kind had ever fallen under his cognizance before. Reflecting, however, that this diſorder had always been deemed of the ſpaſmodic kind, and that the good effects produced by the *extractum thebaïcum* muſt probably be owing to the relaxing and reſolving faculty of that medicine, he directed a bliſter to be applied between the ſhoulders; the whole length of the ſpine, and jaw, to be anointed with the *oleum lateritium*; and a purge, conſiſting of the *tinctura ſacra jalapii* and the *ſyrupus de rhamno cathartico*, to be given him. This was repeated three ſeveral times afterwards, at the diſtance of three or four days between each doſe. On the intermediate days, he was ordered the *oleum ſuccini*, the fœtid gum, and the *oleum amygdalinum*. Of the firſt he took 30 drops, of the gum 20 grains, and of the laſt four ounces, *in nycthemeri ſpatio*. By theſe means, and theſe only, the convulſions ſoon ceaſed, and he grew daily better and better, till at the end of a fortnight he was able to walk about his room, and in leſs than three weeks became in all reſpects well, ſome ſmall weakneſs in the parts only excepted. The jaw was relieved firſt, after that the ſpine, and laſt of all the legs. A pain and uneaſineſs in the places affected, neither of which he had felt before, were the forerunners of his approaching amendment.

From all this it ſeems reaſonable to conclude, either that there is no certain remedy for tetanus in all caſes, or that the medicines which prove effectual in one conſtitution will fail in another. Thus, it is poſſible, that in caſes where opium proves ineffectual, mercury may be a remedy; and on the contrary, where mercury fails, opium may be effectual; and even where both are ineffectual, the antiſpaſmodics recommended by Dr Carter may be of uſe. It is therefore neceſſary for phyſicians to be extremely careful to obſerve the effects of the firſt doſes of their remedies: for if the ſymptoms ſhew not the leaſt appearance of remiſſion after a large doſe of opium, it is improbable that it can be cured by a repetition of the medicine; and as no time can be loſt with ſafety, it will then be proper to apply mercurial ointment, or whatever elſe may be judged proper.—In the Medical Commentaries indeed we have an account of the cold bath being uſed as a remedy, by Thomas Cochran ſurgeon at Nevis. The patient was an Eaſt Indian boy who had been gored by a cow and afterwards expoſed to a rainy damp air for ſome hours. Mr Cochran aſcribes his cure to the cold bath, which was applied by daſhing the water upon his body. But as the patient at the ſame time got laudanum at firſt in the quantity of 200 drops a-day, and afterwards in ſtill larger doſes; and had beſides his throat and ſhoulders anointed with warm oil of turpentine, was bled, and had lenient glyſters and laxatives; it is by no means eaſy to ſay what ſhare the cold bath had in his cure, or whether it had any at all. Mr Cochran, however, ſays he has heard of ſome caſes being treated ſucceſsfully by cold water and the bark in St Euſtatia and St Kitts, and in another letter mentions his having uſed the cold bath in other caſes of tetanus with ſucceſs. This remedy is now alſo uſed by ſome Engliſh phyſicians.

GENUS XLIX. TRISMUS, or the LOCKED JAW.

Triſmus, *Sauv.* gen. 117. *Lin.* 124. *Sag.* gen. 223. Capiſtrum, *Vog.* 208.

CXV. The *Locked* JAW in Children under two months old. Sp. I. 388

Triſmus naſcentium, *Sauv.* ſp. 1. *Heiſter* Comp. Med. Pract. cap. xv. § 10. *Cleghorn* on the Diſeaſes of Minorca, Introd. p. 33. *Hoſer* in Act. Helvet. tom. i. p. 65.

This diſtemper is ſo cloſely connected with the tetanus, that it ought rather to be accounted a ſymptom of the tetanus than a primary diſeaſe. The triſmus of young children we have accordingly diſcuſſed under TETANUS.

389 CXVI. The TRISMUS from *Wounds* or *Cold*. Sp. II.

Triſmus traumaticus, *Sauv.* ſp. 2. *Lond. Med. Obſ.* Vol. I. art. 1. 7. Vol. II. 34. Vol. III. 31. Vol. IV. 7.
Angina ſpaſmodica, *Sauv.* ſp. 18. *Zwingeri* Act. Helvet. Tom. III. p. 319.
Convulſio a nervi punctura, *Sauv.* ſp. 2.
Triſmus catarrhalis, *Sauv.* ſp. 15. *Hillary's* Barbadoes, 221. *Lond. Med. Obſ.* Vol. IV. 7.

The internal remedies proper in all caſes of the locked jaw, from whatever cauſe it may proceed, have been already mentioned under TETANUS: the external treatment of wounded parts which may give occaſion to it belongs to the article SURGERY.

390 CXVII. CONVULSION. Genus L.

Convulſio, *Sauv.* gen. 128. *Lin.* 142. *Vog.* 191. *Sag.* gen. 235.
Convulſio univerſalis, *Sauv.* ſp. 11.
Hieranoſos, *Lin.* 144. *Vog.* 190.
Convulſio habitualis, *Sauv.* ſp. 12.
Convulſio intermittens, *Sauv.* ſp. 16.
Convulſio hemitotonos, *Sauv.* ſp. 15.
Convulſio abdominis, *Sauv.* ſp. 10.
Convulſio ab inanitione, *Sauv.* ſp. 1.
Convulſio ab onaniſmo, *Sauv.* ſp. 13.
Scelotyrbe feſtinans, *Sauv.* ſp. 2.

Deſcription. When convulſions attack only particular parts of the body, they are generally attended with ſome kind of paralyſis at the ſame time, by which means the affected parts are alternately convulſed and relaxed; a permanent convulſion, or unnatural contraction, of particular muſcles, is called a *ſpaſm*, or *cramp*. Theſe partial convulſions may attack almoſt any part of the body; and are not unfrequently ſymptomatic, in fevers, the cholera morbus, &c. The involuntary ſtartings of the tendons, the picking of the bed-clothes, &c. in acute diſeaſes, &c. are all of them convulſive diſorders.

Cauſes. Convulſions, not only of particular parts, but alſo over the whole body, often take place from cauſes not very evident. Sometimes they ſeem to depend on a certain delicacy or irritability of the nervous ſyſtem, which is framed with ſuch exquiſite ſenſibility as to be ſtrongly affected by the ſlighteſt cauſes. Delicate women are often ſubject to hyſterical convulſions, as alſo hypochondriac people. Convulſions, however, often take their riſe from wounds, irritations of the ſtomach and inteſtines by worms, poiſons, violent cathartics and emetics, &c.; and very often they are ſymptomatic, as in dentition, the ſmall-pox, and many kinds of fevers.

Prognoſis. Except in ſome few caſes, convulſive diſorders are always to be dreaded; but leſs in young people than in ſuch as are advanced in life. Thoſe which attack girls under the age of puberty will generally ceaſe on the appearance of the menſes; and boys have likewiſe a chance of being relieved as they advance in life: but in grown up people, unleſs the cauſe is very evident, a cure is hardly to be expected.

Cure. See EPILEPSY, below.

391 CXVIII. CHOREA, or ST VITUS's DANCE.
Genus LI.

Scelotyrbe, *Sauv.* gen. 136. *Sag.* 243.
Chorea, *Lin.* 139.
Scelotyrbe chorea Viti, *Sauv.* ſp. 1.
Chorea St. Viti, *Sydenh.* Sched. Monit.

Deſcription. This diſeaſe ſhews itſelf firſt by a kind of lameneſs or inſtability of one of the legs, which the patients draw after them in a ridiculous manner: nor can they hold the arm of the ſame ſide ſtill for a moment; for if they lay it on their breaſt, or any other part of their body, it is immediately forced away by a convulſive motion. If they are deſirous of drinking, they uſe a number of odd geſticulations before they can bring the cup to their mouths, becauſe their arms are drawn this way and that by the convulſions which affect them.

Cauſes, &c. The general cauſe of St Vitus's dance is a debility of the ſyſtem; and hence we find it attacks only weakly boys, and more eſpecially girls, when under the age of puberty. But the particular cauſes determining the muſcles to be affected in ſuch and ſuch a manner are entirely unknown.

Prognoſis. As this diſorder ſcarce ever attacks any perſons but ſuch as are under the age of puberty, there is almoſt a certain proſpect of its being then cured, tho' generally the diſorder is eaſily removed before that time.

Cure. See EPILEPSY.

CXIX. RAPHANIA. Genus LII. 392

Raphania, *Lin.* 155. *Vog.* 143. *Lin.* Amœn. Acad. Vol. VI.
Convulſio raphania, *Sauv.* ſp. 7.
Eclampſia typhodes, *Sauv.* ſp. 1. *Sennert* de febr. l. iv. cap. 16. *Gregor. Horſt.* Oper. tom. II. l. viii. obſ. 22. *Brunner* in Ephem. Germ. D. iii. A. ii. obſ. 224. *Williſch.* ibid. cent. vii. obſ. 13. *Wepfer* de Affect. Capitis, obſ. 120. *Breſlauer* Sammlung 1717, Julio, Septembri, & Decembr. Ibid. 1723, Januar. A. N. C. Vol. VII. obſ. 41. *Bruckmann.* Com. Norimb. 1743, p. 50.

Deſcription. According to Sauvages, this diſtemper begins with a laſſitude of the limbs, tranſient colds and ſhiverings, pain of the head, and anxieties of the præcordia. Then come on ſpaſmodic ſtartings of the fingers and feet; alſo of the tendons and muſcles, conſpicuous below the ſkin. The diſeaſe is attended with heat, fever, delirium, ſtupor, conſtriction of the breaſt, ſuffocating dyſpnœa, loſs of voice, horrid convulſions of the limbs, preceded by a formication, or ſenſation as of ants or other ſmall inſects creeping on the parts. In this ſtate of the diſeaſe, the convulſive paroxyſms are attended with moſt violent pains in the limbs, vomiting, or diarrhœa, with the paſſing of worms, thirſt, and in young people an unnatural hunger. It continues from ten days to three months. About the eleventh or twentieth day, ſome are relieved by copious ſweats, or purple exanthemata; while others fall into a tabes, with ſtupor, or ſtiffneſs of the joints.

Cauſes, &c. This diſeaſe is frequently epidemic in Suabia and other parts of Germany; where it is ſaid to be produced by ſeeds of radiſhes, which are often mixed with rye in that country; and from this ſuppoſed cauſe the diſeaſe takes its name.

Cure. See Epilepsy.

Genus LIII. EPILEPSY, or Falling-Sickness.

Epilepſia, *Sauv.* gen. 134. *Lin.* 143. *Vog.* 188. *Sag.* gen. 24. *Boerh.* 1071. *Hoffm.* III. 9. *Junck.* 54.

Eclampſia, *Sauv.* gen. 133. 180. *Sag.* gen. 240.

393 CXX. The Cerebralis, or *Epilepſy* depending on an affection of *Brain.* Sp. I.

Epilepſia plethorica, *Sauv.* ſp. 1.
Eclampſia plethorica, *Sauv.* ſp. 7.
Epilepſia cachectica, *Sauv.* ſp. 2.?

394 CXXI. The Sympathica, or *Sympathetic Epilepſy*, with a ſenſation of ſomething riſing from a certain part of the body towards the Head. Sp. II.

Epilepſia ſympathica, *Sauv.* ſp. 8.
Epilepſia pediſymptomatica, *Sauv.* ſp. 6.

395 CXXII. The Occasionalis, or *Epilepſy* ariſing from various irritating Cauſes. Sp. II.

Epilepſia traumatica, *Sauv.* ſp. 13.
Eclampſia traumatica, *Sauv.* ſp. 9.
Epilepſia a dolore, *Sauv.* ſp. 10.
Epilepſia rachialgica, *Sauv.* ſp. 14.
Eclampſia a doloribus, *Sauv.* ſp. 4.
  a. Rachialgica.
  b. Ab otalgia.
  c. A dentitione.
Eclampſia parturientium, *Sauv.* ſp. 3.
Eclampſia verminoſa, *Sauv.* ſp. 2.
Eclampſia ab atropa, *Sauv.* ſp. 11.
Eclampſia ab œnanthe, *Sauv.* ſp. 12.
Eclampſia a cicuta, *Sauv.* ſp. 13.
Eclampſia a coriaria, *Sauv.* ſp. 14.
Epilepſia exanthematica, *Sauv.* ſp. 11.
Epilepſia cachectica, *Sauv.* ſp. 2.
Epilepſia ſtomachica, *Sauv.* ſp. 3.
Eclampſia a ſaburra, *Sanv.* ſp. 5.
Epileſia a pathemate, *Sauv.* ſp. 7.
Eclampſia ab inanitione, *Sauv.* ſp. 8.
Epilepſia neophytorum, *Sauv.* ſp. 15.

Deſcription. The epilepſy often attacks ſuddenly, and without giving any warning: but more frequently is preceded by a pain in the head, laſſitude, ſome diſturbance of the ſenſes, unquiet ſleep, unuſual dread, dimneſs of ſight, a noiſe in the ears, palpitation of the heart, coldneſs of the joints, and in ſome there is a ſenſation of formication, or a cold air, &c. aſcending from the lower extremities towards the head. In the fit, the perſons fall ſuddenly to the ground (whence the name of the *falling-ſickneſs*), frequently with a violent cry. The thumbs are ſhut up cloſe in the palms of the hands, and are with difficulty taken out; the eyes are diſtorted, ſo that nothing but the whites are to be ſeen; all ſenſation is ſuſpended, inſomuch, that by no ſmell, noiſe, or otherwiſe, nor even by pinching the body, can they be brought to themſelves; they froth at the mouth, with a hiſſing kind of noiſe; the tongue is frequently lacerated by the teeth, and there is a violent convulſive motion of the arms and legs. Sometimes, however, the limbs, inſtead of being agitated by convulſive motions, are all ſtiff, and the patients are as immoveable as a ſtatue. In children the penis is erected; and in young men there is an emiſſion of the ſemen, and the urine is often thrown out to a conſiderable diſtance. At length there is a remiſſion of the ſymptoms, and the patients recover after a longer or ſhorter interval; when they complain of a pain, torpor, and heavineſs of the head, with a laſſitude of all the joints.

Cauſes, &c. The diſſection of epileptic ſubjects has ſhewn a variety of morbid appearances, which may be ſuppoſed to have contributed to the diſeaſe; ſuch as, indurations in the brain or meninges; caries of the internal ſurface of the cranium; projections of the boney ſubſtance of the ſame, preſſing upon the brain; collections of ſerum or purulent matter, and earthy concretions within the ſcull; beſides many others which are recorded by Bonetus, Morgagni, and Lieutaud. But often the cauſes are impoſſible to be diſcovered; for even in thoſe who have died of the diſeaſe, the brain and all other parts of the nervous ſyſtem have been apparently ſound. The diſeaſe will attack ſtrong as well as weak people; and in thoſe who are ſubject to it, any conſiderable exceſs in drinking, a ſurfeit, violent paſſion, or venery, &c. will certainly bring on a fit. Some have epileptic paroxyſms returning periodically after conſiderable intervals; and the diſeaſe hath been thought to have ſome dependence on the phaſes of the moon.

Prognoſis. If the epilepſy comes on before the time of puberty, there are ſome hopes of its going off at that time. But it is a bad ſign when it attacks about the 21ſt year, and ſtill worſe if the fits grow more frequent; for then the animal-functions are often deſtroyed, as well as thoſe of the mind, and the patient becomes ſtupid and fooliſh. Sometimes it will terminate in melancholy or madneſs, and ſometimes in a mortal apoplexy or palſy. It hath ſometimes, however, been obſerved, that epilepſies have been removed by the appearance of cutaneous diſeaſes, as the itch, ſmall-pox, meaſles, &c. While the diſeaſe is recent, therefore, we are not to deſpair of a cure; but if it is of long ſtanding, or hereditary, there is very little reaſon to expect that it can be removed.

Cure. In all convulſive diſorders, excepting thoſe which are cured by nature about the time of puberty, the cure by artificial means is very difficult. Numberleſs ſpecifics have been recommended, but all of them have failed of anſwering the expectation. When the cauſe can be diſcovered, that muſt be removed. In other caſes, the cold bath, valerian root, caſtor, muſk, opium, the fœtid gums, Peruvian bark, with the whole tribe of nervous and antiſpaſmodic medicines, have been recommended: but none of theſe, or indeed any combination of them, have been found generally uſeful; though the ſlighter, or ſymptomatic caſes, may often be removed by them.

Of late the *calx*, improperly called the *flowers*, of zinc, have obtained ſuch reputation in convulſive diſorders as to be received into the Edinburgh diſpenſatory. They were propoſed by Dr Gaubius as an antiſpaſmodic, in his *Adverſaria;* and their efficacy hath ſince been confirmed by various obſervations. In an inaugural diſſertation publiſhed by Dr Hart at Leyden, the medical virtues of the flowers of zinc are conſidered. He obſerves, that they have long been uſed externally, chiefly for inflammations of the eyes from acrid lymph. Glauber firſt propoſed the internal uſe of them; and Gaubius diſcovered them to be the remedy of the celebrated empiric Luddemannus, under the title of *luna fixata*. After this he exhibited them with ſucceſs in convulſive and ſpaſmodic diſeaſes. Our author ſuppoſes, that they act either as abſorbents, or as poſſeſſing a ſpecific virtue: but is a ſtrong advocate for their efficacy, on whatever principles they may operate; and, in favour of his opinion, relates ſeven caſes in which they proved ſucceſsful. A girl of 17 was ſeized with a ſlight *chorea* from a fright; and when the diſeaſe had continued ſix days, began to take the flowers of zinc, by which her diſorder was removed in leſs than three weeks. Her cure required only 16 grains of the calx. In a few months the complaints returned, from the ſame cauſe; and were removed by four grains of the medicine divided into ten doſes.—A boy of about four years old, labouring under a real epilepſy, ſuſpected to be hereditary, was cured by a grain of the flowers of zinc taken every day for ſome time.—A man 50 years old, thrown into convulſions from a violent paſſion, was cured by a grain of the calx taken every two hours. The diſeaſe had gone off upon veneſection and the uſe of ſome other remedies; but returned again in two weeks, when it was finally removed by the zinc.—The two laſt caſes are related from Dr Gaubius, who affirms that he has uſed the flowers of zinc in caſes of the chincough, hyſteric hiccough, and ſpaſmus cynicus; that they frequently did more than other medicines, but were by no means ſucceſsful in every caſe. The other cures mentioned by Dr Hart are ſimilar to thoſe above-mentioned, and it does not appear that he ever ſaw a confirmed epilepſy cured by this medicine.

In the firſt volume of *Edin. Medical Commentaries*, p. 204, we have an account by Mr Benjamin Bell, of a man afflicted with a confirmed epilepſy, who was conſiderably relieved by the flowers of zinc. He was about 35 years of age, and had been ſubject to the diſeaſe for 10 years. At firſt the paroxyſms did not return oftener than once a month: but becoming gradually more frequent, they came at laſt to be in a manner continual, inſomuch that he would have ten, eleven, or twelve attacks in a day, and very ſeldom had an interval of 24 hours. His memory and judgment were ſo much impaired, that he could ſcarce anſwer a queſtion diſtinctly, though he had uſed a great variety of medicines. About three years before applying to Mr Bell, he had violent rheumatic pains in his limbs, which left ſuch an extreme debility that he was never afterwards able to get out of bed without the aſſiſtance of two or three people.

On the 22d of October 1772, Mr Bell found him in the above-mentioned condition, and preſcribed as follows:

℞ *Flor. Zinc.* gr. xxiv.
Ext. Gent. ℨi. M. f. maſſ. et divid. in pil. xxiv. cap. 1. m. & v.

He continued to take two pills a-day till the firſt of November, without any ſenſible benefit. The doſe was then doubled, and continued till the 12th; when the fits, though equally violent, became leſs frequent. The medicine was gradually augmented to ten pills thrice a-day; and the conſequence was, that his memory and underſtanding returned, the fits became much ſlighter and leſs frequently repeated, though the diſeaſe could not be radically ſubdued.

In a young man labouring under the epilepſy, in whom the fits were preceded by an *aura epileptica*, or ſenſation like air ariſing from the inſide of the knee-joint, the diſeaſe was alſo relieved, but not cured.

Dr Percival relates ſome caſes of epilepſy which ſeem to have been cured by the flowers of zinc; and in other caſes, where the diſeaſe was not entirely removed by it, the ſpaſms were nevertheleſs much mitigated. He did not obſerve that it promoted any evacuation; except that in ſome, upon being firſt taken, it occaſioned a little ſickneſs, which went off with a ſtool. He adds, that thoſe apothecaries who do not prepare this medicine themſelves, are in great danger of being impoſed upon, as it is ſometimes a mere corroſion of the zinc by an acid, and even imperfectly waſhed.

The good effects of flowers of zinc as an antiſpaſmodic are alſo atteſted by Dr Haygarth of Cheſter and Dr White of York. The former gives a teſt of their goodneſs which may be of uſe to thoſe who do not prepare them, namely, that the true flowers of zinc when ſtrongly heated become yellow, but reaſſume their white colour on being allowed to cool. The latter gives a caſe of hieranoſos, or ſtrange convulſions of almoſt all the muſcles of the body, cured by zinc, after a number of other remedies had failed. The patient, however, had been formerly much relieved by Ward's antimonial pill.

In Dr Home's clinical experiments and hiſtories, alſo, the flowers of zinc are mentioned as having been found ſerviceable upon trial in the Royal Infirmary of Edinburgh. Of the other principal remedies which have been recommended for the epilepſy and other convulſive diſorders allied to it, we have the following account by the ſame author.

1. *The cold-bath* was tried in one who had a convulſive diſorder of one ſide, but the ſymptoms were rendered much worſe by it.

2. *Veneſection.* Not to be depended on in convulſions.

3. *Electricity.* In two convulſive caſes this was of no ſervice. See the ſection on *Electricity*, below.

4. *Epiſpaſtics.* Do not ſeem to be powerful antiſpaſmodics.

5. *Valerian.* In nine convulſive caſes, for which this remedy hath been reckoned almoſt a ſpecific, it not only made no cure, but could ſcarcely be reckoned to do any good. Dr Home ſuppoſes that it acts as a bitter tonic, ſomething like the *ſerpentaria Virginiana*. "Tho' much uſed at preſent, (ſays he), it has always appeared to me a weak, often a hurtful, medicine."

6. *Muſk.* Six convulſive patients treated with large doſes of this remedy, were neither cured nor in the leaſt relieved.

7. *Caſtor* ſeems to be unworthy of the confidence formerly put in it. It is indeed poſſeſſed of a ſedative power, and therefore may be uſeful in ſpaſmodic feveriſh caſes.

8. *Aſafœtida* hath conſiderable antiſpaſmodic powers, but is not always ſucceſsful. It heats and quickens the pulſe; and is therefore improper in caſes attended with inflammation. It diſagrees with ſome from a peculiarity of conſtitution; exciting pain in the ſtomach, and vomiting; but this can be known only

after the exhibition of the medicine.

9. *Cortex Peruvianus.* Of ſeven ſpaſmodic caſes, ſix were either cured or mitigated. An epilepſy of eight years ſtanding was very much relieved by taking the bark for a month, and one of two years ſtanding by taking it for ten days. But the medicine is of a heating nature, and therefore is not to be employed in caſes attended with inflammatory ſymptoms.

10. *Peony-root* was given to two epileptic patients without the leaſt ſucceſs.

11. *Viſcus quercinus*, or miſletoe, was given in the quantity of two ſcruples five times a-day to an epileptic patient, without ſucceſs.

12. *Extractum hyoſciami*, was given to an epileptic patient, to one afflicted with the hemitotonos, and to one who laboured under the hyſteric affection, without the leaſt good effect.

13. *Folia aurantiorum*, were exhibited with the like bad ſucceſs. Five drachms of the powdered leaves were taken at once without any ſenſible effect.

14. *Cardamine pratenſis*, in three epileptic caſes was not attended with any ſucceſs.

15. *Opium*, did no good.

16. *Cuprum ammoniacale*, made no cure in four caſes of epilepſy in which it was tried.

Genus LIV. PALPITATIO, Palpitation *of the* Heart.

Palpitatio, *Sauv.* gen. 130. *Lin.* 132. *Vog.* 213. *Sag.* 237. *Hoffm.* III. 83. *Junck.* 33.

The palpitation of the heart is ſometimes ſo violent, that it may be heard at a conſiderable diſtance. It may proceed from a bad conformation of the heart itſelf, or ſome of the large veſſels. It may alſo be occaſioned by wounds or abſceſſes in the heart; or it may proceed from polypous concretions or oſſifications of that viſcus, or from plethora, fear, or ſpaſmodic affections of the nervous ſyſtem. When it proceeds from diſeaſes of the heart or large veſſels, it is abſolutely incurable. In ſpaſmodic caſes, the remedies above-related may be uſed. If the patient is plethoric, bleeding will probably remove the diſorder, at leaſt for the preſent.

Genus LV. ASTHMA.

Aſthma, *Sauv.* gen. 145. *Lin.* 161. *Vog.* 268. *Sog.* gen. 282.
Aſthma convulſivum et ſpaſmodica flatulentum, *Hoffm.* III. 94.
Aſthma ſpaſticum, *Junck.* tab. 51.

396 CXXII. The *Spontaneous* Asthma. Sp. I.

Aſthma humidum, *Sauv.* ſp. 1. Flatulentum, *Floyer* on the Aſthma, chap. i.
Aſthma convulſivum, *Sauv.* ſp. 2. *Willis* Pharm. rat. P. II. ſect. i. cap. 12.
Aſthma hyſtericum, *Sauv.* ſp. 3. *Floyer* on the Aſthma, chap. i.
Aſthma ſtomachicum, *Sauv.* ſp. 8. *Floyer*, Scheme of the Species of Aſthma. Periodic Aſthma 6.
Orthopnœa ſpaſmodica, *Sauv.* ſp. 3.
Orthopnœa hyſterica, *Sauv.* ſp. 4.

CXXIII. The *Exanthematic* Asthma. Sp. II. 397

Aſthma exanthematicum, *Sauv.* ſp. 11.
Aſthma cacheticum, *Sauv.* ſp. 13.

CXXIV. The *Plethoric* Asthma. Sp. III. 398

Aſthma plethoricum, *Sauv.* ſp. 15.

The aſthma is a chronic diſeaſe, which may continue to give very great diſtreſs, at intervals, for a conſiderable number of years. Sir John Floyer, when he wrote his celebrated treatiſe, had laboured under repeated paroxyſms for 30 years.

The common diſtinction is into *humid* and *dry*; the former is accompanied with an expectoration of mucus or purulent matter, but the latter is not ſo attended. In the genuine humoral aſthma, the patients are obliged to lean forward; the inſpiration is ſhort and ſpaſmodic; and the exſpiration very ſlow.

Aſthmatic perſons have generally ſome warning of the attack, from a langnor, loſs of appetite, oppreſſion, and ſwelling of the ſtomach from flatulence, which precede the fit; but it is uſually in the middle of the night, that the violent difficulty of breathing comes on.

The duration of the paroxyſm is uncertain, as it will ſometimes terminate in three or four hours, while at other times it ſhall continue for as many days; nay, it has been known to laſt three weeks without intermiſſion. While it ſubſiſts, the patient is in very great diſtreſs, not being able to lie in bed, nor ſcarcely to ſpeak or expectorate, ſo great is the difficulty of breathing; and yet, notwithſtanding all this apparent interruption to the free paſſage of the blood through the lungs, an inflammation here ſeldom or never ſupervenes a fit of the aſthma. As the paroxyſm wears off, and the breathing becomes free, there is more or leſs of an expectoration of mucus; and the urine, from being pale and limpid, becomes high-coloured, and lets fall a copious ſediment.

In order to obtain relief in the fit, we muſt ſometimes bleed, unleſs extreme weakneſs or old age ſhould forbid, and repeat it according to the degrees of ſtrength and fulneſs: a purging clyſter, with a ſolution of aſafœtida, muſt be immediately injected; and if the violence of the ſymptoms ſhould not ſpeedily abate, it will be proper to bliſter the nape of the neck.

In the height of the paroxyſm, an emetic might be followed by dangerous ſymptoms, as it would increaſe the accumulation of blood in the veſſels of the head; but vomiting will often prevent a fit of the aſthma, eſpecially if the ſtomach ſhould chance to be loaded with any ſort of ſaburra. A very ſtrong infuſion of roaſted coffee has been found to give eaſe in an aſthmatic paroxyſm.

Dr Pringle ſays it is the beſt abater of the paroxyſms of the periodic aſthma that he has ſeen. The coffee ought to be of the beſt Mocco, newly burnt, and made very ſtrong immediately after grinding it. He commonly ordered an ounce for one diſh; which is to be repeated freſh after the interval of a quarter, or half an hour; and which is to be taken without milk or ſugar. The medicine in general is mentioned by Muſgrave in his treatiſe *de Arthritide anomala*; but he firſt heard of it from a phyſician in Litchfield, who had been informed by the old people of that place, that Sir John Floyer, during the latter part of his life, kept free from, or at leaſt lived eaſy under his aſthma, from the uſe of very ſtrong coffee. This diſcovery, it ſeems, he made after the publication of his book upon that diſeaſe. Dr Percival ſays he has frequently directed coffee in the aſthma with great ſucceſs.

In the intervals of the fits, perſons ſubject to the aſthma, eſpecially the humid ſpecies, ſhould take emetics from time to time. An infuſion of tobacco is an emetic that has been found very ſerviceable in ſome aſthmatic caſes; and ſmoking or chewing the ſame has been known to prevent the frequency and ſeverity of the paroxyſms. They ſhould alſo uſe the lac ammoniaci, with a due proportion of *oxymel ſcilliticum* and *vinum antimoniale*, with a view to promote expectoration; or the gum ammoniac, and others of ſimilar virtues, may be formed into pills, and combined with ſoap, as beforementioned for the dyſpnœa pituitoſa; or a maſs may be compoſed of aſafœtida and balſam of Tolu, with *ſyr. ex allio*; and theſe pills may be waſhed down by a medicated wine, impregnated with ſquills, horſe-radiſh root, and muſtard-ſeed; or a ſtrong bitter infuſion, with a little antimonial wine.

In ſome caſes crude mercury will be found ſerviceable; in others flowers of ſulphur, made into an electuary with honey or ſyrup of garlic; and if, notwithſtanding the uſe of theſe things, a coſtive habit ſhould prevail, it will be neceſſary, from time to time, to give a few grains of the *pil. Ruſi*, ſoap and aloes, or a maſs of equal parts of rhubarb, ſcammony, and ſoap.

The *dry* or *ſpaſmodic aſthma*, during the extreme violence of the fit, is beſt relieved by opiates; and ſometimes very large doſes are required. But, in order to obtain permanent relief, nothing is found to anſwer better than the *radix ipecacuanha*, in ſmall doſes. Three, five, eight or ten grains, according to the ſtrength and conſtitution of the patient, given every other day, have been productive of the happieſt effects; acting ſometimes as an evacuant, pumping up the viſcid phlegm; at others, as an antiſpaſmodic or ſedative. Iſſues are generally recommended in both ſpecies, and will often be found uſeful.

Changes of weather are uſually felt very ſenſibly by aſthmatic people, who in general cannot live with tolerable eaſe in the atmoſphere of large cities; though we ſhall ſometimes meet with patients who agree better with this air, which is ſo replete with groſs effluvia of various kinds, than with the pureſt that can be found in country ſituations. And ſome are found who breathe with the moſt eaſe in a crowded room, with a fire and candles.

A light diet of meats that are eaſy of digeſtion, and not flatulent, is requiſite for aſthmatic people; and the exerciſe of riding is indiſpenſably neceſſary.

When the aſthma is found to depend on ſome other diſeaſe, whether it be the gout or an intermittent fever, or when it proceeds from the ſtriking in of ſome cutaneous eruption, regard muſt always be had to the primary diſeaſe: thus, in the *aſthma arthriticum*, ſinapiſms to the feet, or bliſtering, will be abſolutely neceſſary, in order, if poſſible, to bring on a fit of the gout. And when the dregs of an ague give riſe to an aſthma, which is termed *febriculoſum*, and invades at regular intervals, we muſt have recourſe to the cortex. The *aſthma exanthematicum* will require bliſters or iſſues, to give vent to the acrid matters which were repelled from the ſurface of the body; and courſes of ſulphureous waters, goat's whey, and ſweetening diet-drinks, or perhaps mercurial alteratives, in order to correct the ſharpneſs of the juices.

Genus LVI. DYSPNOEA, or *Habitual* Difficulty of Breathing.

Dyſpnœa, *Sauv.* gen. 144. *Lin.* 160. *Vog.* 267. *Sag.* 251. *Junck.* 32.

CXXV. The *Catarrhal* Dyspnoea. Sp. I. 399

Aſthma catarrhale, *Sauv.* ſp. 16.
Aſthma pneumonicum, *Willis* Pharm. Pat. P. II. ſect. i. cap. 12.
Aſthma pituitoſum, *Hoffm.* III. ſect. ii. cap. 2. § 3.
Aſthma pneumodes, *Sauv.* ſp. 17.

This is readily known by the ſymptoms of pneumonia and catarrh attending it, and towards the removal of theſe ſymptoms the care of the phyſician muſt be principally directed.

CXXVI. The *Dry* Dyspnoea. Sp. II. 400

Dyſpnœa a tuberculis, a hydatibus, &c. *Sauv.* ſp. 2. 4. 5. 20.
Orthopnœa a lipomate, *Sauv.* ſp. 18.

This is generally accompanied with a phthiſis pulmonalis; but Sauvages mentions one ſpecies of phthiſis to which the dry dyſpnœa ſeems more particularly to belong. The patients fall away by degrees, and have a great difficulty of breathing, continual thirſt, and little or no ſpitting. When opened after death, their lungs are found not to be ulcerated, but ſhrivelled and contracted as if they had been ſmoke-dried. Goldſmiths and chemiſts are ſaid to be ſubject to this diſeaſe by reaſon of the vapours they draw in with their breath. Our author doth not mention any particular remedy. Shortneſs of breath ariſing from *tubercles*, as they are termed, or a ſcirrhous enlargement of the lymphatic glands which are diſperſed through the lungs, is commonly found in ſcrofulous habits, and may be diſtinguiſhed by the concomitancy of thoſe external ſwellings and appearances which particularly mark the ſcrofula. This ſpecies of dyſpnœa generally ends in a phthiſis. Courſes of goat's whey, and of ſea-water, have been known to do ſervice; but it muſt be confeſſed, that a perfect cure is ſeldom obtained. Iſſues are of uſe in theſe caſes, as they appear to prevent the ill effects of an over-fulneſs, if it ſhould happen at any time to ſupervene.

CXXVII. Dyspnoea from *Changes* in the *Weather*. Sp. III. (*Sauv.* ſp. 12.) 401

This ſeems to be a diſeaſe entirely ſpaſmodic, and the antiſpaſmodics already related are accordingly indicated.

CXXVIII. The Dyspnoea from *Earthy Subſtances* formed in the *Lungs*. Sp. IV. 402

Sauvages mentions this diſeaſe as much more common in brutes than in the human race: but Dr Cullen mentions his having ſeen ſome inſtances of it; and we have ſeveral accounts by different authors of calculous matters being coughed up by people labouring under a dyſpnœa, and threatened with conſumption. In three caſes of this kind which fell under Dr Cullen's inſpection, there was no appearance of earthy or ſtony concretions in any other part of the body. The calcareous matter was coughed up frequently with a little blood, ſometimes with mucus only, and ſometimes with pus. In one of theſe caſes, an exquiſitely formed phthiſis came on, and proved mortal: in the other two the ſymptoms of phthiſis were never fully formed; and after ſome time, merely by a milk-diet and avoiding irritation, the patients entirely recovered.

Sauvages alſo greatly recommends milk in theſe caſes, and ſoap for diſſolving the concretions. The reaſon why brutes are more ſubject to theſe pulmonary calculi than mankind, is, that they very ſeldom cough, and thus the ſtagnating mucus or lymph concretes into a kind of gypſeous matter.

403 CXXIX. The *Watery* DYSPNOEA. Sp. V.

Dyſpnœa pituitoſa, *Sauv.* ſp. 1.
Orthopnœa ab hydropneumonia, *Sauv.* ſp. 12.

This may ariſe from too great a defluxion of mucus on the lungs, or from an effuſion of ſerum, as is mentioned under the pneumonia. The treatment of the diſeaſe may be gathered from what has been already ſaid under the heads of pneumonia, catarrh, empyema, &c.

404 CXXX. The DYSPNOEA from *Corpulency*. Sp. VI.

Othopnœa a pinguedine, *Sauv.* ſp. 6.

There have been many inſtances of ſuffocation and death occaſioned by too great corpulency. Theſe fatal effects, however, may be almoſt always avoided if the perſons have reſolution to perſiſt in an active and very temperate courſe of life; avoiding animal-food, much ſleep, and uſing a great deal of exerciſe. In the third volume of the Medical obſervations, however, there is an extraordinary inſtance of internal obeſity which neither ſhewed itſelf externally, nor could be removed by any medicines.

Other ſpecies of dyſpnœa have been treated under PHTHISIS. It is frequently ſymptomatic of diſeaſes of the heart and large veſſels, or ſwellings of the abdomen, &c.

405 CXXXI. PERTUSSIS, the CHINCOUGH.
Genus LVII.

Pertuſſis *Sydenham,* Ed. Leid. p. 200. 311. 312.
Huxham de aere, ad. ann. 1732.
Tuſſis convulſiva, ſive ferina, *Hoffm.* III. 111.
Tuſſis ferina, *Sauv.* ſp. 10. *Sag.* ſp. 10.
Tuſſis convulſiva, *Sauv.* ſp. 11. *Sag.* ſp. 11.
Amphimerina tuſſiculoſa, *Sauv.* ſp. 13.

Deſcription. This diſeaſe comes on at firſt like a common cold; but is from the beginning attended with a greater degree of dyſpnœa than is common in that diſeaſe; and there is a remarkable affection of the eyes, as if they were ſwelled, and a little puſhed out of their ſockets. By degrees the fits of coughing become longer and more violent, till at laſt they are plainly convulſive, ſo that for a conſiderable time the patient cannot reſpire, and when at laſt he recovers his breath, inſpiration is performed with a ſhrill kind of noiſe like the crowing of a cock. This kind of inſpiration ſerves only as an introduction to another convulſive fit of coughing, which is in like manner followed by another inſpiration of the ſame kind; and thus it continues for ſome time, very often till the patient vomits, which puts an end to the paroxyſm at that time. Theſe paroxyſms are attended with a violent determination of the blood towards the head, ſo that the veſſels become extremely turgid, and blood not unfrequently flows from the mouth and noſe. The diſeaſe is tedious, and often continues for many months. It is not commonly attended with fever.

Cauſes, &c. The chincough is an infectious diſorder, and very often epidemic; but the nature of the contagion is not underſtood. It generally attacks children, or adults of a lax habit, making its attack generally in the ſpring or autumn; and thoſe children who live upon unwholeſome watery food, or breathe unwholeſome air, are moſt liable to its attacks, and ſuffer moſt from them. In general it may be concluded, that whatever weakens the ſolids, or tends to bring on a diſſolution of the fluids, prediſpoſes to this diſeaſe.

Prognoſis. The chincough is not very often fatal. In children under two years of age it is moſt dangerous; and kills them by producing convulſions, ſuffocation, inflammation, and ſuppuration of the brain, ruptures, and incurvation of the ſpine. In pregnant women it will produce abortion; and, in adults, inflammations of the lungs, and all the conſequences of pneumonia, more frequently than in children. From a long continuance of the diſeaſe patients will become aſthmatic, ricketty, and ſcrophulous. It is generally reckoned a good ſign when a fit terminates by vomiting; for in this diſeaſe there ſeems to be a prodigious increaſe of the ſecretion of mucus, and the vomiting affords great relief.

Cure. The moſt approved remedies in this diſeaſe are vomits, purges, bleeding, and the attenuating pectorals, for the other kinds generally do hurt. But large evacuations of any kind are pernicious. In the Medical Obſervations, Vol. III. Dr Morris recommends caſtor and the bark; but in caſes attended with any degree of inflammation, the latter muſt certainly do hurt, and the former will generally be inſignificant. Dr Butter, in a diſſertation expreſsly on the ſubject, inſtances 20 caſes of it cured by the extract of hemlock. He directs half a grain a-day for a child under ſix months old; one grain for a child from ſix months to two years; afterwards allowing half a grain for every year of the patient's age till he be 20: beyond that period, he directs ten grains to be given for the firſt day's conſumption, gradually increaſing the doſe according to the effect. If the patient has not two ſtools a-day, he adviſes magneſia or polychreſt ſalt to be added to the hemlock mixture. By this method he ſays the peculiar ſymptoms of the diſeaſe are removed in the ſpace of a week; nothing but a ſlight cough remaining. The uſe of hemlock, however, hath by no means become univerſal in conſequence of this publication, nor indeed is the remedy at preſent much uſed in caſes of chincough or any other diſeaſe. The remedy moſt to be depended upon in this diſeaſe is change of air. The patient, as ſoon as the diſeaſe is fully formed, ought to remove to ſome other part of the country; but there is no occaſion for going to a diſtant place; a mile or two, or frequently a ſmaller diſtance, will be ſufficient; and in this new habitation he muſt remain till the diſorder goes off, which it will generally do in a ſhort time: tho' ſome recommend frequent changes of air and habitation But it will not do to take the patient out daily, and return to his town-habitation at night. If the diſeaſe is attended with fever, bleeding and other antiphlogiſtic remedies are proper. Dr Buchan recommends an ointment made of equal parts of garlic and hog's lard applied to the ſoles of the feet. It ought to be put on a rag and applied like a plaſter. Opiates may ſometimes be uſeful, but in general are to be avoided.

406 CXXXII. PYROSIS, the HEART-BURN.
Genus LVIII.

Pyroſis, *Sauv.* gen. 200. *Sag.* 158.
Soda, *Lin.* 47. *Vog.* 154.
Scotis, the WATER-BRASH.
Pyroſis Suecica, *Sauv.* ſp. 4.
Cardialgia ſputatoria, *Sauv.* ſp. 5.

This diſeaſe, whether conſidered as primary or ſymptomatic, hath already been fully treated under DYSPEPSIA.

GENUS LIX. COLICA. The COLIC.

Colica, *Sauv.* gen. 204. *Lin.* 50. *Vog.* 160. *Sag.* 162. *Junck.* 106.
Colica ſpaſmodica et flatulenta, *Hoffm.* II. 284.
Rachialgia, *Sauv.* gen. 211. *Sag.* 168.
Ileus, *Sauv.* gen. 252. *Vog.* 162. *Sag.* gen. 187.
Iliaca, *Lin.* 185.
Dolor et ſpaſmus iliacus, *Hoffm.* II. 263.
Paſſio iliaca, *Junck.* 107.

407 CXXXIII. The *Spaſmodic* COLIC. Sp. I.

Colica flatulenta, pituitoſa, &c. *Sauv.* ſp. 1. 2. 5. 6. 7. Ileus phyſodes, volvulus, inflammatorius, &c. *Ejuſd.* ſp. 1. 3. 5. 7. 8. 9.

Deſcription. THE colic is chiefly known by a violent pain in the abdomen, commonly about the umbilical region. The pain reſembles various kinds of ſenſations, as of burning, twiſting, boring, a ligature drawn very tight, &c. The belly is generally coſtive, though ſometimes there is a violent evacuation of bilious matters upwards and downwards. In theſe caſes the diſeaſe is ſometimes accompanied from the beginning with a weak and intermitting pulſe, cold ſweats, and fainting. In ſome the diſeaſe comes on gradually, beginning with an habitual coſtiveneſs; and if purgatives are taken, they do not operate. The pain comes on generally after a meal, and ſoon occaſions nauſea and vomiting. Sometimes the diſeaſe is attended with pyrexia, violent thirſt, and a full pulſe; the vomiting becomes more violent, and excrementitious matters are thrown up with the moſt exquiſite pain and tenſion of the abdomen; an hickup comes on, which continues obſtinately; till at laſt a ceſſation of pain and fœtid breath indicates a mortification of the inteſtines, and approaching death. Sometimes the periſtaltic motion of the inteſtines is ſo totally inverted, that all the contents of the inteſtines are evacuated by the mouth, and even clyſters will be vomited; which conſtitutes that diſeaſe commonly called the *iliac paſſion*.

Cauſes, &c. Colics may ariſe from any ſudden check given to perſpiration, as by violent cold applied to any part of the body, eſpecially to the lower extremities and abdomen. Very frequently they are occaſioned by auſtere, acid, or indigeſtible aliments taken into the ſtomach. By any of theſe, a violent colic, or indeed an iliac paſſion, may be occaſioned; for Dr Cullen juſtly obſerves, that this laſt, though commonly accounted a different ſpecies of diſeaſe, differs from a colic in no other way than in being in every reſpect in a much higher degree. In thoſe who have died of this diſeaſe and been diſſected, the gut hath ſometimes been found twiſted; but more commonly there hath been an *introſuſception* of the inteſtine, that is, one part of the gut ſeems to have entered within the other. In the Edinburgh Medical Eſſays, Vol. III. we have a diſſertation on the uſe of the warm bath in the bilious colic, in which the author derives the diſorder from a ſpaſmodic conſtriction of the inteſtine occaſioned by the acrimony of the bile. By this, he ſays, the inteſtine is not only contracted into an unuſual narrowneſs, but coats of it have been found, upon diſſection, ſo cloſely joined, that no paſſage could be made downwards more than if they had been ſtrongly tied by a ligature. The formation of the *introſuſceptio* he explains by quoting a paſſage from Peyerus, who made the following experiment on a frog. Having irritated the inteſtine of the animal in ſeveral different places, he obſerved it to contract at thoſe places moſt violently, and to protrude its contents upwards and downwards wherever the relaxed ſtate of the part would permit; by which means the contents were heaped together in different parts. Hence ſome parts of the inteſtine being dilated much more than enough, by reaſon of the great quantity of matter thrown into them, formed a kind of ſack which readily received the conſtricted part into it. If this happens in the human body, there is the greateſt danger of a mortification, becauſe the part which is conſtricted, and at any rate diſpoſed to inflammation, hath that diſpoſition very much increaſed by its confinement within the other, and by the preſſure of the contents of the alimentary canal from the ſtomach downwards upon it. An iliac paſſion may alſo ariſe from the ſtrangulation of part of the inteſtine in a hernia; and even a very ſmall portion of it thus ſtrangulated may occaſion a fatal diſeaſe. In the Medical Obſervations, Vol. IV. however, we have an account of an iliac paſſion ariſing from a very different cauſe, which could neither have been ſuſpected nor cured by any other way than the operation of *gaſtrotomy*, or opening the abdomen of the patient, in order to remove the cauſe of the diſorder. The patient, a woman of about 28 years of age, died after ſuffering extreme torture for ſix days. The body being opened, ſome quantity of a dirty-coloured fluid was found in the cavity of the abdomen. The jejunum and ileon were greatly diſtended with air. A portion of the omentum adhered to the meſentery, near that part where the ileon terminates in the cæcum.

From this adheſion, which was cloſe to the ſpine, there ran a ligamentous cord or proceſs about two inches and a half long, unequally thick, in ſome places not thicker than a packthread; which by its other extremity adhered to the coats of the ileon, about two inches above the cæcum. This cord formed a circle with the meſentery, large enough to admit a hen's egg to paſs through it. The chord had formed a nooſe (in a manner difficult to be explained), which included a doubling of about two inches of the lower end of the ileon; and was drawn ſo tight, that it not only put a ſtop to the paſſage of every thing through the bowels, and brought on a gangrene of the ſtrangulated part, but it had even cut through all the coats of the inteſtine on the oppoſite ſide to the meſentery, and made an aperture about an inch long. In the Memoirs of the Academy of Surgery are mentioned ſeveral ſimilar caſes.

Prognoſis. The colic is never to be reckoned void of danger, as it may unexpectedly terminate in an inflammation and gangrene of the inteſtines. Thoſe ſpecies of it which are attended with purging muſt be conſidered as much leſs dangerous than thoſe in which the vomiting is very violent. The iliac paſſion, or that attended with the vomiting of fæces, is always to be accounted highly dangerous; but if the paſſage through the inteſtines is free, even though their periſtaltic motion ſhould be inverted, and clyſters evacuated by the mouth, there is much more hope of a cure, than when the belly is obſtinately coſtive, and there is ſome fixed obſtruction which ſeems to bid defiance to all remedies.

Cure. As the chief danger in colics ariſes from an inflammation and conſequent mortification of the inteſtines, it is eſſentially neceſſary, in the firſt place, to diminiſh the tendency to a pyrexia, if there ſhould happen to be any. This is accompliſhed by bleeding, emollient injections, warm bathing, and cooling medicines taken inwardly. Dr Porter, in the eſſay above-mentioned, ſtrongly recommends the warm bath in thoſe colics attended with violent evacuations of bile. He ſuppoſes it to do ſervice by relaxing the conſtriction of the inteſtines, and thus preventing or removing the introſuſceptio. In the mean time opiates may be given to eaſe the pain, while every method is tried, by cathartics and glyſters of various kinds, to procure a ſtool. In obſtinate caſes, where ſtimulating cathartics have proved ineffectual, the milder kinds, ſuch as manna, ſenna, oleum ricini, &c. will ſucceed; but where every thing of this kind fails, recourſe muſt be had to ſome of the more extraordinary methods. Some have recommended the ſwallowing of leaden bullets, on a ſuppoſition that by their weight they would force through the obſtruction into the gut; but theſe ſeem much more likely to create than to remove an obſtruction. It is impoſſible they can act by their gravity, becauſe the inteſtines do not lie in a ſtraight line from the pylorus to the anus; and though this were actually the caſe, we cannot ſuppoſe that the weight of a leaden bullet could prove very efficacious in removing either a ſpaſmodic conſtriction, or an obſtruction from any other cauſe. But when we conſider, not only that the inteſtines conſiſt of a great multitude of ſolids, but that their periſtaltic motion (by which only the contents are forced through them) is inverted, the futility of his remedy muſt be evident. It might rather be ſuppoſed to aggravate the diſeaſe; as the lead, by its preſſure, would tend to fix the introſuſception more firmly, or perhaps puſh it ſtill further on. The ſame thing may be ſaid of quickſilver: not mention the pernicious conſequences to be apprehended from ſwallowing large quantities of this mineral, even if it ſhould prove efficacious in relieving the patient for the preſent. Another method hath been propoſed, in the Medical Eſſays, for relieving the miſerable patients in this diſorder, which at leaſt can be attended with no bad conſequences, and in many caſes hath been known to do ſervice. The patient is to be taken out of bed, and made to walk about on the cold floor of a damp apartment. At the ſame time, porringers of cold water are to be daſhed on his feet, legs, and thigs; and this muſt be continued for an hour or longer, if a ſtool is not procured before that time, though this will generally be the caſe much ſooner. The exerciſe doth not at all impair the patient's ſtrength, but rather adds to it; and ſome very remarkable inſtances are adduced in the 6th volume of the Medical Eſſays, where this proved effectual after all other medicines had failed. In one perſon the diſeaſe had come on with an habitual coſtiveneſs, and he had been for a week tormented with the moſt violent pain and vomiting, which could be ſtopped neither by anodynes nor any other medicines, the ſharpeſt clyſters being returned unaltered, and all kinds of purgatives thrown up ſoon after they were ſwallowed; but by the above-mentioned method, a ſtool was procured in 35 minutes, and the patient recovered. In ſome others the coſtiveneſs had continued for a much longer time.—Other remedies are, the blowing air into the inteſtines by means of a bellows, and the injecting clyſters of the ſmoke of tobacco. But neither of theſe ſeem very capable of removing the diſeaſe. They can affect only the parts below the obſtruction; while, to cure the diſeaſe, it is neceſſary that the obſtructed parts themſelves ſhould be reached by the medicine, and therefore we have not many well-atteſted inſtances of their ſucceſs. The cold water gives a general and very conſiderable ſhock to the ſyſtem, cheeks the perſpiration, and thus drives the humours inward upon the inteſtines, by which they receive a much more effectual ſtimulus than can be ſuppoſed to ariſe from any kind of clyſter. But when all methods have failed, the only chance the patient can have for life is by a manual operation. See SURGERY.

In thoſe colics which are attended with faintings, &c. from the beginning, and which generally attack hyſteric women and other debilitated perſons, all kinds of evacuations are pernicious; and the cure is to be attempted by anodynes and cordials, which will ſeldom fail of ſucceſs.

CXXXIV. COLICA PICTONUM; the *Colic of Poictou*. Sp. II. 408

Rachialgia Pictonum, *Sauv.* ſp. 1.
Rachialgia metallica, *Sauv.* ſp. 3.
Colica Pictonum *Citeſii et ſuccedentium auctorum*.

ANOTHER cauſe to which violent colics are frequently to be aſcribed, and which often gives occaſion to them where it is very little ſuſpected, is lead, or ſome ſolution or fume of it, received into the body. To this cauſe is evidently owing the colics to which plumbers, lead-miners, and ſmelters of lead, are ſubject. To the ſame cauſe, though not ſo apparent at firſt ſight, are we to aſcribe the Devonſhire colic, where lead was received into the body diſſolved in cyder, the common drink of the inhabitants of that county. This hath been proved by experiment; for lead hath been extracted from cyder in quantity ſufficient to produce pernicious effects on the human body. The colic of Poictou, and what is called the *dry belly-ache* in the Weſt Indies, are of the ſame nature; for which reaſon we give the following general deſcription of the ſymptoms of all theſe diſeaſes.

The patient is generally firſt ſeized with an acute pain at the pit of the ſtomach, which extends itſelf down with griping pains to the bowels. Soon after there is a diſtenſion, as with wind; and frequent reachings to vomit, without bringing up any thing but ſmall quantities of bile and phlegm. An obſtinate coſtiveneſs follows, yet ſometimes attended with a teneſmus, and the bowels ſeem to the patient as if they were drawn up towards the back; at other times they are drawn into hard lumps, or hard rolls, which are plainly perceptible to the hand on the belly, by ſtrong convulſive ſpaſms. Sometimes the coats of the inteſtines ſeem to be drawn up from the anus and down from the pylorus towards the navel. When a ſtool is procured by artificial means, as clyſters, &c. the fæces appear in little hard knots like ſheep's dung, called *ſcybals*, and are in ſmall quantity. There is, however, uſually an obſtinate coſtiveneſs; the urine is diſcharged in ſmall quantity, frequently with pain and much difficulty. The pulſe is generally low, though ſometimes a little quickened by the violence of the pain; but inflammatory ſymptoms very ſeldom occur. The extremities are often cold, and ſometimes the violence of the pain cauſes cold clammy ſweats and fainting. The mind is generally much affected, and the ſpirits are ſunk. The diſeaſe is often tedious, eſpecially if improperly treated, inſomuch that the patients will continue in this miſerable ſtate for twenty or thirty days ſucceſſively; nay, inſtances have been known of its continuing for ſix months. In this caſe the pains at laſt become almoſt intolerable: the patient's breath acquires a ſtrong fetid ſmell like excrements, from a retention of the fæces, and an abſorption of the putrid effluvia from them by the lacteals. At laſt, when the pain in the bowels begins to abate, a pain comes on in the ſhoulder-joints and adjoining muſcles, with an unuſual ſenſation and tingling along the ſpinal marrow. This ſoon extends itſelf from thence to the nerves of the arms and legs, which become weak; and that weakneſs increaſes till the extreme parts become paralytic, with a total loſs of
408 motion, though a benumbed ſenſation often remains. Sometimes, by a ſudden metaſtaſis, the brain becomes affected, a ſtupor and delirium come on, and the nervous ſyſtem is irritated to ſuch a degree as to produce general convulſions, which are frequently followed by death. At other times, the periſtaltic motion of the inteſtines is inverted, and a true iliac paſſion is produced, which alſo proves fatal in a ſhort time. Sometimes the paralytic affection of the extremities goes off, and the pain of the bowels returns with its former violence; and on the ceſſation of the pain in the inteſtines, the extremities again become paralytic, and thus the pain and palſy will alternate for a very long time.

Cure. Various methods have been attempted for removing this terrible diſeaſe. The obſtinate coſtiveneſs which attends it, made phyſicians at firſt exhibit very ſtrong purgatives and ſtimulating clyſters. But theſe medicines, by increaſing the convulſive ſpaſms of the inteſtines, were found to be pernicious. Balſam of Peru, by its warm aromatic power, was found to ſucceed much better; and Dr Sydenham accordingly preſcribed it in the quantity of 40 drops twice or thrice a-day taken on ſugar. This, with gentle purgatives, opiates, and ſome drops of the hotter eſſential oils, continued to be the medicine commonly employed in this diſeaſe, till a ſpecific was publiſhed by Dr Lionel Chalmers of South Carolina. This receipt was purchaſed by Dr Chalmers from a family where it had long been kept a ſecret. The only unuſual medicine in this receipt, and on which the efficacy of it chiefly if not wholly depends, is Roman vitriol. This muſt be diſſolved in water, in the quantity of one grain to an ounce, and the doſe of the ſolution is a wine-glaſsful given faſting for nine ſucceſſive mornings. For the firſt four or five days this medicine diſcharges much æruginous bile both ways: but the excretions of this humour leſſen by degrees; and before the courſe is ended, it hath little other effect than to cauſe ſome degree of ſqueamiſhneſs, or promote a few bilious ſtools, or perhaps may not move the patient at all. At the time of uſing this medicine the patients ſhould live upon broth made of lean meat, gruel, or panado; but about the ſeventh or eighth day, they may be allowed bread and boiled chicken. Here the copper ſeems to do ſervice by its tonic power; and for the ſame reaſon, alum, recommended by Dr Percival, moſt probably cures the diſeaſe. He ſays he hath found this very efficacious in obſtinate affections of the bowels, and that it generally proves a cure in the ſlighter caſes of the colica pictonum. It was given to the quantity of fifteen grains every fourth, fifth, or ſixth hour; and the third doſe ſeldom failed to mitigate the pain, and ſometimes entirely removed it. Among purgative medicines, the *oleum Ricini* is found to be the moſt efficacious.

CXXXV. The Colic from *Coſtiveneſs*. Sp. III. 409

Colica ſtercorea, *Sauv.* ſp. 3.
Ileus a fæcibus induratis, *Sauv.* ſp. 2.

For the treatment of this ſpecies, ſee above.

CXXXVI. The *Accidental* Colic. Sp. IV. 410

Colica Japonica,—accidentalis,—lactentium,—a veneno, *Sauv.* ſp. 10. 14. 18. 20.
Cholera ſicca auriginoſa a fungis venenatis, *ejuſd.* ſp. 2.

When colics ariſe from acrid poiſonous matter taken into the ſtomach, the only cure is either to evacuate the poiſon itſelf by vomit, or to ſwallow ſome other ſubſtance which may decompound it, and thus render it inactive. The moſt common and dangerous ſubſtances of this kind are corroſive mercury and arſenic. The former is eaſily decompounded by alkaline ſalt; and therefore a ſolution of ſalt of tartar, if ſwallowed before the poiſon hath time to induce a mortification of the bowels, will prove a certain cure. Much more uncertain, however, is the caſe when arſenic is ſwallowed, becauſe there is no certain and ſpeedy ſolvent of that ſubſtance yet known. Milk hath been recommended as efficacious; and lately ſolution of *hepar ſulphuris*. The latter may poſſibly do ſervice; as arſenic unites readily with ſulphur, and hath its pernicious qualities more obtunded by that than by any other known ſubſtance: but indeed, even the ſolvent powers of this medicine are ſo weak, that its effects as well as thoſe of others muſt be very uncertain. See Chemistry, n° 466.

Some kinds of fungi, when ſwallowed, are apt to produce colics attended with ſtupor, delirium, and convulſions; and the ſame ſometimes happens from eating a large quantity of muſcles *. Some of the fungi, doubtleſs, may have an inherent poiſonous quality; but generally they as well as the muſcles act on a different principle. Their pernicious effects happen moſt commonly when they are taken on an empty ſtomach; and are then occaſioned by their adhering ſo cloſe to its coats, that it cannot exert its powers, and the whole ſyſtem is thrown into the utmoſt diſorder. The malady may therefore be very eaſily prevented; but when once it hath taken place, it cannot be removed till either a vomiting is excited, or the ſtomach hath recovered itſelf in ſuch a manner as to throw off the adhering matter.

411 CXXXVII. Colic of *New-born Infants* from a *Retention* of the *Meconium*. Sp. V. (*Sauv.* ſp. 19.)

This diſorder would be prevented were children allowed immediately to ſuck their mothers, whoſe milk at firſt is purgative. But as this is not commonly done, the child is frequently troubled with colics. Theſe, however, may be removed by a few grains of ipecacuanha, a grain of emetic tartar, or a drop or two of antimonial wine. By theſe means the ſtomach is cleanſed by vomiting, and the belly is generally looſened; but if this laſt effect doth not happen, ſome gentle purge will be neceſſary.

412 CXXXVIII. The Colic from a *Calloſity* of the *Colon*. Sp. VI.

It is in a manner impoſſible to diſcover this diſtemper before the patient's death; and though it ſhould, it doth not admit of a cure.

413 CXXXIX. The Colic from *Inteſtinal Calculi*. Sp. VII. (*Sauv.* ſp. 10. 15.)

When certain indigeſtible bodies, ſuch as cherry-ſtones, plum-ſtones, ſmall pieces of bones, &c. are ſwallowed, they frequently prove the baſis of calculi, formed by an accretion of ſome kind of earthy matter, and, being detained in ſome of the flexures of the inteſtines, often occaſion very violent colics. Theſe calculi do not diſcover themſelves by any peculiar ſymptoms, nor do they admit of any method of cure. In the Medical Eſſays we have an inſtance of colics for ſix years, occaſioned by calculi of this kind. The concretions were at laſt paſſed by ſtool; and their paſſage was procured by cauſing the patient drink a large quantity of warm water, with a view to promote the evacuation of bile, a redundancy of which was ſuppoſed to be the cauſe of her diſorder.

Genus LX. CHOLERA, the Cholera Morbus.

Cholera, *Sauv.* 253. *Lin.* 186. *Vog.* 110. *Sag.* 188. *Hoffm.* II. 165.
Diarrhœa cholerica, *Junck.* 112.

CXL. The *Spontaneous* Cholera, coming on without any manifeſt cauſe. Sp. I. 414

Cholera ſpontanea, *Sauv.* ſp. 1. *Sydenh.* ſect. iv. cap. 2.
Cholera Indica, *Sauv.* ſp. 7.

CXLI. The *Accidental* Cholera, from acrid matters taken inwardly. Sp. II. 415

Cholera crapuloſa, *Sauv.* ſp. 11.
Cholera a venenis, *Sauv.* ſp. 4. 5.

The cholera ſhews itſelf by enormous vomiting and purging of corrupted matters, with violent pain, inflation and diſtenſion of the belly. Sometimes the patients fall into univerſal convulſions; and ſometimes they are affected with violent ſpaſms in particular parts of the body. There is a great thirſt, ſmall and unequal pulſe, cold ſweats, fainting, coldneſs of the extremities, and hickup; and death frequently enſues in 24 hours. The cure of this diſtemper is effected by giving the patient a large quantity of warm water, or very weak broth, in order to cleanſe the ſtomach of the irritating matter which occaſions the diſeaſe, and injecting the ſame by way of clyſter, till the pains begin to abate a little. After this, a large doſe of laudanum is to be given in ſome convenient vehicle, and repeated as there is occaſion. But if the vomiting and purging have continued for a long time before the phyſician is called, immediate recourſe muſt be had to the laudanum, becauſe the patient will be too much exhauſted to bear any further evacuations. Sometimes the propenſity to vomit is ſo ſtrong, that nothing will be retained, and the laudanum itſelf thrown up as ſoon as ſwallowed. To ſettle the ſtomach in theſe caſes, Dr Douglas, in the Medical Eſſays, recommends a decoction of oat-bread toaſted as brown as coffee; and the decoction itſelf ought to be of the colour of weak coffee. He ſays he does not remember that this decoction was ever vomited by any of his patients. An infuſion of mint-leaves in good ſimple mint-water is alſo ſaid to be very efficacious in the ſame caſe.

Genus LXI. DIARRHOEA, or Looseness.

Diarrhœa, *Sauv.* gen. 253. *Lin.* 187. *Vog.* 105. *Sag.* gen. 189. *Junck.* 112.
Hepatirrhœa, *Sauv.* gen. 246.
Cholerica, *Lin.* 190.
Cœliaca, *Sauv.* gen. 255. *Lin.* 189. *Vog.* 109. *Sag.* gen. 199.
Lienteria, *Sauv.* gen. 256. *Lin.* 188. *Sag.* gen. 191. *Vog.* 108.
Pituitaria, & leucorrhois, *Vog.* 111. 112.

CXLII. The Diarrhoea from *Surfeit*. Sp. I. 416

Diarrhœa ſtercoroſa & vulgaris, *Sauv.* ſp. 1. 2.

This is occaſioned by the too great quantity of matter

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* See *Mytulus*.

ter thrown into the alimentary canal; and what is diſcharged hath not the appearance of excrements, but is much whiter, and of a thinner conſiſtence. Voracious people who do not ſufficiently chew their food, gormandizers, and even thoſe who ſtammer in their ſpeech, are ſaid to be liable to this diſeaſe. In ſlighter caſes it is removed without any medicine, or by a doſe of rhubarb; but where the matters have acquired a putrid taint, the diſorder may be exceedingly protracted and become dangerous. In this caſe lenient and antiſeptic purgatives are to be made uſe of, after which the cure is to be completed by aſtringents.

417 CXLIII. The *Bilious* DIARRHOEA. Sp. II.
(*Sauv.* ſp. 8.)

This diſtemper ſhews itſelf by copious ſtools of a very yellow colour, attended with gripes and heat of the bowels, thirſt, bitterneſs, and dryneſs of the mouth, yellowneſs of the tongue, and frequently follows an intermitting or bilious fever. When the fever is gone, the diarrhœa is to be removed by acidulated and cooling drinks, with ſmall doſes of nitre.

418 CXLIV. The *Mucous* DIARRHOEA. Sp. III.

Diarrhœa lactentium, *Sauv.* ſp. 19.
Dyſenteria Pariſiaca, *Sauv.* ſp. 3.
Diarrhœa ab hypercatharſi, *Sauv.* ſp. 16.
Dyſenteria a catharticis, *Sauv.* ſp. 12.
Pituitaria, *Vog.* 111.
Leucorrhois, *Vog.* 112.
Diarrhœa pituitoſa, *Sauv.* ſp. 4.
Cœliaca mucoſa, *Sauv.* ſp. 3.
Diarrhœa ſeroſa, *Sauv.* ſp. 10.
a. Diarrhœa urinoſa.

This kind of diarrhœa, beſides the matters uſually excreted, is attended with a copious dejection of the mucus of the inteſtines with great pain; while the patient daily pines away, but without any fever.—Perſons of all ages are liable to it, and it comes on uſually in the winter-time; but is ſo obſtinate, that it will ſometimes continue for years. In obſtinate looſeneſſes of this kind, vomits frequently repeated are of the greateſt ſervice. It is alſo very beneficial to keep the body warm, and rub the belly with ſtimulating ointments; at the ſame time that aſtringent clyſters, rhubarb, and ſtomachic medicines, are to be exhibited. Starch clyſters are very often efficacious.—Some kinds of looſeneſs are contagious; and Sir John Pringle mentions a ſoldier who laboured under an obſtinate diarrhœa, who infected all thoſe that uſed the ſame privy with himſelf. In the looſeneſs which frequently followed a dyſentery, the ſame author tells us that he began the cure with giving a vomit of ipecacuanha, after which he put the patients on a courſe of aſtringents. He uſed a mixture of three drachms of extract of logwood, diſſolved in an ounce and a half of ſpirituous cinnamon-water, to which was added ſeven ounces of common water, and two drachms of japonic tincture. Of this the patient took two ſpoonfuls once in four or five hours, and ſometimes alſo an opiate at bed-time. He recom- 416 mends the ſame medicine in obſtinate diarrhœas of all kinds. A decoction of ſimarauba bark was alſo found effectual, when the dyſenteric ſymptoms had gone off. Dr Huck, who uſed this remedy in North-America, alſo recommends it in diarrhœas. Two or three ounces of it are to be boiled in a pound and a half of water to a pound, and the whole quantity taken throughout the day. He began with the weakeſt decoction; and, when the ſtomach of the patient could eaſily bear it, he then ordered the ſtrongeſt: but at the ſame time he acknowledges, that, unleſs the ſick found themſelves ſenſibly better within three days from the time they began the medicine, they ſeldom afterwards received any benefit from it. But when all aſtringents have failed, Sir John Pringle informs us, he hath known a cure effected by a milk and farinaceous diet; and he thinks in all caſes the diſorder would be much more eaſily removed, if the patients could be prevailed on to abſtain entirely from ſpirituous liquors and animal-food. If the milk by itſelf ſhould turn ſour on the ſtomach, a third part of lime-water may be added. In one caſe he found a patient receive more benefit from good butter-milk than from ſweet-milk. The chief drinks are decoctions of barley, rice, calcined hartſhorn, toaſt and water, or milk and water.

CXLV. The COELIAC PASSION. Sp. IV. 419

Cœliaca chyloſa, *Sauv.* ſp. 1.
Cœliaca lactea, *Sauv.* ſp. 4.

THERE are very great differences among phyſicians concerning the nature of this diſeaſe. Sauvages ſays, from Aretæus, it is a chronic flux, in which the aliment is diſcharged half digeſted. It is attended with great pains of the ſtomach, reſembling the pricking of pins; rumbling and flatus in the inteſtines; white ſtools, becauſe deprived of bile, while the patient becomes weak and lean. The diſeaſe is tedious, periodical, and difficult to be cured. Sauvages adds, that none of the moderns ſeem to have obſerved the diſeaſe properly; that the excrements indeed are white, on account of a deficiency of the bile, but the belly is bound as in the jaundice. Dr Cullen ſays there is a dejection of a milky liquid of the nature of chyle; but this is treated by Vogel as a vulgar error. He accuſes the moderns of copying from Aretæus, who mentions white fæces as a ſymptom of the diſtemper; from whence authors have readily fallen into the notion that they never appeared of any other colour in perſons labouring under the cœliac paſſion. This error quickly produced another, which hath been very generally received; namely, that the chyle was thrown out of the lacteals by reaſon of ſome obſtruction there, and thus paſſed along with the excrements; of which he ſays there is not the leaſt proof, and agrees with Aretæus that the whiteneſs is only occaſioned by the want of bile. He endeavours to prove at length, that the cœliac paſſion can neither be occaſioned by an obſtruction of the lacteals, nor of the meſenteric glands; though he owns that ſuch as have died of this diſeaſe and were diſſected, had obſtructions in the meſenteric glands; but denies that all thoſe in whom ſuch obſtructions occur, are ſubject to the cœliac paſſion. He conſiders the diſtemper as ariſing from a cachexy of the ſtomachic and inteſtinal juices; and directs the cure to be attempted by emetics, purgatives, antiſeptics, and tonics, as in other ſpecies of diarrhœa.

420 CXLVI. The Lientery. Sp. V.

Lienteria ſpontanea, *Sauv.* ſp. 2.

The lientery, according to Sauvages, differs from the cœliac paſſion only in being a ſlighter ſpecies of the diſeaſe. The aliment paſſes very quickly through the inteſtines, with ſcarce any alteration. The patients do not complain of pain, but are ſometimes affected with an intolerable hunger. The cure is to be attempted by ſtomachics and tonics, eſpecially the Peruvian bark.

421 CXLVII. The *Hepatic* Flux. Sp. VI.

Hepatirrhœa inteſtinalis, *Sauv.* ſp. 2.

The hepatic diarrhœa is by Sauvages deſcribed as a flux of bloody ſerous matter like the waſhings of fleſh, which percolates through the coats of the inteſtines by means of the anaſtomoſing veſſels. It is the cœliac paſſion of Trallian; and which, according to Sauvages, rarely, if ever, occurs as a primary diſeaſe. It hath, however, been obſerved to follow an inflammation of the liver, and then almoſt always proves fatal.

Genus LXII. DIABETES, or *too great a Quantity of* Urine.

Diabetes, *Sauv.* gen. 263. *Lin.* 197. *Vog.* 115. *Sag.* gen. 199. *Junck.* 99. *Dobſon*, Med. Obſervat. Vol. V. p. 298. *Home*'s Clinical Experiments, ſect. xvi.
Diureſis, *Vog.* 114.

422 CXLVIII. The Diabetes with *ſweet Urine*. Sp. I.

Diabetes Anglicus, *Sauv.* ſp. 2. *Mead* on Poiſons, Eſſay I. Ejuſdem Monita Med. cap. ix. ſect. 2. *Dobſon* in Lond. Med. Obſerv. Vol. V. art. 27. *Myers* Diſſ. inaug. de Diabete. Edinb. 1779.
Diabetes febricoſus, *Sauv.* ſp. 7. *Sydenh.* Ep. reſp. ad. R. Brady.

423 CXLIX. Diabetes with *inſipid Urine*. Sp. II.

M. Liſter Exerc. Medicin. II. de Diabete.
Diabetes legitimus, *Sauv.* ſp. 1. *Aretæus* de morb. diuturn. lib. ii. cap. 2.
Diabetes ex vino, *Sauv.* ſp. 5. *Ephem. Germ.* D. I. A. II. Obſerv. 122.

Deſcription. The diabetes firſt ſhews itſelf by a dryneſs of the mouth and thirſt, white frothy ſpittle, and the urine in ſomewhat larger quantity than uſual. A heat begins to be perceived in the bowels, which at firſt is a little pungent, and gradually increaſes. The thirſt continues to augment by degrees, and the patient gradually loſes the power of retaining his urine for any length of time. It is remarkable, that, tho' the patients drink much, the quantity of urine always exceeds what is drank. In Home's Clinical Experiments we have an account of two patients labouring under this diſeaſe: one of them drank between 10 and 12 Engliſh pints a-day, without being ſatisfied. The quantity was greater in the forenoon than in the afternoon. In the other the caſe was reverſed. He drank about four pints a-day, and more in the afternoon than the forenoon. The former paſſed from 12 to 15 pints of urine a-day: the latter, 11 or 12; ſo that his urine always exceeded his drink by eight, or at leaſt ſeven pints. When the urine is retained a little while, there is a ſwelling of the loins, ilia, and teſtes; the ſtrength gradually decays; the ſkin is dry and ſhrivelled; œdematous ſwellings ariſe in various parts of the body, but afterwards ſubſide without relieving the diſeaſe in the leaſt; and the patient is frequently carried off by convulſions.

The moſt ſingular phænomenon in this diſeaſe is, that the urine ſeems to be entirely or very much diveſted of an animal-nature, and to be largely impregnated with a ſaccharine ſalt ſcarce diſtinguiſhable from that ſold in the ſhops. This diſcovery was firſt made by Dr Dobſon of Liverpool, who made ſome experiments on the urine of a perſon labouring under a diabetes, and who made 28 pints of urine every day, taking during the ſame time from 12 to 14 pounds of ſolid and liquid food. Some of this urine being ſet by, fell into a ſpontaneous efferveſcence, changed firſt into a vinous liquor, and afterwards into an acetous one, before it became putrid and offenſive. Eight ounces of blood taken from the ſame patient, ſeparated into craſſamentum and ſerum; the latter being ſweet to the taſte, but leſs ſo than the urine. Two quarts of the urine, evaporated to dryneſs, left a white cake weighing four ounces two drachms and two ſcruples. This cake was granulated, and broke eaſily between the fingers: it ſmelled ſweet like brown ſugar; neither could it by the taſte be diſtinguiſhed from ſugar, except that it left a ſlight ſenſe of coolneſs on the tongue. The experiment was repeated after the patient was recovered to ſuch a degree as to paſs only 14 pints of urine a-day. There was now a ſtrong urinous ſmell during the evaporation; and the reſiduum could not be procured in a ſolid form, but was blackiſh, and much reſembled very thick treacle. In Dr Home's patients, the ſerum of the blood had no preternatural ſweetneſs; in one of them the craſſamentum was covered with a thick inflammatory cruſt. In one of theſe patients the urine yielded an ounce and a half, and in the other an ounce, of ſaccharine matter from each pound. It had, however, an urinous ſmell, and a ſaline taſte mixed with the ſweet one; and the urine of one fermented with yeaſt, we are told, into "tolerable ſmall-beer." Both theſe patients had a voracious appetite, and perpetual gnawing ſenſe of hunger; as had alſo Dr Dobſon's patient. The inſipid urine of thoſe affected with diabetes hath not been examined by phyſicians.

Cauſes. Theſe are exceedingly obſcure and uncertain; ſpaſms of the nervous ſyſtem, debility, and every thing inducing it, but eſpecially ſtrong diuretics and immoderate venery, have been accuſed as bringing on the diabetes. It hath, however, occurred in perſons where none of all theſe cauſes could be ſuſpected; nor have the beſt phyſicians been able to determine it.—Diſſections have only ſhewn that the kidneys were in an enlarged and lax ſtate. In one of Dr Home's patients who died, they ſmelled ſour; which ſhewed that the urine peculiar to diabetes came from the kidneys, and was not ſent directly from the inteſtines by a retrograde motion of the lymphatics, as ſome imagine.

Prognoſis. The diabetes is rarely cured, unleſs when taken at the very beginning, which is ſeldom done;

and in a confirmed diabetes the prognoſis muſt therefore be unfavourable.

Cure. The only hopes of a cure in this diſtemper are from aſtringent and ſtrengthening medicines. Dr Dobſon's patient was relieved by the following remedies; which, however, were frequently varied, as none of them produced their good effects for any length of time: The bark in ſubſtance, with ſmall doſes of rhubarb; decoction of the bark, with the acid elixir of vitriol; the cold infuſion of the bark, of which he drank from a quart to two quarts daily; Dover's powder; alum-whey; lime-water; antimonials combined with *tinctura Thebaica*. The warm bath was uſed occaſionally when the ſkin was remarkably hot and dry, and the patient complained of reſtleſſneſs and anxiety. The tincture of cantharides was likewiſe tried; but he could never take more than 25 drops to a doſe, without exciting great uneaſineſs in his bowels. The body was kept conſtantly open, either with rhubarb, or the infuſion of ſena joined with rhubarb. His common drikns were rice-water, barley-water, lime-water and milk; lime-water alone; ſage, balm, or mint-tea; ſmall-beer, ſimple water, and water acidulated with the vitriolic acid. In ſeven months, theſe remedies, in whatever manner varied, made no further progreſs in removing the diſeaſe. In Dr Home's patients, all theſe medicines, and many others, were tried without the leaſt good effect; inſomuch that he uſes this remarkable expreſſion: "Thus, theſe two patients have exhauſted all that experience had ever recommended, and almoſt all that theory could ſuggeſt; yet, in both caſes, the diſeaſe has reſiſted all the means of cure uſed." It is remarkable, that though ſeptics were given to both, in ſuch quantity as evidently to produce a putreſcency in the *primæ viæ*, the urine remained unaltered both in quantity and quality.

424 CLII. HYSTERIA, Hysterics. Genus LXIII.

Hyſteria, *Sauv.* gen. 135. *Lin.* 126. *Vog.* 219. *Sag.* gen. 242.
Malum hyſtericum, *Hoffm.* III. 50. *Junck.* 36.
Affectio hyſterica, *Willis* de Morb. Convulſiv. cap. 5, 10, 11. *Sydenham* Diſſ. Epiſt. ad G. Cole, *Whytt* on Nervous Diſorders.

Deſcription. The hyſteria is a convulſive diſeaſe which comes on at uncertain intervals, ſometimes longer and ſometimes ſhorter, but at no ſtated time. The paroxyſms commonly begin with a languor and debility of the whole body; yawning, ſtretching, and reſtleſſneſs. A ſenſe of coldneſs, alſo, in the extremities, almoſt always precedes, and for the moſt part remains during the whole time of, the paroxyſm. To this ſometimes ſucceeds a ſenſe of heat; and the two ſenſations alternate with each other in different parts of the body. The face is ſometimes fluſhed and ſometime pale; and ſometimes the paleneſs and fluſhing come alternately. There is a violent pain in the head; the eyes become dim, and pour out tears; there is a rumbling and inflation of the inteſtines; a ſenſation is felt like that of a globe aſcending from the lower part of the abdomen or hypogaſtrium, which ſometimes ſeems to roll along the whole alimentary canal. It aſcends to the ſtomach, ſometimes ſuddenly, ſometimes ſlowly; and there produces a ſenſe of inflation and weight, together with anxiety, nauſea, and vomiting. At laſt it comes up to the throat, where it produces a ſenſe of ſuffocation, and difficulty of breathing or ſwallowing. All this time there are the moſt violent pains both in the external and internal parts of the abdomen; the muſcles are convulſed; the navel is drawn inwards; and there are frequently ſuch ſpaſms of the inteſtines, that neither clyſters can be injected, nor even flatus paſs downwards. Sometimes the paroxyſm remits after theſe ſymptoms have continued for a certain time, but more frequently the patients fall into fainting fits; ſometimes they lie without motion, as if they were in a deep ſleep; ſometimes they beat their breaſts violently and continually with their hands, and ſometimes they are ſeized with general convulſions, and the diſeaſe puts on the appearance of an epilepſy. In ſome patients the extremities become cold and ſtiff, and the body has the appearance of one in a catalepſy. Sometimes a moſt violent beating pain takes place in ſome part of the head, as if a nail was driving into it, and all viſible objects ſeem to turn round; grievous pains attack the loins, back, and bladder, and the patients make a ſurpriſing quantity of urine as limpid as water; which laſt is one of the ſureſt ſigns of the diſeaſe. The mind is very much affected as well as the body. Sometimes the patients are tormented with vain fears; ſometimes they will laugh, at other times cry immoderately; and ſometimes their temper becomes ſo peeviſh and fretful, that they cannot enjoy a moment's quiet.

Cauſes, &c. The general cauſe of hyſteria is thought by the beſt phyſicians to conſiſt in a too great mobility and irritability of the nervous ſyſtem, and of conſequence may be brought on by whatever debilitates and renders the body irritable. Hence the diſeaſe moſt frequently attacks females of a weak and lax habit of body, though there are ſome inſtances of men alſo attacked by it. The diſeaſe generally comes on between the time of puberty and the age of 35, and makes its attacks during the time of menſtruation more frequently than at any other. It alſo more uſually ſeizes barren women and young widows, than ſuch as are bearing children.

Prognoſis. Though the appearance of this diſeaſe is ſo very terrible, it ſeldom proves mortal unleſs by wrong treatment: but notwithſtanding this it is extremely difficult of cure, and rarely admits of any thing elſe than being palliated; for though it ſhould ſeem to be conquered by medicine for a time, it very quickly returns, and that from the ſlighteſt cauſes.

Cure. The moſt powerful remedy hitherto diſcovered in hyſteric caſes is opium, or the ſolution of it called *laudanum*. By this commonly the moſt violent paroxyſms are ſtopped, though it is inſufficient to accompliſh a radical cure. In Home's Clinical Experiments we find an inſtance of a cure performed by veneſection, though this remedy hath been generally condemned in hyſterical caſes. Aſafætida ſeems to ſtand next in virtue to opium; though with ſome it diſagrees, and occaſions pains in the ſtomach and vomiting. Æther will alſo frequently remove an hyſteric fit: but its effects are of ſhort duration; and if it do not effect a cure ſoon after its exhibition, no ſervice is to be expected either by perſeverance in the uſe of it or by increaſing the doſe, and with ſome conſtitutions it diſagrees to ſuch a degree as to occaſion convulſions. If the patient is ſeized with a violent fit, ſo that ſhe can ſwallow nothing, which is frequently the caſe, it will be proper to apply ſome ſtrong volatile alkali to her noſe; or if that be not at hand, the vapour of burning feathers is ſometimes very efficacious. A plaſter of galbanum and aſafœtida will alſo prove ſerviceable: but it muſt be remembered, that none of theſe things will prevent the return of the diſeaſe; and therefore a radical cure is to be attemped by exerciſe, the Peruvian bark, chalybeates, mineral waters, and other tonics.

Genus LXIV. HYDROPHOBIA, the *Dread* of Water.

Hydrophobia, *Sauv.* gen. 231. *Lin.* 86. *Vog.* 30. *Sag.* gen. 343. *Boerh.* 1138. *Junck.* 124. *Mead* on poiſons. *Deſault* ſur la rage. *Sauv.* diſſ. ſur la rage. *James* on canine madneſs. *Dalby,* Virtues of cinnabar and muſk againſt the bite of a mad dog. *Nugent* on the hydrophobia. *Choiſel,* Nouvelle methode pour le traitement de la rage. *Journal de Medicine,* paſſim. *Medical Obſ. and Inquiries,* vol. iii. art. 34. vol. v. art. 20. 26. and App. *Med. Tranſact.* vol. ii. art. 5. 12. and 15. *Heyſcham,* Diſſ. inaug. de rab. canin. Edinb. 1777. *Parry,* Diſſ. inaug. de rab. contagioſ. ſive canin. Edinb. 1778. *Andry,* Recherches ſur la rage, 1778. *Vaughan,* Caſes of hydrophobia, ſecond edit. 1778.

425 CLII. Hydrophobia *Rabioſa,* or Hydrophoby conſequent on the *Bite* of a *Mad Animal.* Sp. I.

Hydrophobia vulgaris, *Sauv.* ſp. 1.

Deſcription. This diſeaſe commonly does not make its attack till a conſiderable time after the bite. In ſome few inſtances it hath commenced in ſeven or eight days from the accident; but generally the patient continues in health for 20, 30, or 40 days, or even much longer. The bite hath been healed long before that time, frequently with the greateſt eaſe; though ſometimes it reſiſts all kinds of healing applications, and forms a running ulcer which diſcharges a quantity of matter for many days. It has been ſaid, that the nearer the wounded place is to the ſalivary glands, the ſooner the ſymptoms of hydrophobia appear. The approach of the diſeaſe is known by the cicatrix of the wound becoming high, hard, and elevated; pains ſhoot from it towards the throat: ſometimes it is ſurrounded with livid or red ſtreaks, and ſeems to be in a ſtate of inflammation; though frequently there is nothing remarkable to be obſerved about it. The patient becomes melancholy, loves ſolitude, and hath a ſickneſs at ſtomach. Sometimes the peculiar ſymptom of the diſeaſe, *the dread of water,* comes on all at once. We have an inſtance of one who, having taken a vomit of ipecacuanha for the ſickneſs he felt at his ſtomach, was ſeized with the hydrophobia in the time he was drinking the warm water. Sometimes the diſeaſe begins like a common ſore throat; and the ſoreneſs daily increaſing, the hydrophobic ſymptoms ſhew themſelves like a convulſive ſpaſm of the muſcles of the fauces. In others, the mind ſeems to be primarily affected, and they have a real *dread* of water or any liquid before they try whether they can ſwallow it or not. Dr James, in his treatiſe on canine madneſs, mentions a boy ſent out to fill two bottles with water, who was ſo terrified by the noiſe of the liquid running into them, that he fled into the houſe crying out that he was bewitched. He mentions alſo the caſe of a farmer, who, going to draw ſome ale from a caſk, was terrified to ſuch a degree at its running into the veſſel, that he ran out in a great haſte with the ſpigot in his hand. But in whatever manner this ſymptom comes on, it is certain that the moſt painful ſenſations accompany every attempt to ſwallow liquids. Nay, the bare ſight of water, of a looking-glaſs, of any thing clear or pellucid, will give the utmoſt uneaſineſs, or even throw them into convulſions.

With regard to the affection of the mind itſelf in this diſeaſe, it does not appear that the patients are deprived of reaſon. Some have, merely by the dint of reſolution, conquered the dread of water, though they never could conquer the convulſive motions which the contact of liquids occaſioned: while this reſolution hath been of no avail; for the convulſions and other ſymptoms increaſing, have almoſt always deſtroyed the unhappy patients.

In this diſeaſe there ſeems to be an extreme ſenſibility and irritability of the nervous ſyſtem. The eyes cannot bear the light, or the ſight of any thing white; the leaſt touch or motion offends them, and they want to be kept as quiet and in as dark a place as poſſible. Some complain of the coldneſs of the air, frequently when it is really warm Others complain of violent heat; and have a great deſire for cold air, which yet never fails to increaſe the ſymptoms. In all there is a great flow of viſcid ſaliva into the mouth; which is exceedingly troubleſome to the patients, as it has the ſame effect upon their fauces that other liquids have. This therefore they perpetually blow off with violence, which in a patient of Dr Fothergill's occaſioned a noiſe not unlike the hollow barking of a dog, and which he conjectures might have given riſe to the common notion that hydrophobous patients bark like dogs. They have an inſatiable thirſt; but are unable to get down any drink, except with the utmoſt difficulty; though ſometimes they can ſwallow bread ſoaked in liquids, ſlices of oranges, or other fruits. There is a pain under the *ſcrobiculus cordis,* as in the tetanus; and the patients mournfully point to that place as the ſeat of the diſeaſe. Dr Vaughan is of opinion that it is this pain, rather than any difficulty in ſwallowing, which diſtreſſes the patient on every attempt to drink. The voice is commonly plaintive and mournful; but Dr Vaughan tells us there is a mixture of fierceneſs and timidity in the countenance which he cannot deſcribe, but by which he could know a hydrophobous perſon without aſking any queſtions.

In this diſtemper, indeed, the ſymptoms are ſo various, that they cannot be enumerated; for we will ſeldom read two caſes of hydrophobia which do not differ very remarkably in this reſpect. Some ſeem to have at times a furious delirium, and an inclination to ſpit at or bite the byſtanders; while others ſhew no ſuch inclination, but will even ſuffer people to wipe the inſide of their mouths with the corner of a handkerchief in order to clear away the viſcid ſaliva which is ready to ſuffocate them. In ſome male patients there is an involuntary erection of the penis, and emiſſion of the ſemen; and the urine is forced away by the frequent return of the ſpaſms. In a letter from Dr Wolf of Warſaw to Henry Baker, F. R. S. dated Warſaw Sept. 26th 1767, we have the following melancholy account of the caſes of five perſons who died of the hydrophobia, "None of them quite loſt their right ſenſes; but they were all talking without intermiſſion, praying, lamenting, deſpairing, curſing, ſighing, ſpitting a frothy ſaliva, ſcreeching, ſometimes belching, retching, but rarely vomiting. Every member is convulſed by fits, but moſt violently from the navel up to the breaſt and œſophagus. The fit comes on every quarter of an hour; the fauces are not red, nor the tongue dry. The pulſe is not at all feveriſh, and when the fit is over nearly like a ſound pulſe. The face grows pale, then brown, and during the fit almoſt black; the lips livid: the head is drowſy, and the ears tingling; the urine limpid. At laſt they grow weary; the fits are leſs violent, and ceaſe towards the end; the pulſe becomes weak, intermittent, and not very quick; they ſweat, and at laſt the whole body becomes cold. They compoſe themſelves quietly as if to get ſleep, and ſo they expire. The blood let out a few hours before death appears good in every reſpect. A general obſervation was, that the lint and dreſſings of the wounds, even when dry, were always black, and that when the pus was very good in colour and appearance." In one of Dr Wolf's patients who recovered, the blood ſtunk intolerably as it was drawn from a vein; and one of Mr Vaughan's patients complained of an intolerable fetid ſmell proceeding from the wounded part, though nobody but himſelf could perceive it. In general, the violent convulſions ceaſe a ſhort time before death; and even the hydrophobia goes off, ſo that the patients can drink freely. But this does not always happen; for Mr Vaughan mentions the caſe of a patient, in whom, "when he had in appearance ceaſed to breathe, the ſpaſmus cynicus was obſervable, with an odd convulſive motion in the muſcles of the face; and the ſtrange contrariety which took place in the action of theſe produced the moſt horrid aſſemblage of features that can well be conceived. Of this patient alſo it was remarkable, that in the laſt hours of his life he ceaſed to call for drink, which had been his conſtant requeſt; but was perpetually aſking for ſomething to eat."

The hydrophobia ſeems to be a ſymptom peculiar to the human race; for the mad animals which communicate the infection, do not ſeem to have any dread of water. Dr Wolf, in the letter above quoted, ſays in general, that cattle bit at the ſame time and by the ſame animal (a mad wolf) which bit the perſons whoſe caſes he relates, died nearly with the ſame frightful raging as the men; but ſays nothing of their having any hydrophobia: nay, Dr James and ſome others aſſert, that the hydrophobia is not always an attendant on rabies canina in the human race; and indeed it is certain that the diſeaſe has proved mortal after this terrible ſymptom hath been removed. With regard to the ſymptoms of madneſs in dogs, they are very equivocal; and thoſe particularly enumerated by ſome authors, are only ſuch as might be expected in dogs violently heated or agitated by being violently purſued and ſtruck. One ſymptom indeed, if it could be depended upon, would determine the matter; namely, that all other dogs avoid and run away from one that is mad; and even large dogs will not attack one of the ſmalleſt ſize who is infected with this diſeaſe. Upon this ſuppoſition they point out a method of diſcovering whether a dog who hath been killed was really mad or not, namely, by rubbing a piece of meat along the inſide of his mouth, and then offering it to a ſound dog. If the latter eats it, it is a ſign the dog was not mad; but if the other rejects it with a kind of howling noiſe, it is certain that he was. Dr James tell us, that among dogs the diſeaſe is infectious by ſtaying in the ſame place; and that after a kennel hath been once infected, the dogs put into it will be for a conſiderable time afterwards in danger of going mad alſo. A remedy for this, he ſays, is to keep geeſe for ſome time in the kennel. He rejects as falſe the opinion that dogs when going mad will not bark; though he owns that there is a very conſiderable change in their bark, which becomes hoarſe and hollow.

Cauſes, &c. In no diſeaſe whatever are we more at a loſs to diſcover the cauſes than in the hydrophobia. In dogs, foxes, and wolves, it ſeems to come on ſpontaneouſly; though this is conteſted by ſome authors. It is ſaid, that the cauſes commonly aſſigned, viz. heat, feeding upon putrid fleſh, want of water, &c. are not ſufficient for producing the diſtemper. It does not appear that madneſs is more frequent among dogs in the warm than in the cold climates; nay, in the iſland of Antigua, where the climate is very hot, and the water very ſcarce, the dogs are ſaid not to be ſubject to this diſtemper. As to putrid aliment, it ſeems natural for dogs to prefer this to any other, and they have been known to ſubſiſt upon it for a long time without any detriment. For theſe reaſons, they think the diſeaſe ariſes from a ſpecific contagion, like the ſmall-pox and meaſles among the human race, which, being once produced by cauſes unknown, continues to be propagated by the intercourſe which dogs have with each other, as the diſeaſes juſt mentioned continue to be propagated among the human race by means of the intercourſe which they have with one another.

With regard to the immediate cauſe among mankind, there is not the leaſt doubt that the hydrophobia is occaſioned by the ſaliva of the mad animal being mixed with the blood. It doth not appear that this can operate through the cuticula; but, when that is rubbed off, the ſmalleſt quantity is ſufficient to communicate the diſeaſe, and a ſlight ſcratch with the teeth of a mad animal hath been found as pernicious as a large wound. It is certain alſo, that the infection hath been communicated by the bites of dogs, cats, wolves, foxes, weaſels, ſwine, and even cocks and hens, when in a ſtate of madneſs. But it does not appear that the diſtemper is communicable from one hydrophobous perſon to another, by means of the bite, or any other way. Dr Vaughan inoculated a dog with the ſaliva of a hydrophobous child, but the animal continued free from diſeaſe for two months; and though the doctor promiſed to inform the public if it ſhould happen to occur afterwards, nothing hath hitherto appeared on that ſubject. A nurſe alſo frequently kiſſed this child during the time of his diſorder, but no bad conſequence enſued.

When we attempt to inveſtigate the nature of the cauſe of the hydrophobia by diſſections, our inquiries are commonly diſappointed. In two bodies opened by Dr Vaughan, there was not the leaſt morbid appearance; in the very fauces, where we might have expected that the diſeaſe would have ſhewn itſelf moſt evidently, there was not the leaſt appearance even of inflammation. The ſtomach, inteſtines, diaphragm, œſophagus, &c. were all in a natural ſtate: neither do we find in authors of credit any certain accounts of morbid appearances in the bodies of hydrophobous perſons after death. Dr Vaughan therefore concludes, that the poiſon acts upon the nervous ſyſtem; and is ſo wholly confined to it, that it may be doubted whether the qualities of the blood are altered by it or not; and that it acts upon the nerves by impairing and diſturbing their functions to ſuch a degree as ſpeedily to end in a total extinction of the vital principle. As to the difficulty in ſwallowing generally believed to accompany the dread of water, he treats it as miſrepreſentation, as well as that the œſophagus with the muſcles ſubſervient to deglutition are ſpecially concerned in this diſeaſe. The principal foundation of the evil, he thinks, reſts on a morbid ſenſibility both of the external and internal fauces. For the ſight of a liquid, or the application of any ſubſtance to the internal fauces, but more eſpecially of a fluid, inſtantly excites the moſt painful feelings. Nay, the ſame ſymptoms are produced by touching the external fauces with a fluid, or by the contact of cold air with theſe parts; and nearly in as great a degree. But a ſolid or a fluid ſubſtance being conveyed into the œſophagus, the tranſit into the ſtomach is accompliſhed with little or no impediment; ſo that in fact the difficulty is ſurmounted before the patient is engaged in the action of ſwallowing. Nor is the excruciating pain which never fails to be the compainion of every attempt to drink, felt in the *fauces* and *throat*: it is, he ſays, at the *ſcrobiculus cordis;* to which the ſufferers applies his hand. From this laſt circumſtance, therefore, from the preſence of the *riſus ſardonius*, from the muſcles of the abdomen being forcibly contracted, and from the ſenſe of ſuffocation which ſeems to threaten the patient with immediate death, Dr Vaughan has been led to think that in the hydrophobia a new ſympathy was eſtabliſhed between the fauces, the diaphragm, and the abdominal muſcles.

Prognoſis. When a perſon is bit, the prognoſis with regard to the enſuing hydrophobia is very uncertain. All thoſe who are bit do not fall into the diſeaſe; nay, Dr Vaughan relates, that out of 30 bit by a mad dog, only one was ſeized with the hydrophobia. During the interval betwixt the bit and the time the diſeaſe comes on, there are no ſymptoms by which we can judge whether it will appear or not. When once it hath made its appearance, the prognoſis is exceedingly fatal.

Prevention and Cure. It hath been generally allowed by practitioners, that though the hydrophobia may be prevented, yet it can ſeldom or ever be cured after it has made its appearance. A great number of different methods of prevention have been attempted. Bathing in cold water, eſpecially in the ſea, and drinking ſea-water for a certain time, have been preſcribed, and by ſome accounted a certain preventative. When this was known to fail, a long courſe of antiphlogiſtic regimen, violent ſubmerſion in water even to danger of drowning, and keeping the wounded place open with cauteries, were recommended.—To this extreme ſeverity Dr Mead objected; and in his treatiſe on this ſubject endeavours to ſhew, that in all ages the greateſt ſucceſs hath been reaped from diuretics, for which reaſon he propoſes the following powder: "Take aſh-coloured ground-liverwort, half an ounce; black-pepper, two drachms: reduce them ſeparately to powder, then mix them together." But this medicine, which was inſerted in former editions of the London Diſpenſatory under the name of *Pulvis Antilyſſus*, has long loſt its credit.

There is a famous Eaſt-India medicine, compoſed of 24 grains of native and as much factitious cinnabar, made into a powder with 16 grains of muſk. This is called the *Tonquin* medicine, and muſt be taken in a tea-cup-full of arrac or brandy; and is ſaid to ſecure the patient for 30 days, at the expiration of which it is to be repeated; but if he has any ſymptoms of the diſeaſe, it muſt be repeated in three hours, which is ſaid to be ſufficient for a cure. The firſt doſe is to be taken as ſoon after the bite as poſſible.

Another celebrated remedy is Palmarius's powder, compoſed of the leaves of rue, vervain, ſage, polypody, wormwood, mint, mugwort, balm, betony, St John's-wort, and leſſer centaury. Theſe herbs muſt be gathered in their prime, dried ſeparately in the ſhade, and then powdered. The doſe is a drachm, or a drachm and an half, taken every day.

A remedy which might promiſe to be more efficacious than any of thoſe hitherto mentioned is mercury. This hath been recommended in frictions, and to be taken inwardly in the form of calomel and turbith-mineral, in order if poſſible to raiſe a ſlight ſalivation, on which the efficacy was thought to depend. Beſides this, veneſection, opium, the bark, camphire, have have been tried in very large quantities; the warm bath; and, in ſhort, every thing which human invention could ſuggeſt; but with what ſucceſs, can beſt be judged from the following well-authenticated caſes.

In the beginning of December 1728, a young gentleman, aged 17, was bit by a dog in the middle-finger of the right-hand about the middle of the nail. In the beginning of January 1729, he complained of pain in that finger reaching along the back of the hand to the elbow. In the night between the ſixth and ſeventh days of that month, he became hot and reſtleſs: emollient and anodyne fomentations were applied; but the pain became very ſharp, and the hydrophobia came on in the night-time. He was blooded; but became worſe every hour, and at laſt quite furious and outrageous. The bandage was thrown off from his arm, and he loſt about 20 ounces of blood beſides what had formerly been taken from him. This, however, made no abatement of the ſymptoms, and he died the ſame night.

In 1753, a woman, ſeized with the hydrophobia in conſequence of the bite of a dog ſuppoſed to be mad, was treated in the following manner by Dr Nugent. Firſt ſhe was blooded to about 15 ounces; ſhe took 15 grains of muſk in powder, and alongſt with it a pill of two grains of pure opium, every three hours. A plaſter of galbanum, with half an ounce of pure opium, was laid to her neck and throat. She began to take theſe medicines on a Saturday morning, an hour or two after the dread of water had commenced. In the evening ſhe was a little eaſier at intervals. The muſk and opium pill were continued as before, and the hand that was bit was ordered to be chafed with warm ſalad oil ſeveral times a-day. Only two papers of powder and two pills were taken in the night, for the laſt made her ſick and vomit. She had little or no ſleep, but lay pretty quiet.—On Sunday, 20 ounces of blood were taken away, and a clyſter with antimonial wine injected: the pills and powders were continued as before. On Sunday evening ſhe could ſwallow liquids a little better, and ſhe lay quiet moſt of the night. On Monday her ſwallowing was greatly better. The muſk and opium were continued, and twelve ounces more of blood were taken from her; the plaſter was renewed with only two drachms of opium, and the oil was uſed as before. At night ſhe was better; her hand eaſy; and by a continuance of theſe remedies ſhe recovered.—This was the caſe which chiefly brought opium into reputation.

The following caſes publiſhed by De Sault, a Frenchman, firſt brought mercury into reputation.—Four men were bitten by the ſame wolf, on the ſame day, at the ſame hour. They were dipped in ſalt-water, and came back perſuaded that they had nothing to fear. Some days after, one of them felt a numbed pain about his ſcars, while the ſcars themſelves grew hard and roſe like an embroidery: he was ſoon after ſeized with the uſual ſymptoms, as did alſo another. The ſon of the former likewiſe began to feel a pain about the cicatrices, and a ſwelling with hardneſs; as did alſo the fourth. They were ordered to rub a drachm and a half of the mercurial or blue ointment upon the cicatrices and about the whole arm. This was repeated three days ſucceſſively, and then every other day: after the fifth friction, he allowed an interval of two days. Beſides this, they took every day a drachm and an half of Palmarius's powder. After the third friction the cicatrices grew flat and ſoft, the pain went off, their courage returned, and their mind reſumed its former tranquillity.

But how far mercury, or indeed any thing elſe, is from being a *ſpecific* in the hydrophobia, will appear from the following account of Dr Wolf's patients.—In the middle of April 1767, ſeventeen people and a great number of cattle were bitten in the neighbourhood of Warſaw by a mad wolf. One of theſe, an officer, was brought into the city that ſame day, and had the beſt advice of the ſurgeons and phyſicians in that place; beſides which, he took the bark very copiouſly with camphire. He continued well till the ſeventh week, when he became hydrophobous, and died.

Eleven of the others applied to Dr Wolf on the ninth day. Their wounds were all deeply ſcarified; diligently waſhed and fomented with vinegar, ſalt, and theriaca; and kept open till the 80th day, in thoſe who lived ſo long. Every two weeks they were blooded largely, and were purged every week with ſalts and jalap. Their diet was moſtly vegetable, and their drink whey and water. They all eat as much as could be got of the herbs *matriſylva* and *anagallis flore puniceo*; and they all took often of the *pulvis Palmarii*. The *muſcus cinereus terreſtris* could not be got, or it would alſo have been preſcribed. Beſides the general treatment, two were rubbed daily with a drachm of mercurial ointment, and had their purges with calomel. Two took every day four ounces of vinegar, three drachms tincture of poppies, and half an ounce of *rob ſambuci* every night. One took every day 16 grains of camphire, with four ſcruples of ſaltpetre, and at night half an ounce of *rob ſambuci*. Two took 24 grains of muſk, with 50 grains of cinnabar. Other two took from 40 to 60 drops of ſpirit of ſal ammoniac with quick-lime, and the laſt took a ſcruple of cryſtallized ſalt of tartar made by the mixture of a little ſpirit of ſal ammoniac with a ſolution of that ſalt.

One of the firſt who uſed the mercurial ointment was ſeized with the hydrophobia on the 22d day, immediately after being well purged with calomel. He was blooded copiouſly, plunged abundantly in cold water, and had ſeveral clyſters adminiſtered, without effect. Two pounds of oil, and as much of drink, were poured down by force: alſo a drachm of ſoap of tartar and half a drachm of muſk were given in three doſes. He then began to drink freely, but died the third day. His companion then left off the uſe of mercury, and took 80 drops a-day of Dippel's animal-oil, till he had taken ſix drachms of it; after which he went on with 100 drops daily of vinous ſpirit of ſal ammoniac made with alkali.

One of thoſe who took the vinegar fell ſick the 33d day. He was immediately blooded, and vomited with ipecacuanha. This man was too ſtrong to make experiments on by force: he refuſed every thing, and died the third day. His companion, an old man, began to be ſeized in the ſame manner: he was purged with ſalts, took the *morſulæ balſami Peruviani*, and drank lemonade. He recovered, and uſed afterwards 100 drops of ſpirit of ſal ammoniac daily. This was the patient formerly mentioned, whoſe blood had the fetid ſmell.

The man who uſed the camphire fell ſick the 33d day. He was thrice copiouſly blooded, was plunged forcibly into the coldeſt water for the ſpace of two hours, and was nearly drowned. He was clyſtered with effect. He himſelf forced down, with incredible averſion and labour, a great quantity of drink; by which he vomited more than 50 times abundance of frothy ſlime. He took ſeveral ounces of oil, and ſeveral boluſes of caſtor and opium, of each four grains, without effect; and died the fourth day.

A girl who uſed the muſk with cinnabar, fell ill the 62d day, and died the third day after. No farther attempt was made to ſave her life, ſhe being then at a diſtance. Her companion, a pregnant woman, then left off the muſk, and took in its ſtead vinous ſpirit of ſal ammoniac.

A woman who had taken nothing, fell ill on the 40th day. She ſuffered terribly in the night, but leſs in the day-time. Beſides the uſual ſymptoms, ſhe had great pain and ſwelling in her belly. In the ſpace of two days ſhe drank about two bottles of brandy, but would taſte no other liquor. The Doctor ordered her to mix an equal quantity of oil with her brandy, and to take every day two boluſes of caſtor and opium. She recovered; and at laſt took two doſes of turbith-mineral, by which ſhe was vomited and purged.

After the 80th day, all the ſurviving people took thrice the turbith-mineral, except the pregnant woman; and they afterwards continued their alkaline memedicines to the 100th day.

On theſe caſes Dr Wolf makes the following obſervations.—"Thus we ſee, that the bark, the mercury, the acids, the muſk, the feeding on the moſt famous herbs, the ſweating, the *cura antiphlogiſtica*, are no ſpecifics. I don't know what to ſay to the alkalies: the danger is not yet over; and there are ſtill four people who uſed nothing, in as good health as my patients."

The following caſe by Dr Raymond of Marſeilles, ſhews the inefficacy of mercury even as a *preventative*.—On the 19th of July 1765, Mr Boyer, aged 25, of a bloated cachectic habit, was bit by a mad dog in the inferior part of the leg: the wound extended half way round, bled freely, and was like a great ſcratch. The patient's legs had been ſwelled for a conſiderable time before the accident; and there were alſo two ulcers in the other leg. Some hours after the accident, the actual cautery was applied to the wound. The Dr was not preſent at this operation; but the part around the bite was rubbed with mercurial ointment immediately after, and the eſchar was dreſſed with the ſame ointment. The eſchar was ſeparated on the firſt day, but the dreſſing was continued till the wound was cicatriſed. The ſecond day a bolus of four grains of turbith and eight grains of camphire was exhibited. This procured a conſiderable evacuation both by vomit and ſtool, and a ſpitting alſo came on. The third day the bitten leg was rubbed with mercurial ointment: in the ſpace of a month the frictions were repeated five times on both legs, three drachms of mercurial ointment being uſed in each friction. During the ſame time the bolus was five times repeated; and this treatment kept up a ſlight ſalivation to the 40th day. The evening of the third day he took the *Tonquin medicine*, called alſo *Sir George Cobb's powder*, in a bolus; which vomited him briſkly. This powder was repeated ſeven or eight times in the month, generally with the ſame effect. During the firſt ſeven or eight days he got four times, in the morning, a drachm of the *anagallis flore puniceo*, freſh gathered and powdered. The 41ſt day, the turbith bolus was preſcribed for the ſeventh time; he was bathed in the ſea, and continued the bathing for two days more. On the 74th he was ſeized with the diſtemper; and died on the 76th, ſeemingly ſuffocated or ſtrangled, his mouth covered with ſlaver, and his face bloated. He loſt his ſenſes not above half a quarter of an hour before his death. The pulſe was quiet the whole time. The Doctor ſays he has reaſon to ſuſpect the wound was not well cauterized.

Another inſtance is mentioned, by the ſame author, of a pregnant woman bit by the ſame dog and on the ſame day with Mr Boyer, who was never ſeized with the diſtemper. She was treated in much the ſame manner with him, and ſalivated a little more. But ſhe was bit through a ſhamoy leather ſhoe, which muſt neceſſarily have cleaned the animal's teeth of the poiſonous ſaliva before they reached her ſkin, and to this we are naturally led to aſcribe her ſafety. One of Dr Wolf's patients alſo was a pregnant woman, and was not ſeized with the diſtemper. Perhaps women in a ſtate of pregnancy may be leſs liable to this diſtemper than others.

The ſame author tells us, "there are many examples of the inefficacy of mercurial frictions. A ſurgeon of Marſeilles treated a girl about 12 years of age bit by a mad dog, with mercurial frictions; applying them as in the *lues venerea*: yet ſhe died of the hydrophobia on the 55th day. Her wound was not cauterized."

In the following caſe all the moſt powerful remedies were tried.—In the afternoon of the 29th of Aug. 1778, Dr Vaughan was called to a boy of eight years of age labouring under a hydrophobia. He had been bit on the wriſt by a cat about a month before; of which the marks remained, but without any ulcer, or even the ſmalleſt appearance of inflammation. About the middle of the day before Dr Vaughan ſaw him, he began to complain of a pain in the part bitten, which aſcended up the arm, and affected the temple on that ſide; ſoon after which he ſwallowed liquids with reluctance and difficulty. He was put into the warm bath for three quarters of an hour, during which time he was eaſier: he had a clyſter of five ounces of freſh broth, and 30 drops of laudanum, injected immediately after his coming out of it; a liniment conſiſting of three drachms of ſtrong mercurial ointment, with the ſame quantity of oil of amber, was rubbed upon the ſhoulders and back; two pills of a grain of flowers of zinc, and half a grain of *cuprum ammoniacale*, were taken every three or four hours; and a medicated atmoſphere was prepared for him, by burning gum ammoniac in his room. As theſe remedies were not attended with any good effect, each doſe of pills was ordered to contain two grains of *cuprum ammoniacale*, the ſame quantity of opium, three grains of flowers of zinc, and ten grains of aſafœtida; whilſt a ſolution of that fetid gum, with a drachm of laudanum, was adminiſtered as a clyſter. Theſe pills, though repeated every four hours, afforded not the ſmalleſt relief, nor did they ſhew the leaſt action on the frame. At laſt the Doctor reſolved to put in practice the deſperate remedy mentioned by Van Helmont, of throwing the patient into cold water, and keeping him there till he is almoſt drowned. With this view a large tub of cold water, well ſaturated with common ſalt, was prepared, into which the poor boy was plunged over head and ears, and there held until he ceaſed to ſtruggle. He was then taken out again, and the ſame operation repeated until he became ſo quiet that the Doctor was under apprehenſions that a total extinction of life would take place. He was then wrapped up in a blanket and put to bed, and he remained more quiet than he had formerly been; but all his former reſtleſſneſs ſoon returned, his pulſe ſunk, and he died about two o'clock in the morning.

The laſt celebrated antidote againſt the poiſon of a mad dog hath been known for ſome years by the name of the *Ormſkirk medicine*. The true compoſition of this is kept a ſecret by the proprietors: however, it hath been analyſed, and the following compoſition publiſhed by Dr Heyſham as perfectly ſimilar to it in all reſpects.

"Take half an ounce of chalk, three drachms of Armenian bole, ten grains of alum, one drachm of elecampane in powder; mix them all together, and add ſix drops of oil of aniſe."

They muſt certainly be very credulous who can put confidence in ſuch an inſignificant medicine as a preſervative againſt the hydrophobia: however, there is a poſſibility that there may be ſome unknown ingredient in the genuine powder; for it is difficult to analyſe powders after the ingredients are thoroughly mixed together. The efficacy of the medicine therefore muſt depend on the virtues of that unknown ingredient, if any ſuch there is. The following caſes, however, too well determine that it is not *infallible*, as was at firſt pretended.

On the 14th of February 1774, Mr Bellamy of Holborn, aged 40, was bit by a cat, which was killed the ſame morning. The following day he took the celebrated Ormſkirk medicine, ſold by Hill and Berry in Hill-Street, Berkeley Square, and conformed in every reſpect to the directions given by the vender. A ſervant-maid, who was bitten in the leg before her maſter was bitten, likewiſe took the ſame remedy. About the middle of April Mr Bellamy complained of a pain in his right knee, which he ſuppoſed to be rheumatic, and which continued and increaſed till the 7th of June, when he got ſome pills of calomel, ipecacuanhæ, and *pil. ſapon.* from an apothecary, with Huxham's tincture of the bark in ſmall doſes. In ſix days more he had a titillation in the urethra, a contraction of the ſcrotum and penis to a degree of pain, and an emiſſion of ſemen after making water, to which he had frequent calls. The medicines were diſcontinued; and on the 16th of that month the hydrophobia came on, and Dr Fothergill was called. Six ounces of blood were taken from his arm, and a bolus of a ſcruple of native cinnabar and half a ſcruple of muſk was given every four hours. The diſtemper manifeſtly increaſed thro' the day. In the evening a clyſter was injected, and ſeveral times repeated during the night; he had been put into the warm bath, and two drachms of ſtrong mercurial ointment rubbed into his legs and thighs by himſelf. He was greatly relieved by the warm bath while he continued in it, but the ſymptoms returned with increaſed violence in the night. The next day, being greatly worſe, he was blooded to as great a quantity as he could bear, had the warm bath and clyſters repeated, and half an ounce of mercurial ointment rubbed into his thighs and legs. Pills of opium were preſcribed, but he did not take them. He died the ſame night, at half an hour after 12. This patient was a man of great reſolution, and could in part conquer his averſion at water. He ſeemed to have totally forgot the accident of the bite; and caſually ſaid, that he thought this diſorder reſembled the hydrophobia, without ſuppoſing that he was afflicted with that diſtemper at the time.—The bite on the girl's leg refuſed to heal, baffled the art of a young ſurgeon who attempted to cure it, and continued a running ulcer for a long time. She did not fall into the hydrophobia. Hence Dr Fothergill thinks it probable, that keeping the wounds made by the teeth of mad animals open for a long time, would probably be of ſervice as a preventative; but in ſome of Dr Wolf's patients, theſe artificial drains appear not to have been attended with ſucceſs.

On the 16th of November 1773, Thomas Nourſe, a ſtrong healthy boy of 14, was admitted into the Leiceſter infirmary; having been that day month bitten by a mad fox-hound. The wound was a large lacerated one on the cheek, and bled very freely on being inflicted. The day after he was bit he went to the ſea, where he was dipped with all the ſeverity uſually practiſed under ſo diſagreeable an operation. The *Ormſkirk medicine* was alſo adminiſtered with all due care. It was bought of the perſon in Leiceſter who is deputed by the proprietor to ſell it for him. A common adheſive plaſter was applied to the part after ſea-bathing; and in the courſe of a month, without any further trouble, the wound was healed; excepting a ſmall portion, ſomewhat more than an inch in length, and in breadth about one-tenth. This yielded no diſcharge, and was quite in a cicatrizing ſtate. Five days before his admiſſion into the infirmary, he began to complain of a tightneſs over his temples, and a pain in his head: in two days the hydrophobia began to appear; and at its commencement, he complained of a *boiling heat* in his ſtomach, which was continually aſcending to the fauces. The diſeaſe was pretty ſtrong when he came to the infirmary. He got a bolus of a ſcruple of muſk with two grains of opium; then a compoſition of 15 grains of muſk, one of turbith mineral, and five grains of opium, was directed to be taken once in three hours: an ounce of the ſtronger mercurial ointment was to be rubbed on the cervical vertebræ and ſhoulders, and an embrocation of two ounces of laudanum, and half an ounce of *acetum ſaturninum*, was directed to be applied to the throat. But by this laſt he was thrown into convulſions, and the ſame effect followed though his eyes were firſt covered with a napkin. The embrocation was therefore changed for a plaſter of three drachms of powdered camphire, half an ounce of opium, and ſix drachms *confectio Democriti*. By theſe medicines the diſeaſe ſeemed to be ſomewhat ſuſpended, but they returned with violence in the evening. His medicine was repeated at ſeven; and at eight, five grains of opium were exhibited without muſk or turbith. At nine, another ounce of mercurial ointment was rubbed upon the ſhoulders, and half an ounce of laudanum with ſix ounces of mutton-broth was injected into the inteſtines, but to no purpoſe. A larger doſe of opium was then given, but with as little effect as the former, and he died the ſame night.

In the month of September 1774, a farmer, aged 25, was bit by a mad dog, whoſe teeth made a ſlight wound in the fore-finger of the left hand. He was dipped, as uſual, in the ſea; and drank the ſea-water for ſome time on the ſpot, which operated briſkly as a purge. He continued well till the 6th of June following, when he firſt felt a pain in that hand and arm; for which he bathed in a river that evening, ſuppoſing that it had been a rheumatic complaint. The next day he was ſick; and in the evening was ſeized with a violent vomiting, which continued all that night and till the middle of the next day, when it was ſucceeded by the hydrophobia. He was treated with the warm bath; had a purgative clyſter injected; and as ſoon as it had operated, a ſecond was given, conſiſting of four ounces of oil, and half an ounce of laudanum: half an ounce of ſtrong mercurial ointment was rubbed on the fauces, and the part was afterwards covered with the *cataplaſma e cymino*, to which was added an ounce of opium. An embrocation was applied to the region of the ſtomach with continued friction, conſiſting of half an ounce of *ſp. ſal. ammoniac.* ten drachms of oil olive, ſix drachms of oil of amber, and ten drachms of laudanum. Two ounces of ſtrong mercurial ointment were rubbed upon the ſhoulders and back; and as a further means of kindling a ptyaliſm ſpeedily, he received the ſmoke of cinnabar into the mouth by throwing a drachm of that ſubſtance now and then upon a hot iron: he was alſo directed to take every four hours a bolus of 15 grains of muſk, three grains of turbith mineral, and four grains of opium. He was eaſier while in the warm bath, and during the application of the ointment; but died the ſame night about two o'clock.

Many other inſtances might be adduced of the inefficacy of this pretended ſpecific: the danger of acquieſcing in which, will, it is hoped, create a due degree of caution in thoſe to whom they who are ſo unfortunate as to be bit by a mad animal may commit themſelves. Of the great variety of remedies which have had their day of reputation, there is not one which has not poſſeſſed the credit, ſome time or other, of preventing the noxious effects ariſing from the bite of a mad dog. A more adequate experience has with all of them diſcovered the deception. It was above obſerved, that the hydrophobia is by no means the infallible conſequence of being bit by a mad animal; and that of between 20 and 30 perſons who were bit by the dog which gave the fatal wound to one of Dr Vaughan's patients, not one felt the leaſt ill effect but himſelf. "In the above number (ſays the Doctor) were ſome who took the Ormſkirk Medicine; others went to the ſalt-water; and a part of them uſed no remedy, who yet fared equally well with the moſt attentive to their injury. The ſame thing has often happened before; and much merit, I doubt not, has been attributed to the medicine taken, from that celebrated one of *Sir George Cobb*, down to the *infallible* one which my good *Lady Bountiful*'s receipt-book furniſhes."

From all that has been ſaid the reader will judge how far the hydrophobia is capable of being ſubdued by any of the medicinal powers which have yet been tried. Some eminent phyſicians aſſert that it is totally incurable; and allege that the inſtances recorded by different authors of its cure have not been the genuine kind, but that which comes on ſpontaneouſly, and which is by no means ſo dangerous. Indeed two of Dr Wolf's patients recovered, where the diſeaſe ſeems to have been perfectly genuine: but in theſe the poiſon ſeemed to vent itſelf partly on ſome other place beſides the nervous ſyſtem. In one the blood was evidently infected, as it had an abominable fœtor; and the other had a violent pain and ſwelling in the belly. In all the others, it ſeemed to have attacked only the nervous ſyſtem; which perhaps hath not the ſame ability to throw off any offending matter that the vaſcular ſyſtem hath.

There is, however, a poſſibility that the prodigious affections of the nerves may ariſe only from a vitiated ſtate of the gaſtric juices; for it is well known, that the moſt terrible convulſions, nay, the hydrophobia itſelf, will ariſe from an affection of the ſtomach, without any bite of a mad animal. This ſeems to be ſomewhat confirmed from one of Dr Wolf's patients, who, though he vomited more than 50 times, yet ſtill threw up a frothy matter, which was therefore evidently ſecreted into the ſtomach, juſt as a continual vomiting of bilious matter ſhews a continual and extraordinary ſecretion of bile. Dr Wolf himſelf adopts this hypotheſis ſo far as to ſay, that perhaps the *ſerum* may become frothy; but in blood drawn from a vein not the leaſt fault appears either in the ſerum or craſſamentum. He affirms, however, that the duodenum appears to be one of the parts firſt and principally affected; and as it is not inflamed, it would ſeem that the affection it ſuſtains muſt ariſe from the vitiated ſtate of its juices.

Be this as it will, however, in the hydrophobia, the ſtomach ſeems totally, or in a great meaſure, to loſe the power which at other times it poſſeſſes. Two grains of *cuprum ammoniacale* were repeatedly given to a child of eight years of age without effect; but this doſe would occaſion violent vomiting in a ſtrong healthy man. Something or other therefore muſt have prevented this ſubſtance from acting on the nervous coat of the ſtomach; and this we can only ſuppoſe to have been the exceedingly diſordered ſtate of the gaſtric juice, which occaſioned ſuch violent irritation through the whole body, that the weaker ſtimulus of the medicine was entirely loſt. It would ſeem proper therefore to conſider the ſtomach in hydrophobic caſes as really containing a poiſonous matter, which could not be expelled by vomiting, becauſe it is renewed as faſt as evacuated. The indication therefore muſt be, to change its nature by ſuch medicines as are certainly more powerful than the poiſon; and this indication will naturally lead us to think of large doſes of alkaline ſalts. Theſe, it is certain, will deſtroy any animal-ſubſtance with which they come in contact, and render even the poiſon of ſerpents inactive. By exhibiting a few doſes of them, larger no no doubt than what could be ſafely done on other occaſions, we would be certain to change the ſtate of the ſtomachic juices; and thus might free the patient from thoſe intolerable ſpaſms which always occaſion death in ſuch a ſhort time. Dr Wolf ſeems inclined to think that volatile alkalies were of ſervice; but the above hypotheſis would incline us to uſe rather the fixed kind. At any rate, it ſeems vain for phyſicians to truſt much to the power of opium, mercury, muſk, or cinnabar, either ſingly, or combined in any poſſible way. The bark hath alſo failed, and the moſt celebrated ſpecifics have been found ineffectual. Alkalies are the next moſt powerful remedies which the *materia medica* affords, and they cannot be more unſucceſsful than the others have generally been.

Another remedy which ſeems adapted to change the nature of the gaſtric juices is ardent ſpirits. In one of Dr Wolf's patients two bottles of brandy ſeem to have effected a cure. The oil mixed with it was of no efficacy in other caſes, and the opium and turbith ſeem not to have been exhibited till the worſt was paſt. In this caſe the diſeaſe ſeems to have attacked the vaſcular as well as the nervous ſyſtem.

In all the patients the warm bath ſeems to have been a palliative, and a very powerful one, and as ſuch it ought never to be ommitted, though we can by no means truſt to it as a radical cure; and the above hiſtories abundantly ſhew, that though the warm bath and opium may palliate for a ſhort time, the cauſe on which the ſpaſms depend is ſtill going on and increaſing, till at laſt the ſymptoms become too ſtrong to be palliated even for a moment by any medicine however powerful. At any rate, the abovementioned hypotheſis ſuggeſts a new indication, which, if attended to, may perhaps lead to uſeful diſcoveries. In caſes where putreſcent bile is abundantly ſecreted, columbo root and vegetable acids are recommended to change the nature of the poiſon which the body is perpetually producing in itſelf. Where corroſive mercury hath been ſwallowed, alkaline ſalt is recommended to deſtroy the poiſon which nature cannot expel by vomiting; and why ſhould not ſomething be attempted to deſtroy the poiſon which the ſtomach ſeems to ſecrete in the hydrophobia, and which nature attempts to expel, though in vain, by violent efforts to vomit?

But whatever plan may be purſued in the hopes of curing this dreadful malady after any of the ſymptoms have made their appearance, we ought, in every inſtance of the accident that gives riſe to it, direct our immediate care to *prevention*, as being perhaps the only real ground of hope: And the moſt certain and efficacious way of preventing the ill conſequences, is inſtantly (if it may be done) to cut out out the piece in the place that happens to be bitten. Dr James, indeed, ſays, that he would have little opinion of cutting or cauteriſing if ten minutes were ſuffered to elapſe from the receiving of the bite before the operation was performed. But in an inaugural diſſertation lately publiſhed at Edinburgh by Dr Parry, the author is of opinion that exciſion will be of uſe a conſiderable time after the bite is received. He adopts this opinion from what happens in the ſmall-pox, where the blood doth not ſeem to receive the infection till ſome days after inoculation hath been performed. A ſecond inflammation, he tells us, then takes place, and the infection is conveyed into the blood. In like manner, when the hydrophobous infection is about to be conveyed into the blood, according to him, the wound, or its cicatrix, begins again to be inflamed; and it is this ſecond inflammation which does all the miſchief. Exciſion, or the cautery, will therefore be effectual any time betwixt the bite and the ſecond inflammation of the wound. Without implicitely truſting to this doctrine, however, or conſidering it as in any degree aſcertained in what manner the poiſon diffuſes itſelf, by what marks its progreſs may be known, or how ſoon the ſyſtem may be irremediably tainted with its malignity, it is undoubtedly ſafeſt not to loſe unneceſſarily a moment's time in applying the knife. This, or a dilation of the wound if it be ſmall, Dr Vaughan conſiders as the only prophylactics that can be depended upon. In the latter caſe, he directs to fill the wound with gunpowder, and ſet fire to it; which would produce a laceration of the part, and poſſibly the action of ignited powder upon the poiſon may have its uſe.

6 CLII. The *Spontaneous* Hydrophobia. Sp. II.

Hydrophobia ſpontanea, *Sauv.* ſp. 2.

This diſeaſe very much reſembles the former, ſo that it has undoubtedly been often miſtaken for it. It has been known to come on in an inflammation of the ſtomach, where it was cured by repeated and large blood-letting; in hyſteria, where it was cured by opium, muſk, or other antiſpaſmodics; and in putrid fevers, where it was cured by evacuating the inteſtinal canal of the putrid matters by repeated clyſters. A very good method of diſtinguiſhing the two is, that in the ſpontaneous hydrophobia the patient is much more delirious than in the genuine ſpecies. In the inſtance mentioned in the Medical Eſſays of this ſymptom attending the inflammation of the ſtomach, the patient *raved in the moſt extraordinary manner.* Dr Raymond ſays he remembers a ſpontaneous hydrophobia *attended with madneſs;* and in almoſt all the caſes of hydrophobia which are ſaid to have been cured, the patient was very delirious. Dr Nugent's patient was very frequently delirious, and dreaded *dogs* as well as water. In the Medical Tranſactions a caſe is communicated by W. Wrightſon ſurgeon in Sedgefield, Durham, of *canine madneſs* ſucceſsfully treated. This madneſs indeed came on after the bite of a dog ſaid to be mad: but it appeared only four days after the accident happened, and was attended with ſymptoms very unlike any of thoſe abovementioned; for he ſuddenly ſtarted up in a fit of delirium, and ran out of the houſe, and after being brought in caught hold of the hot bars of the grate which held the fire: Whereas, in the true hydrophobia, the patients dread the fire, light, or any thing which makes a ſtrong impreſſion on the ſenſes, exceedingly. It is probable, therefore, that this was only a ſpontaneous hydrophobia, eſpecially as it readily yielded to veneſection, 30 drops of laudanum, and pills of a grain and an half of opium given every three hours, ſome boluſes of muſk and cinnabar, &c. while in ſome of the former caſes as much opium was given to a boy as would have deprived of life the ſtrongeſt healthy *man* had he ſwallowed it; and yet this amazing quantity produced ſcarce any effect. This patient alſo dreaded the ſight of a dog.

Order VI. VESANIÆ.

Paranoiæ, *Vog.* Claſs IX.
Deliria, *Sauv.* Claſs. VIII. Ord. III. *Sag.* Claſs XI. Ord. III.
Ideales, *Lin.* Claſs V. Ord. I.

CLIV. AMENTIA; Folly, or *Idiotiſm.* Genus LXV. 427

Amentia, *Sauv.* gen. 233. *Vog.* 337. *Sag.* 346.
Moroſis, *Lin.* 106.
Stupiditas, moroſis, fatuitas, *Vog.* 336.
Amneſia, *Sauv.* gen. 237. *Sag.* 347.
Oblivio, *Lin.* 107. *Veg.* 338.
Memoriæ debilitas, *Junck.* 120.

CLV. MELANCHOLIA, Melancholy *Madneſs.* Genus LXVI. 428

Melancholia, *Sauv.* gen. 234. *Lin.* 71. *Vog.* 332. *Sag.* 347. *Boerh.* 1089. *Junck.* 121.
Dæmonomania, *Sauv.* gen. 236. *Sag.* 348.
Dæmonia, *Lin.* 69.
Veſania, *Lin.* 70.
Paraphobia, *Lin.* 75.
Athymia, *Vog.* 329.
Delirium melancholicum, *Hoffm.* III. 251.
Erotomania, *Lin.* 82.

Noſtalgia, *Sauv.* gen. 226. *Lin.* 83. *Sag.* 338. *Junck.* 125.
Melancholia nervea, *Cl. Lorry* de melancholia, P. I.

429 CLVI. MANIA, Raving or Furious *Madneſs*.

Genus LXVII.

Mania, *Sauv.* gen. 235. *Lin.* 68. *Vog.* 331. *Sag.* 349. *Boerh.* 1118. *Junck.* 122. *Battie* on Madneſs.
Paraphroſyne, *Lin.* 66.
Amentia, *Lin.* 67.
Delirium maniacum, *Hoffm.* III. 251.

Although theſe diſtempers may be conſidered as diſtinct genera, yet they are ſo nearly allied, and ſo readily change into each other, that it ſufficiently juſtifies the treating of them all at once.

The diſtinguiſhing characteriſtic of madneſs, according to Dr Battie, is a *falſe perception;* and under this general character may be comprehended all kinds of what is called *madneſs*, from the moſt ſilly ſtupidity and idiotiſm to the moſt furious lunacy. Frequently the different kinds of madneſs are changed into each other by the caſual excitement of ſome paſſion: thus, an idiot may become furiouſly mad, by being put in a violent paſſion; though this does not ſo often happen as the change of melancholy into the raving madneſs, and *vice verſa.*

It is a very ſurpriſing circumſtance, that mad people are not only leſs liable to be ſeized with infectious diſorders than thoſe who are in perfect health, but even when labouring under other diſeaſes, if the patients chance to be ſeized with madneſs, they are ſometimes freed from their former complaints. Of this kind Dr Mead relates two very remarkable inſtances.

On the other hand, it has been known, that an intermittent fever, ſupervening madneſs of long ſtanding, has proved a cure for the madneſs; the ſenſes having returned, when the fever terminated. Dr Monro ſaw two inſtances of this himſelf; and mentions it as an obſervation of his predeceſſor in the care of Bethlem hoſpital.

Another remarkable circumſtance is, that immoderate joy, long continued, as effectually diſorders the mind as anxiety and grief. For it was obſervable in the famous South-Sea year, when ſo many immenſe fortunes were ſuddenly gained, and as ſuddenly loſt, that more people had their heads turned, from the prodigious flow of unexpected riches, than from the entire loſs of their whole ſubſtance.

Mad people, eſpecially of the melancholic kind, ſometimes obſtinately perſevere in doing things which muſt excite great pain; whence it ſhould ſeem as if their minds were troubled with ſome diſtracting notions, which make them patiently bear the preſent diſtreſs, leſt more ſevere tortures ſhould be inflicted; or poſſibly they may think, that, by thus tormenting the body, they render themſelves more acceptable to the divine Being, and expiate the heinous ſins of which they may imagine themſelves to have been guilty.

Cure, &c. All the ſpecies and degrees of madneſs which are hereditary, or that grow up with people from their early youth, are out of the power of phyſic; and ſo, for the moſt part, are all maniacal caſes of more than one year's ſtanding, let them ariſe from what ſource ſoever. Very often, mere waſte, or the dregs of ſome particular diſeaſe, ſuch as an ague, the ſmall-pox, or a nervous fever, ſhall occaſion different degrees of fooliſhneſs, or madneſs. In theſe caſes, the cure muſt not be attempted by evacuations; but, on the contrary, by nouriſhing diet, clear air, moderate exerciſe, and the uſe of wine: whereas, in almoſt all the other maniacal caſes which ariſe from different ſources, and which come on in conſequence of intemperate living, violent paſſions, or intenſe thinking, it is generally held, that evacuations of every kind are neceſſary, unleſs the conſtitution of the patient be ſuch as abſolutely forbids them.

Blood is moſt conveniently drawn either from the arm or jugulars; and if the weakneſs be ſuch as renders it improper to take away much blood, we may apply cupping-glaſſes to the occiput.

Vomiting, in weakly people, muſt be excited by the vinum ipecacoanæ; but, in the more robuſt, by emetic tartar, or antimonial wine: the moſt efficacious cathartics, are the infuſion or tincture of black hellebore, or infuſion of ſena, quickened with tincture of jalap; but if there be ſuppreſſion of the menſes, or hæmorrhoidal diſcharge, then aloetic purges will be more proper. In general, mad people require very large doſes, both of the emetics and cathartics, before any conſiderable operation enſues.

Dr Monro aſſures us, that the evacuation by vomiting is infinitely preferable to any other: the prodigious quantity of phlegm, with which the patients in this diſeaſe abound, he ſays, is not to be got the better of but by repeated vomits; and he obſerves, that the purges have not their right effect, or do not operate to ſo good purpoſe, until the phlegm is broken and attenuated by frequent emetics. He mentions the caſe of a gentleman who had laboured under a melancholy for three years, from which he was relieved entirely by the uſe of vomits, and a proper regimen. Increaſing the diſcharge by urine, is alſo of the greateſt moment, eſpecially when any degree of fever is preſent. The cutaneous diſcharges are alſo to be promoted, for which purpoſe the hot bath is of the higheſt ſervice in maniacal caſes. Hoffman aſſerts, that he has ſeen numerous inſtances, both of inveterate melancholy and raging madneſs, happily cured by means of warm bathing; bleeding and nitrous medicines having been premiſed. Camphor has alſo been highly commended; but, if we believe Dr Locker of Vienna, not very deſervedly. Having found very good effects from a ſolution of this medicine in vinegar, he took it for granted that all the ſucceſs was owing to the camphor; therefore, in order to give it a fair trial, he ſelected ſeven patients, and gave it in large doſes of half a drachm twice a-day. This was continued for two months, and the doctor was ſurpriſed to find that only one of his patients received any benefit. He then returned the other ſix back to the camphorated julep made with vinegar, and in a few weeks four of them recovered the uſe of their reaſon. This inclined him to think that the virtue depended ſolely on the vinegar, and accordingly he began to make the trial. Common vinegar was firſt given: but after a little while he fixed on that which had been diſtilled, and gave about an ounce and half of it every day; the patients having been previouſly prepared by bleeding and purging,

ging, which was repeated according as it was found neceſſary. He gives a liſt of eight patients who were cured by this method; ſome in ſix weeks, others in two months, and none of them took up more than three months in perfecting the cure. He does not indeed give the ages of the patients, nor mention the circumſtances of the caſe; only ſays, they began the vinegar ſuch a day, and were diſcharged cured on ſuch another day; and he adds, that they all continued well at the time of his writing.

Dr Locker informs us, that this medicine acts chiefly as a ſudorific; and he obſerved, that the more the patients ſweated, the ſooner they were cured: it was alſo found to promote the menſtrual diſcharge in ſuch as had been obſtructed, or had too little of this ſalutary evacuation.

Both reaſon and experience ſhew the neceſſity of confining ſuch as are deprived of their ſenſes; and no ſmall ſhare of the management conſiſts in hindering them to hurt themſelves, or do miſchief to other perſons. It has ſometimes been uſual to chain and to beat them: but this is both cruel and abſurd; ſince the contrivance called the *ſtrait waiſtcoat* anſwers every purpoſe of reſtraining the patients, without hurting them.

Theſe waiſtcoats are made of ticken, or ſome ſuch ſtrong ſtuff; are open at the back, and laced on like a pair of ſtays; the ſleeves are made tight, and long enough to cover the ends of the fingers, where they are drawn cloſe with a ſtring, like a purſe, by which contrivance the patient has no power of his fingers; and, when laid on his back in bed, and the arms brought acroſs the cheſt, and faſtened in that poſition, by tying the ſleeve-ſtrings round the waiſt, he has no uſe of his hands. A broad ſtrap of girth-web is then carried acroſs the breaſt, and faſtened to the bedſtead, by which means the patient is confined on his back; and if he ſhould be ſo outrageous as to require further reſtraint, the legs are ſecured by ligatures to the foot of the bed.

It is of great uſe in practice to bear in mind, that all mad people are cowardly, and can be awed even by the menacing look of a very expreſſive countenance; and when thoſe who have charge of them once impreſs them with the notion of fear, they eaſily ſubmit to any thing that is required. The phyſician, however, ſhould never deceive them in any thing, but more eſpecially with regard to their diſtemper: for as they are generally conſcious of it themſelves, they acquire a kind of reverence for thoſe who know it; and by letting them ſee that he is thoroughly acquainted with their complaint, he may very often gain ſuch an aſcendant over them that they will readily follow his directions.

It is a more difficult matter to manage thoſe whoſe madneſs is accompanied either with exceſſive joy, or with great dejection and deſpondency, than thoſe who are agitated with rage: and all that can be done is to endeavour to excite contrary ideas, by repreſſing the immoderate fits of laughter in the one kind by chiding or threatening, (taking care, however, not abſolutely to terrify them, which can never be done without danger, and has often added to the miſery of the unhappy ſufferer); and diſpelling the gloomy thoughts in the other, by introducing pleaſing concerts of muſic, or any other ſpecies of entertainment which the patients have been known to delight in while they had the uſe of their reaſon.

Though bliſtering the head has generally been directed, Dr Mead ſays he has oftener found it to do harm than ſervice: but he recommends iſſues in the back; and adviſes to keep the head always cloſe ſhaved, and to waſh it from time to time with warm vinegar. Opium is uſually forbidden in maniacal caſes, as ſuppoſing that it always increaſes the diſturbance; but there are inſtances where large doſes of this medicine have been found to prove a cure, and perhaps if it were tried oftener we ſhould find powerful effects from it: there certainly cannot much harm enſue from a few doſes, which may be immediately diſuſed if they ſhould be found to exaſperate the diſeaſe.

The diet of maniacal patients ought to be perfectly light and thin: their meals ſhould be moderate; but they ſhould never be ſuffered to live too low, eſpecially while they are under a courſe of phyſic: they ſhould be obliged to obſerve great regularity in their hours: even their amuſements ſhould be ſuch as are beſt ſuited to their diſpoſition; and after the diſeaſe appears to be ſubdued, chalybeate waters and the cold bath will be highly proper, to ſtrengthen their whole frame, and ſecure them againſt a relapſe.

CLVIII. ONEIRODYNIA, Uneaſineſs in Sleep. Genus LXVIII. 430

Somnium, *Vog.* 339.
Somnambuliſmus, *Sauv.* gen. 221. *Lin.* 77. *Sag.* 333.
  Hypnobataſis, *Vog.* 340.
  Noctambulatio, *Junck.* 124.
Ephialtes, *Sauv.* gen. 138. *Lin.* 163. *Sag.* 245.
  Incubus, *Vog.* 211. *Junck.* 50.

The greateſt uneaſineſs which people feel in ſleep, is that commonly called the *incubus* or *night mare*. Thoſe ſeized with it ſeem to have a weight on their breaſts and about their præcordia. Sometimes they imagine they ſee ſpectres of various kinds which oppreſs or threaten them with ſuffocation. Neither does this uneaſineſs continue only while they are aſleep; for it is ſome time after they awake before they can turn themſelves in their beds or ſpeak; nay, ſometimes, though rarely, the diſtemper hath proved mortal.—The incubus rarely ſeizes people except when the ſtomach is oppreſſed with aliments of hard digeſtion, and the patient lies on his back. It is to be cured by eating ſlight ſuppers, and raiſing the head high; or, if it become very troubleſome, antiſpaſmodic medicines are to be adminiſtered, and the body ſtrengthened by chalybeates. The ſame method is to be followed by thoſe who are ſubject to walking in their ſleep; a practice which muſt neceſſarily be attended with the greateſt danger.

CLASS III. CACHEXIÆ.

Cachexiæ, *Sauv.* Claſs X. *Sag.* Claſs VIII. *Sag.* Claſs III.
Deformes, *Lin.* Claſs X.

ORDER I. MARCORES.

Macies, *Sauv.* Claſs X. Order I. *Sag.* Claſs III. Order I.
Emaciantes, *Lin.* Claſs X. Order I.

431 CLIX. TABES, or WASTING of the *Body*. Genus LXIX.

Tabes, *Sauv.* gen. 275. *Lin.* 209. *Vog.* 306. *Sag.* 100.

This diſorder is occaſioned by the abſorption of pus from ſome ulcer external or internal, which produces an hectic fever. The primary indication therefore muſt be to heal the ulcer, and thus take away the cauſe of the diſeaſe. If the ulcer cannot be healed, the patient will certainly die in an emaciated ſtate. But for the proper treatment of the tabes proceeding from this cauſe, ſee below, ULCER, SIPHYLIS, SCROPHULA, SCURVY, &c. alſo the article SURGERY.

432 CLX. ATROPHY, or NERVOUS CONSUMPTION. Genus LXX.

Deſcription. This is a waſting of the body, without any remarkable fever, cough, or difficulty of breathing; but attended with want of appetite, and a bad digeſtion, whence the whole body grows languid, and waſtes by degrees.—Dr Cullen, however, aſſerts, that ſome degree of fever, or at leaſt of increaſed quickneſs of the pulſe, always attends this diſeaſe.

Cauſes. Sometimes this diſtemper will come on without any evident cauſe. Sometimes it will ariſe from paſſions of the mind; from an abuſe of ſpirituous liquors; from exceſſive evacuations, eſpecially of the ſemen, in which caſe the diſtemper hath got the name of *tabes dorſalis*. It will ariſe from mere old age, or from famine.

Prognoſis. This diſtemper, from whatever cauſe it may ariſe, is very difficult to cure, and often terminates in a fatal dropſy.

Cure. Stomachic and nervous medicines are only to be depended upon in this caſe. The Peruvian bark, elixir of vitriol, and chalybeates, are excellent; and the diet ſhould be as light and nutritive as poſſible. In that ſpecies of the diſtemper occaſioned by venereal exceſſes, it is ſo eſſentially neceſſary to abſtain from them, that without it the beſt remedies will prove uſeful. But this is ſo ſeldom complied with, that the tabes dorſalis almoſt always proves mortal.

ORDER II. INTUMESCENTIÆ.

Intumeſcentiæ, *Sauv.* Claſs X. Ord. II. *Sag.* Claſs III. Ord. II.
Tumidoſi, *Lin.* Claſs X. Ord. II.

433 CLXI. POLYSARCIA, or CORPULENCY. Genus LXXI.

Polyſarcia, *Sauv.* gen. 279. *Lin.* 213. *Vog.* 540. *Sag.* 160. Steatites, *Vog.* 390.

In a natural and healthy ſtate, the fat, or animal oil, is not allowed to diffuſe itſelf throughout the cellular interſtices at large, but is confined to the places where ſuch an oily fluid is neceſſary, by a particular apparatus of diſtinct veſicles. But in many conſtitutions the oily part of the blood appears to exceed the requiſite proportion, and eaſily ſeparates from the other conſtituent parts; and then it is apt to accumulate in ſuch quantities, that we may ſuppoſe it to burſt thoſe veſicles which were originally deſtined to hinder it from ſpreading too far.

The increaſe of the omentum particularly, and the accumulation of fat about the kidneys and meſentery, ſwell the abdomen, and obſtruct the motions of the diaphragm; whence one reaſon of the difficulty of breathing which is peculiar to corpulent people; while the heart, and the large veſſels connected therewith, are in like manner ſo encumbered, that neither the ſyſtaltic nor ſubſultory motion can be performed with ſufficient freedom, whence weakneſs and ſlowneſs of the pulſe: but when the whole habit is in a manner overwhelmed with an oily fluid, the enlargement of the cellular interſtices will neceſſarily interrupt the general diſtribution and circulation throughout the nervous and vaſcular ſyſtems; impeding the action of the muſcular fibres, and producing inſenſibility, ſomnolency, and death.

Theſe caſes are the more deplorable, as there is but little proſpect of a cure. For the animal oil is of too groſs a nature to be eaſily taken up by abſorption: and we know, that when fluids are accumulated in the cellular ſyſtem, there are only two ways in which they can be carried off or eſcape; namely, by the abſorbents, which take their riſe from the cellular interſtices, and through the pores of the ſkin by tranſudation.

Another miſfortune is, that the diſeaſe ſteals on ſo imperceptibly, that it becomes inveterate by the time that people begin to think of purſuing the proper means of relief.

Soap has been propoſed as a remedy to melt down and facilitate the abſorption of the fat in corpulent people; and Dr Fleming ſome years ago publiſhed a little treatiſe, wherein he recommends this medicine, and relates the caſe of a gentleman who is ſaid to have received conſiderable benefit from it. But perhaps the ſoap-lees would be more powerful, and might be more eaſily taken, ſheathed, as hereafter directed when recommended as a diſſolvent of the ſtone.

Lieutaud adviſes to take *acetum ſcilliticum* in ſmall doſes, with frequent purging and briſk exerciſe. But it will ſeldom happen that the patients will be found ſufficiently ſteady to perſiſt in any of theſe courſes, it being the nature of the diſorder to render them irreſolute and inattentive to their condition. Therefore the principal uſe of rules muſt be with a view to prevention; and perſons who are diſpoſed to corpulency ſhould take care in time to prevent it from becoming an abſolute diſeaſe, by uſing a great deal of exerciſe, not indulging in ſleep, and abridging their meals, eſpecially that of ſupper. Salted meats are leſs fattening than ſuch as are freſh; and drinking freely of coffee is recommended to corpulent people.

But Dr Fothergill obſerves, that a ſtrict adherence to vegetable diet reduces exuberant fat more certainly than any other means that he knows of; and gives two caſes wherein this regimen ſucceeded remarkably well. The famous Dr Cheyne brought himſelf down in this way, from a moſt unweildy bulk, to a reaſonable degree of weight; as he himſelf informs us. See CHEYNE.

434 CLXII. PNEUMATOSIS, EMPHYSEMA, or *Windy Swelling*. Genus LXXII.

Pneumatoſis, *Sauv.* gen. 280. *Vog.* 391 *Sag.* 107.
Emphyſema. *Sauv.* gen. 13. *Lin.* 288. *Vog.* 392.
Leucophlegmatia, *Lin.* 214.

THE emphyſema ſometimes comes on ſpontaneouſly; but more frequently is occaſioned by wounds of the lungs, which giving vent to the air, that fluid inſinuates itſelf into the cellular texture, and often blows it up to a ſurpriſing degree. It muſt be obſerved, however, that it is only in caſes of laceration of the lungs where this diſeaſe can take place; for in a ſimple wound, the effuſion of blood always prevents the air from getting out. The cure is to be accompliſhed by the ſcarifications and compreſſes, and in ſome caſes only by the paracenteſis of the thorax. See SURGERY.

435 CLXII. TYMPANITES, the TYMPANY. Genus LXXIII.

Tympanites, *Sauv.* gen. 291. *Lin.* 219. *Vog.* 316. *Sag.* 118. *Boerh.* 226. *Junck.* 87.
Affectio tympanitica, *Hoffm.* III. 339.
Meteoriſmus, *Sauv.* gen. 292.

THIS is an inflation of the abdomen, and is of two kinds: 1. That in which the flatus is contained in the inteſtines, in which the patient has frequent exploſions of wind, with a ſwelling of the belly frequently unequal. 2. When the flatus is contained in the cavity of the abdomen; in which caſe the ſwelling is more equal, and the belly ſounds when ſtruck, without any conſiderable emiſſion of flatus. In both caſes the reſt of the body falls away.

Cauſes, &c. The tympany ſometimes takes place in thoſe who have been long troubled with flatulencies in the ſtomach and inteſtines. It happens frequently to women after abortion; to both ſexes after the ſuppreſſion of the hæmorrhoids; and ſometimes from tedious febrile diſorders injudiciouſly treated.

Prognoſis. This diſeaſe is generally very obſtinate, and for the moſt part proves fatal by degenerating into an aſcites. Sometimes, if the patient be healthy and ſtrong, the diſeaſe may terminate favourably, and that the more readily if it has followed ſome other diſorder. A hectic conſumption, dry cough, and emaciated countenance in a tympany, with a ſwelling of the feet, denote approaching death in a very ſhort time.

Cure. The cure of the tympany is to be attempted by carminative, reſolvent, and ſtomachic medicines, gentle laxatives, and at laſt tonics, eſpecially chalybeates. In the Edinburgh Medical Eſſays, Vol. I. we have a very remarkable hiſtory of a tympany by Dr Monro ſenior. The patient was a young woman of 22 years of age, who fell into the diſtemper after having a tertian ague in which ſhe was badly treated. She became a patient in the Edinburgh Infirmary the 24th of March 1730; took ſeveral purgatives, ſome doſes of calomel; uſed the warm bath; and had an antihyſteric plaſter applied over the whole belly, but with very little effect. She was monſtrouſly diſtended, inſomuch that the ſkin ſeemed to be in danger of burſting: her breathing was much ſtraitened; and the ſwelling gradually decreaſed without any evacuation. The returns and degree of this ſwelling were very uncertain; and when the belly was moſt detumefied, ſeveral unequal and protuberant balls could be felt over the whole abdomen, but eſpecially at its ſides. Her ſtomach was good, ſhe had no thirſt, and her urine was in proportion to the quantity ſhe drank. She was very coſtive, had her menſes at irregular periods, but no œdematous ſwellings appeared in the feet or any where elſe. In this ſituation ſhe continued from the time of her admiſſion till the 21ſt of June, during which interval ſhe had only her menſes twice. Throughout this ſpace of time it was obſerved, 1. Several times, upon the falling of the ſwelling, ſhe complained of a headach; once of pains throughout all her body, once of a giddineſs, twice of a nauſea and vomiting, and the laſt time threw up green bile; and once her ſtomach ſwelled greatly, whilſt the reſt of the abdomen ſubſided. 2. During the flowing of the menſes ſhe did not ſwell, but became very big upon their ſtopping. 3. Blooding and emetics, which were made uſe of for ſome accidental urgent ſymptoms, had no very ſenſible effect in making the tympany either better or worſe. 4. She never had paſſage of wind either way, except a little belching ſome days before the firſt monthly evacuation.

Some time before the laſt eruption of the menſes the purgatives were given more ſparingly, and the doſes of the antihyſterics of the ſtrongeſt kind, ſuch as aſſafœtida, oleum C. C. &c. mixed with ſoap, were given in large doſes, accompanied with the hotter antiſcorbutics as they are called, as horſe-radiſh and ginger-root infuſed in ſtrong-ale with ſteel. The patient was ordered to uſe frequent and ſtrong frictions to all the trunk of her body and extremities, and to uſe moderate exerciſe. Immediately before the menſtrua began to flow, clyſters of the ſame kind of medicines were injected. The menſes were in ſufficient quantity; but as ſoon as they ceaſed, her belly increaſed in its circumference four inches and a half, but ſoon ſubſided. She then complained of pains, which a gentle ſweat carried off. Borborygmi were for the firſt time obſerved on the ſame day, June 25th; and having taken ſome *tinctura ſacra* at night, ſhe paſſed a ſmall quantity of blood next day by ſtool. This was the firſt appearance of the return of the hæmorrhoids, to which ſhe had been formerly ſubject.

The two following days her ſaponaceous, antihyſteric, and antiſcorbutic medicines being ſtill continued, ſhe had ſuch exploſions of wind upwards and downwards, that none of the other patients would remain in the ſame room, nay ſcarce on the ſame floor with her. Her belly became leſs, and ſofter than it had been from the firſt attack of the diſeaſe; her medicines, with a doſe of ſyrup of buckthorn at proper intervals, ſtill were continued, only the proportion of ſteel was increaſed; her flatulent diſcharge went on ſucceſsfully, and ſhe gradually recovered her former health.

436 CLIV. PHYSOMETRA, or Windy Swelling of the *Uterus*. Genus LXXIV.

Phyſometra, *Sauv.* gen 290. *Sag.* 119.
Hyſterophyſe, *Vog.* 317.

The treatment of this is not different from that of the tympany.

437 CLV. ANASARCA, or Watery Swelling over the *Whole Body*. Genus LXXV.

Anaſarca, *Sauv.* gen. 281. *Lin.* 215. *Vog.* 313. *Sag.* 108. *Boerh.* 1225. *Hoffm.* III. 322. *Junck.* 87. *Monro* on the Dropſy. *Milman* Animadverſiones de hydrope 1779.
Phlegmatia, *Sauv.* gen. 282.
Angina aquoſa, *Boerh.* 791.

In this diſeaſe the feet firſt begin to ſwell, eſpecially in the evening, after exerciſe, and when the patient has ſtood or ſat long; which ſwelling riſes frequently to the thighs. By lying in bed, the ſwelling becomes leſs, or even almoſt diſappears. In the progreſs of the diſeaſe, the ſwelling often riſes to the hips, loins, and belly, and at laſt covers the whole body. This diſeaſe, beſides the other ſymptoms hereafter mentioned under Ascites, is attended with a remarkable difficulty of breathing.—For the cure, ſee Ascites. 438 Only it may be here noticed, that in anaſarca it is uſual to ſcarify the feet and legs. By this means the water is often diſcharged: but the operator muſt be cautious not to make the inciſion too deep; they ought barely to penetrate through the ſkin; and eſpecial care muſt be taken, by ſpirituous fomentations and proper digeſtives, to prevent a gangrene. Dr Fothergill obſerves, that the ſafeſt and moſt efficacious way of making theſe drains is by the inſtrument uſed for cupping, called a *ſcarificator;* and he always orders it to be ſo applied as to make the little wounds tranſverſely; as they not only diſcharge better, but are alſo longer in healing, than when made longitudinally.

CLXIV. HYDROCEPHALUS, or Water in the *Head*. Genus LXXVI.

Hydrocephalus, *Sauv.* gen. 285. *Lin.* 216. *Boerh.* 1217.
Hydrocephalum, *Vog.* 384.

This differs from the hydrocephalus formerly mentioned, as the water is collected in the external parts of the head, whereas the former is entirely within the ſkull. In the fifth volume of the Medical Obſervations we have an account of a very extraordinary caſe of this kind. The patient was a child only of a few days old, and had a tumour on his head about the ſize of a common tea-cup, which had the appearance of a bladder diſtended with water; near the apex was a ſmall opening, through which a bloody ſerum was diſcharged. In other reſpects the child was healthy. No application was uſed but a piece of linen dipt in brandy. The tumour continued to increaſe for many months; at the end of which time the membrane containing the water appeared equally thick with the other part of the ſcalp, except one place about the ſize of a ſhilling, which continued thin, and at times appeared as if it would burſt. He continued in this ſituation for about 17 months, when the circumference of the head was 20 inches, the baſe 16½, the middle 18½, and from the baſe to the apex near 2½. The water was then drawn off, and the child died in two days. Almoſt all other caſes of this diſtemper have proved fatal; the ſutures of the ſkull generally give way, and the whole external part of the head is equally enlarged; but in the inſtance juſt now given there was a deficiency of part of the bone.

CLXX. HYDRORACHITIS, or Spina Bifida. Genus LXXVII. 439

Hydrorachitis, *Sauv.* gen. 287. *Morgagn.* de ſed. XII. 9. *et ſeq.*
Spinola, *Lin.* 289.
Spina bifida, *Vog.* 386.

CLXVI. HYDROTHORAX, or Dropsy of the *Breaſt*. Genus LXXVIII. 440

Hydrothorax, *Sauv.* gen. 150. *Vog.* 311. *Boerh.* 1219.

For theſe two diſeaſes. See the article Surgery.

CEXVII. ASCITES, or Dropsy of the *Abdomen*. Genus LXXIX. 441

Aſcites, *Sauv.* gen. 288. *Lin.* 217. *Vog.* 314. *Sag.* gen. 115. *Boerh.* 1226. *Hoffm.* III. 322. *Junck.* 87. *D. Monro* on the Dropſy, 1765. *Milman*, Animadverſiones de hydrope, 1779.

Deſcription. This diſeaſe aſſumes three different forms: 1. When the water immediately waſhes the inteſtines. 2. When it is interpoſed between the abdominal muſcles and peritonæum; or, 3. It may be contained in facs and hollow glands, in which caſe it is called the *encyſted dropſy*. Some phyſicians of great reputation have aſſerted, that the water was often placed within the duplicature of the peritonæum: but this is alleged by Dr Milman to be a miſtake, as that membrane is looked upon by the beſt anatomiſts to be ſingle; and he thinks that the abovementioned phyſicians have been led into the miſtake from obſerving the water collected in the cellular ſubſtance of the peritonæum.

In the beginning of an aſcites the patient becomes languid, breathleſs, and hath an averſion at motion: his belly ſwells; and when ſtruck, the ſound of fluctuating water is perceptible; there is a difficulty of breathing when the belly is preſſed. There is an almoſt continual thirſt, which in the progreſs of the diſeaſe becomes very urgent; the urine is thick, in ſmall quantity, and red. The pulſe is ſmall and frequent; and as the belly ſwells, the other parts waſte away. A fever at laſt ariſes, which, conſtantly increaſing, at laſt carries off the patient. Theſe ſymptoms are moſt urgent where the waters are in immediate contact with the inteſtines; in the other kinds the reſt of the body is leſs waſted; nor is there ſo great thirſt or difficulty of breathing.

Cauſes, &c. The immediate cauſe of dropſy is a greater effuſion of ſerum by the exhalent arteries than the abſorbents can take up. This may be occaſioned either by too great a quantity of liquid thrown out by the former, or by an inability of the latter to perform their office. This commonly happens in people whoſe bodies are of a weak and lax texture, and hence women are more ſubject to this malady than men;

chlorotic girls eſpecially are very apt to become dropſical.

Sometimes, however, this diſeaſe is occaſioned by a debility of the vital powers, by great evacuations of blood, or by acute diſeaſes accidentally protracted beyond their uſual period; and although this cauſe ſeems very different from a laxity of fibres, yet the dropſy ſeems to be produced in a ſimilar manner by both. For the vital powers being debilitated by either of theſe cauſes, naturally bring on a certain debility and laxity of the ſolids; and on the other hand a debility of the ſolids always brings on a debility of the vital powers; and from this debility of the vital powers in both caſes it happens, that thoſe humours which ought to be expelled from the body are not, but accumulate by degrees in its cavities. There is, however, this difference between the two kinds of dropſy ariſing from theſe two different cauſes, That in the one which ariſes from laxity, the ſolid parts are more injured than in that which ariſes from a debility of the vital powers. In the former, therefore, the water ſeems to flow out from every quarter, and the body ſwells all over. But when the diſeaſe is occaſioned by a debility of the vital powers, though the ſolids are leſs damaged, yet the power of the heart being much diminiſhed, and the humours ſcarce propelled through the extreme veſſels, the thin liquids by which, in a healthy ſtate the body is daily recruited, are carried by their own weight either into the cavities or into the cellular texture. Hence thoſe aqueous effuſions which follow great evacuations of blood, or violent looſeneſſes, begin in the more depending parts of the body, gradually aſcending, till they arrive at the cavity of the abdomen, or even the thorax.

But another and much more ſufficient cauſe for the production of dropſy is an obſtruction of the circulation; and this may take place from polypi in the heart or large veſſels, and hard ſwellings in the abdomen. Inſtances have been obſerved of a dropſy ariſing from ſteatomatous tumours in the omentum, and many more from a ſcirrhous liver or ſpleen, and from an infarction and obſtruction of the meſenteric glands, by which means the lymph coming from the extremities is prevented from arriving at the heart.

Laſtly, whatever, either within or without the veſſels, contracts or ſhuts up their cavities, produces a more copious and eaſy tranſmiſſion of the thin humours through the exhalent arteries, at the ſame time that it prevents their return by the abſorbent veins. This hath been eſtabliſhed by experiment. For Lower having perforated the right ſide of the thorax in a dog, tied the *vena cava*, and ſewed up the wound. The animal languiſhed for a few hours, and then died. On diſſection, a great quantity of ſerum was found in the abdomen, as if he had long laboured under an aſcites. In like manner, having tied the jugular veins of another dog, a ſurpriſing ſwelling took place in thoſe parts above the ligatures, and in two days the creature died. On diſſection, all the muſcles and glands were vaſtly diſtended, and quite pellucid, with limpid ſerum. From theſe experiments, and ſome caſes of diſeaſe mentioned by different authors, it appears, that when the veins are obſtructed ſo that they cannot receive the arterial blood, the ſerum is ſeparated as by a filtre into the more open cavities and laxer parts of the body, while the thicker part ſtagnates and is collected in the proper blood-veſſels.

The too great tenuity of the humours is very frequently accuſed as the cauſe of dropſy, and many authors have aſſerted that dropſy might ariſe merely from a ſuperabundance of water in the blood. For this ſome experiments of Haleſius are quoted, from which they would infer, that when a great quantity of aqueous fluid is introduced into the blood, the ſuperfluous fluid ought by no means to paſs thro' the extremities of the ſanguiferous arteries into the veins in the common courſe of circulation, but by being effuſed into the cavities ſhould produce a dropſy. But this can only happen when the vital powers are very much diminiſhed; for, in a natural ſtate, the ſuperfluous quantity is immediately thrown out by the ſkin or the kidneys: and agreeable to this we have an experiment of Schultzius, who induced a dropſy in a dog by cauſing him drink a great quantity of water; but he had firſt bled him almoſt *ad deliquium*, ſo that the vital powers were in a manner oppreſſed by the deluge of water. In this manner do thoſe become hydropic, who are ſeized with the diſeaſe on drinking large quantities of water either when wearied with labour, or weakened by ſome kinds of diſeaſes. Dr Fothergill relates an inſtance of a perſon who, being adviſed to drink plentifully of barley-water, in order to remove a fever, raſhly drunk 12 pounds of that liquor every day for a month, and thus fell into an almoſt incurable diſtemper. But if this quantity had been taken only during the prevalence of the fever, he would in all probability have ſuffered no inconvenience, as is probable from what we have formerly related concerning the *diæta aquea* uſed by the Italians.

It is moreover evident from experiments, that, in a healthy ſtate, not only water is not depoſited in the cavities, but that if it is injected into them it will be abſorbed, unleſs ſome laxity of the ſolids hath already taken place. Dr Muſgrave injected into the right ſide of the thorax of a dog, four ounces of warm water; whence a difficulty of breathing and weakneſs immediately followed. But theſe ſymptoms continually leſſened, and in the ſpace of a week the animal ſeemed to be in as good health as before. Afterwards he injected 16 ounces of warm water into the left cavity of the thorax in the ſame dog; the ſame effects followed, together with great heat, and ſtrong pulſation of the heart; but he again recovered in the ſpace of a week. Laſtly, he injected 18 ounces of water into one ſide of the thorax, and only ſix into the other: the ſame ſymptoms followed, but vaniſhed in a much ſhorter time; for within five days the dog was reſtored to perfect health. During this time, however, he obſerved that the creature made a greater quantity of urine than uſual.

The remote cauſes of dropſy are many and various. Whatever relaxes the ſolids in ſuch a manner as to give an occaſion of accumulation to the ſerous fluids, diſpoſes to the dropſy. A lazy indolent life, rainy wet weather, ſwampy or low ſoil, and every thing which conduces to vitiate the viſcera, or inſenſibly to produce obſtructions in them, paves the way for a dropſy. Hence thoſe are ready to fall into the diſeaſe who uſe hard and viſcid aliments, ſuch as poor people in ſome countries who uſe coarſe brown bread, and children who are fed with unwholeſome aliments; and the ſame thing happens to thoſe who drink immoderately of ſpirituous liquors.

Prognoſis. When the dropſy ariſes from a ſcirrhus of the liver or ſpleen, or any of the other viſcera, the prognoſis muſt always be fatal, as alſo when it ariſes from diſorders of the lungs. Neither is the caſe more favourable to thoſe in whom the ſmall veſſels are ruptured, and pour out their liquids into the cavity of the abdomen. Thoſe certainly die who have polypi in the veſſels, or tumours compreſſing the veins and veſſels of the abdomen. A dropſy ariſing from obſtructions in the menſenteric glands is likewiſe difficult to cure, whether ſuch obſtructions ariſe from a bad habit of body, or from any other cauſe; but if we can by any means remove the diſeaſe of the glands, the dropſy eaſily ceaſes. But in thoſe who fall into dropſy without any diſeaſe preceding, it is not quite ſo dangerous; and even though a diſeaſe hath preceded, if the patient's ſtrength is not greatly weakened, if the reſpiration is free, and the perſon is not affected with any particular pain, we may entertain great hopes of a cure. But where a great loſs of blood is followed by a fever, and that by a dropſy, the patients almoſt always die, and that in a ſhort time; but they are very frequently cured who fall into this diſeaſe without any preceding hæmorrhage.

Cure. In the cure of this diſeaſe authors chiefly mention two indications. 1. To expel the ſuperfluous quantity of water; and, 2. To prevent its being again collected. But before we proceed to ſpeak of the remedies, it is neceſſary to take notice, that by the animal œconomy, if a great evacuation of a fluid takes place in any part of the body, all the other fluids in the body are directed towards that part, and thoſe which lie as it were lurking in different parts will be immediately abſorbed, and thrown out by the ſame paſſage. Hence the humours which in hydropic perſons are extravaſated into the different cavities of the body will be thrown into the inteſtines, and evacuated by purgatives; or by diuretics will be thrown upon the kidneys, and evacuated by urine. It is not, however, only neceſſary to excite theſe evacuations in order to remove this malady, but they muſt be aſſiduouſly promoted and kept up till the abundant humour is totally expelled. For this reaſon Sydenham has adviſed purgatives to be adminiſtered every day, unleſs, either through the too great weakneſs of the body, or the violent operation of the purgative, it ſhall be neceſſary to interpoſe a day or two now and then; becauſe if any conſiderable intervals are allowed to take place between the exhibition of the purgatives, an opportunity is given to the waters of collecting again. In this method, however, there is the following inconvenience, that, when the waters are totally evacuated, the ſtrength is at the ſame time ſo much exhauſted, that the diſtemper commonly returns in a very ſhort time. Hence almoſt our only hopes of curing a dropſy, conſiſt in gently evacuating the waters by means of diuretics. But the efficacy of theſe is generally very doubtful. Dr Freind hath long ago obſerved, that this part of medicine is of all others the moſt lame and imperfect; but a certain French phyſician named *Bacher*, lately found a method of making the diuretics much more ſucceſsful. His reputation became at laſt ſo great, that the French king thought proper to purchaſe his ſecret for a great ſum of money. The baſis of his medicine was hellebore-root, the malignant qualities of which he pretended to correct in the following manner. A quantity of the dried roots of black hellebore were pounded, and then put into a glazed earthen veſſel, and afterwards ſprinkled "*ſpiritu vini armato alkaeſt.*" They were ſuffered to ſtand for twelve hours, ſtirring them about twice or thrice during that ſpace of time. They were then ſprinkled again, and at laſt good Rheniſh wine was poured on till it ſtood ſix fingers above the roots. The mixture was frequently agitated with a wooden ſpatula; and as the wine was imbibed by the roots, more was poured on, ſo as to keep it always at the ſame height for 48 hours. The whole was then put on the fire and boiled for half an hour, after which the decoction was violently preſſed out; the ſame quantity of wine was added as at firſt, and the mixture boiled as before. After the ſecond expreſſion the woody reſiduum was thrown away as uſeleſs. Both the ſtrained liquors are then mixed together with two parts of boiling water to one of the decoction. The whole is then evaporated in a ſilver veſſel to the conſiſtence of a ſyrup. One part of the extract is again added with two parts of boiling water, and the whole inſpiſſated as before.—By this means, ſays he, the volatile nauſeous acrid particles are ſeparated by evaporation, and the fixed ones remain corrected and prepared for medicinal uſes; adding, towards the end, a ninth part of old brandy, and evaporating to the conſiſtence of turpentine. Our author reaſons a good deal on the way in which this proceſs corrects the medicine; but tells us, that notwithſtanding the improvement, his pills will not have the deſired effect unleſs properly made up. For forming them, they ought to be mixed with matters both of an inviſcating and indurating nature; yet ſo prepared that it will be readily ſoluble in the ſtomach, even of a perſon already debilitated. For anſwering theſe purpoſes, he choſe myrrh and carduus benedictus, and then gives the following receipt for the formation of his pills.

"Take of the extract of hellebore prepared as above directed, and of ſolution of myrrh, each one ounce; of powdered carduus benedictus, three drachms and a ſcruple. Mix them together, and form into a maſs, dividing it into pills of a grain and an half each."

The effects of theſe pills were very ſurpriſing. Dr Daignan relates, that he gave them to 18 hydropic patients at once; and theſe he divided into three claſſes, according to the degree of the diſeaſe with which they were affected. The firſt claſs contained thoſe who laboured under an anaſarca following intermittent fevers. The ſecond claſs contained thoſe who had an anaſarca, together with ſome degree of aſcites, ariſing from tedious febrile diſorders. All theſe were cured; but theſe two claſſes conſiſted of ſuch caſes as are moſt eaſily removed. But the third contained ſix who were ſeized with a moſt violent anaſarca and aſcites, after being much weakened by tedious diſorders, and of conſequence in whom the diſeaſe was very difficult to be cured. Even of theſe, however, four were cured, and the other two died. The body of one of theſe being diſſected, both ſides of the cavity of the thorax were found to be full of a blackiſh-red water. The lungs were unſound; there was a polypous concretion in the right ventricle of the heart; the liver and ſpleen were hard, and of a preternatural bulk; and the glands of the meſentery were obſtructed and infarcted. In the other, the liver and pancreas were ſcirrhous, and the ſpleen very hard.

The ſame medicines were given by Dehorne to eight perſons, ſix of whom had both an anaſarca and aſcites, but the other two only an aſcites. Four of theſe recovered; three died without being freed from the dropſy; one in whom the dropſy was cured, died in a ſhort time after, having for ſome time before his death become ſpeechleſs.

By theſe patients 10 of the pills were taken at once; and the ſame doſe repeated thrice, with an interval of an hour betwixt each doſe. At firſt they proved purgative, and then diuretic; by which laſt evacuation they finally cured the diſeaſe. But though Becher was firmly of opinion that his pills cured the dropſy by reaſon of the above-related correction; yet it is certain, that, in the hands of other practitioners, theſe very pills have failed, unleſs they alſo made uſe of the ſame regimen recommended by that phyſician; while, on the other hand, it is certain that different medicines will prove equally efficacious in dropſical caſes, provided this regimen is made uſe of.

For a great number of ages it hath been recommended to dropſical patients to abſtain as much as poſſible from drink, and thus to the torments of their diſeaſe was added that of an intolerable thirſt; and how great this torment was, we may underſtand from an example of a friend of king Antigonus, who, having been cloſely watched both by order of the phyſicians and alſo of the king, was ſo unable to bear the raging thirſt occaſioned by his diſeaſe, that he ſwallowed his own excrements and urine, and thus ſpeedily put an end to his life. Dr Milman ſhews at great length the pernicious tendency of this practice. He maintains that it is quite contrary to the ſentiments of Hippocrates and the beſt ancient phyſicians. He aſſerts, that unleſs plenty of diluting drink is given, the beſt diuretics can have no effect. He condemns alſo in the ſtrongeſt terms the practice of giving dropſical patients only dry, hard, and indigeſtible aliments. Theſe would oppreſs the ſtomach even of the moſt healthy, and how much more muſt they do ſo to thoſe who are already debilitated by labouring under a tedious diſorder? By what means alſo are theſe aliments to be diſſolved in the ſtomach, when drink it withheld? In this diſeaſe the ſaliva is viſcid, and in ſmall quantity; from whence it may be reaſonably conjectured, that the reſt of the fluids are of the ſame nature, and the gaſtric juices likewiſe depraved. Thus the aliments lie long in the ſtomach; and if the viſcera were formerly free of obſtructions, they are now generated; the ſtrength fails; perſpiration and other excretions are obſtructed; the viſcid and pituitous humours produced by theſe kinds of food float about the præcordia, and increaſe the diſeaſe, while the ſurface of the body becomes quite dry. Nay, ſo much does this kind of diet conſpire with the diſeaſe, that 1000 pounds of fluid will ſometimes be imbibed in a few days by hydropic perſons who take no drink. Even in health, if the body from any cauſe becomes dry, or deprived of a conſiderable part of its juices, as by hunger, labour, &c. it will imbibe a conſiderable quantity of moiſture from the air; ſo that we muſt impute the abovementioned extraordinary inhalation, in part at leaſt, to the denial of drink, and to the nature of the aliment given to the ſick. The following is the method, related by Dr Milman, of his practice in the Middleſex hoſpital.

If the patient is not very much debilitated, he is ſometimes treated with the purging waters, and a doſe of jalap and calomel alternately. On the intermediate days he gets a ſaline mixture, with 40 or 60 drops of *acetum ſcilliticum* every ſixth hour; drinking with the purgatives oat-gruel and ſome thin broths. That he might the better aſcertain what ſhare the liquids given along with the medicines had in producing a copious flow of urine, he ſometimes gave the medicines in the beginning of the diſtemper without allowing the drink: but though the ſwellings were uſually diminiſhed a little by the purgatives, the urine ſtill continued ſcanty, and the patients were greatly weakened. Fearing, therefore, leſt, by following this courſe, the ſtrength of the ſick might be too much reduced, he then began his courſe of diuretic medicines, giving large quantities of barley-water with a little *ſal diureticus*; by which means, ſometimes in the ſhort ſpace of 48 hours after the courſe was begun, the urine flowed out in very large quantity: but as ſaline drinks are very diſagreeable to the taſte, a drink was compoſed purpoſely for hydropic perſons, of half an ounce of cream of tartar diſſolved in two pounds of barley-water, made agreeably ſweet with ſyrup, adding one or two ounces of French brandy.

To this compoſition Dr Milman was induced by the great praiſes given to cream of Tartar by ſome phyſicians in hydropic caſes. In the *Acta Bononienſia*, 15 caſes of hydropic patients are narrated who were cured only by taking half an ounce of cream of Tartar daily. But it is remarkable, that by theſe very patients the cream of Tartar was taken for 20, 30, nay 40 days, often without any perceptible effect; yet when diſſolved in a large quantity of water, it ſhewed its ſalutary effects frequently within as many hours, by producing a plentiful flow of urine. This liquor is now the common drink of hydropic patients in the hoſpital abovementioned, of which they drink at pleaſure along with their medicines.

Among purgative medicines Dr Milman recommends the *radix ſenekæ*; but ſays, the decoction of it according to the Edinburgh Diſpenſatory is too ſtrong, as he always found it excite vomiting when prepared as there directed, and thus greatly to diſtreſs the patients: but when only half an ounce or ſix drachms of the root are uſed to a pound of decoction, inſtead of a whole ounce as directed by the Edinburgh college, he finds it an excellent remedy; and though it may ſometimes induce a little vomiting, and frequently a nauſea, yet it ſeldom failed to procure nine or ten ſtools a-day, and ſometimes alſo proved diuretic. But we muſt take care not to be too free in the uſe of ſeneka, or any other purgative, if the patients are very weak; and therefore, after having uſed purgatives for ſome time, it will be proper to depend upon diuretics entirely for perfecting the cure; and of the ſucceſs of this method our author gives ſome very remarkable inſtances. But he obſerves, that after the dropſy is removed,

moved, the patients will ſometimes die without any evident cauſe; and of this it is proper that the phyſician ſhould be aware. It is remarkable with what eaſe a flux of urine is induced in thoſe who have a ſcirrhous liver; while on the other hand, in one who had the meſenteric glands obſtructed, along with a ſcirrhoſity of the liver and vitiated ſtate of the lungs, the moſt powerful diuretics proved ineffectual. In ſome caſes our author thinks the kidneys may be ſo preſſed with the weight of the water, as to be unable to perform their office.

The water having been drawn off, we are to put the patient on a courſe of ſtrengtheners; ſuch as the cortex and filings of iron, with ſome of the warm aromatics, and a due proportion of rhubarb infuſed in wine. Enjoin briſk exerciſe and frictions on the belly, with ſuch a courſe of diet as ſhall be light and nouriſhing.

When the patient can by no other means be relieved, the operation of paracenteſis muſt be had recourſe to. See the article SURGERY.

CLXVII. HYDROMETRA, or DROPSY of the *Uterus*. Genus LXXX. 442

Hydrometra, *Sauv.* gen. 289. *Sag.* 116. *Boerh.* 1224.

CLXVIII. HYDROCELE, or DROPSY of the *Scrotum*. Gen. LXXXI. 443

Oſcheocele, *Sauv.* gen. 41. *Vog.* 388.
Oſcheophyma, *Sag.* 44
Hydrops ſcroti, *Vog.* 389.
Hydrops teſtium, *Boerh.* 1227.

For the treatment of theſe two diſeaſes, ſee ASCITES above, and SURGERY.

CLXIX. PHYSCONIA, or SWELLING of the *Belly*. Genus LXXXII. 444

Phyſconia, *Sauv.* gen. 283. *Vog.* 325. *Sag.* gen. 110.
Hypoſarca, *Lin.* 218.

This may ariſe from a variety of cauſes, as from a ſwelling of the liver, ſpleen, kidneys, uterus, omentum, ovarium, meſentery, inteſtines, &c. and ſometimes it ariſes merely from fat. In the former caſes, as the viſcera are generally ſcirrhous and indurated, the diſtemper is for the moſt part incurable; neither is the proſpect much better where the diſeaſe is occaſioned by a great quantity of fat.

CLXX. RACHITIS, the RICKETS. Genus LXXXIII. 445

Rachitis, *Sauv.* gen. 294. *Lin.* 212. *Vog.* 312. *Sag.* gen. 120. *Boerh.* 1480. *Hoffm.* III. 487. *Zeviani* della Rachitide. *Gliſſon* de Rachitide.

Deſcription. This is one of the diſeaſes peculiar to infancy. It ſeldom attacks children till they are nine months, nor after they are two years old; but it frequently happens in the intermediate ſpace between theſe two periods. The diſeaſe ſhews itſelf by a flaccid tumour of the head and face, a looſe flabby ſkin, a ſwelling of the abdomen, and falling away of the other parts, eſpecially of the muſcles. There is a protuberance of the epiphyſes of the joints; the jugular veins ſwell, while the reſt decreaſe; and the legs grow crooked. If the child has begun to walk before he is ſeized with this diſeaſe, there is a ſlowneſs, debility, and tottering in his motion, which ſoon brings on a conſtant deſire of ſitting, and afterwards of lying down; inſomuch that nothing at laſt is moveable but the neck and head. As they grow older, the head is greatly enlarged, with ample ſutures; the thorax is compreſſed on the ſides, and the ſternum riſes up ſharp, while the extremities of the ribs are knotty. The abdomen is protuberant, and the teeth black and carious. In ſuch patients as have died of this diſeaſe, all the ſolids appeared ſoft and flaccid, and the fluids diſſolved and mucous.

Cauſes. The rickets may proceed from ſcrophulous or venereal taints in the parents, and may be increaſed by thoſe of the nurſe. It is likewiſe promoted by feeding the child with aqueous and mucous ſubſtances, crude ſummer-fruits, fiſh, unleavened farinaceous aliment, and too great a quantity of ſweet things.—Sometimes it follows intermittent fevers, and chronic diſorders; and in ſhort, is cauſed by any thing which tends to debilitate the body, and induce a viſcid and unhealthy ſtate of the juices.

Prognoſis. The rickets do not uſually prove mortal: but, if not cured in time, they make the perſon throughout life deformed in various ways; and often produce very pernicious diſorders, ſuch as carious bones in different parts of the body.

Cure. This is to be effected by mild cathartics, alteratives, and tonics, ſuch as are uſed in other diſeaſes attended with a debility of the ſyſtem and a vitiated ſtate of the blood and juices. In the Weſtern Iſlands of Scotland, the medicine uſed for the cure of the rickets is an oil extracted from the liver of the ſkate-fiſh. The method of application is as follows. Firſt, the wriſts and ankles are rubbed with the oil in the evening: this immediately raiſes a fever of ſeveral hours duration. 44 When the fever from the firſt rubbing ſubſides, the ſame parts are rubbed again the night following; and repeatedly, as long as the rubbing of theſe parts continues to excite the fever.—When no fever can be excited by rubbing the wriſts and ankles alone, they are rubbed again along with the knees and elbows. This increaſed unction brings on the fever again; and is practiſed as before, till it no longer has that effect. Then the vertebræ and ſides are rubbed, along with the former parts; and this unction, which again brings on the fever, is repeated as the former. When no fever can be longer excited by this unction, a flannel-ſhirt dipped in the oil is put upon the body of the patient: this brings on a more violent and ſenſible fever than any of the former unctions; and is continued till the cure is completed, which it commonly is in a ſhort time.

A German phyſician, named Dr Strack, hath lately publiſhed a paper, in which he recommends the filings of iron as a certain remedy in the rickets. This diſeaſe, he obſerves, in general begins with children when they are about 16 months old. It is ſeldom obſerved with children before they be one year old, and ſeldom attacks them after they paſs two; and it is very generally worſe where it begins early than where it begins late.

For effecting a cure, it is, he affirms, a matter of the utmoſt conſequence to be able to diſtinguiſh, very early, whether a child will be afflicted with rickets or not. And this, he aſſures us, may be determined by the following ſymptoms: Paleneſs and ſwelling of the countenance; and in that part of the cheeks which ſhould naturally be red, a yellow colour, approaching to that of ſulphur. When that is the caſe, he directs that a medicine ſhould be immediately had recourſe to which will retard the further progreſs of the diſeaſe and remove what has already taken place. For this purpoſe, he adviſes that five grains of the filings of iron, and as much rhubarb, ſhould be rubbed up with ten grains of ſugar, and given for a doſe every morning faſting, and every evening an hour before ſupper. But if conſiderable looſeneſs ſhould be produced, it will be neceſſary, at firſt, to perſiſt in the uſe of one doſe only every day.

After a month's continuance in this courſe, according to our author, there in general enſues a keen appetite for food, quick digeſtion, and a copious flow of urine; by means of which, the fulneſs of the face and yellowneſs of the complection are by degrees removed, while the natural colour of the countenance and firmneſs of the body in general are gradually reſtored. This practice, he aſſures us, has never failed of ſucceſs in any one inſtance; not even in thoſe children born of parents greatly afflicted with the rickets.

When the bones of rickety children begin to bend, they may ſometimes be reſtored to their natural ſhape by compreſſes, bolſters, and proper ſupports. See the article SURGERY.

ORDER III. IMPETIGINES.

Impetigines, *Sauv.* Cl. X. Ord. V. *Sag.* Cl. III. Ord. V.

446 CLXXI. SCROPHULA, or KING'S-EVIL.

Genus LXXXIV.

Scrophula, *Sauv.* gen. 285. *Vog.* 367. *Sag.* 121. Struma, *Lin.* 284.

Deſcription. THIS diſeaſe ſhews itſelf by hard, ſcirrhous, and often indolent tumours, which ariſe by degrees in the glands of the neck, under the chin, arm-pits, and different parts of the body; but moſt commonly in the neck, and behind the ears. In proceſs of time, the cellular ſubſtance, ligaments of the joints, and even the bones themſelves, are affected. In ſcrophula the ſwellings are much more moveable than thoſe of the ſcirrhous kind; they are generally ſofter, and ſeldom attended with much pain: they are tedious in coming to ſuppuration; are very apt to diſappear ſuddenly, and again to riſe in ſome other part of the body. We may likewiſe mention as characteriſtic circumſtances of this diſeaſe, a remarkable ſoftneſs of the ſkin, a kind of fulneſs of the face, generally with large eyes, and a very delicate complexion.

Cauſes. A variety of cauſes have been mentioned as tending to produce ſcrophula, viz. a crude indigeſtible food; bad water; living in damp, low ſituations; its being an hereditary diſeaſe, and in ſome countries endemic, &c. But whatever may in different circumſtances be the exciting or prediſpoſing cauſes of the ſcrophula, the diſeaſe itſelf either depends upon, or is at leaſt much connected with, a debility of the conſtitution in general, and probably of the lymphatic ſyſtem in particular, the complaint always ſhowing itſelf by ſome affections of the latter. And that debility has at leaſt a conſiderable influence on its production is probable, not only from the manifeſt nature of ſome of the cauſes ſaid to be productive of ſcrophula, but likewiſe from ſuch remedies as are found moſt ſerviceable in the cure, which are all of a tonic invigorating nature.

Prognoſis. The ſcrophula is a diſtemper which often eludes the moſt powerful medicines, and therefore phyſicians cannot with any certainty promiſe a cure. It is ſeldom, however, that it proves mortal in a ſhort time, unleſs it attacks the internal parts, ſuch as the lungs, where it frequently produces tubercles that bring on a fatal conſumption. When it attacks the joints, it frequently produces ulcers, which continue for a long time, and gradually waſte the patient; while in the mean time the bones become foul and corroded, and death enſues after a long ſcene of miſery. The prognoſis in this reſpect muſt be regulated entirely by the nature of the ſymptoms.

Cure. It was long ſuppoſed, that ſcrophula depended upon an acid acrimony of the fluids; and this, it is probable, gave riſe to the uſe of burnt ſponge, different kinds of ſoap, and other alkaline ſubſtances, as the beſt remedies for acidity. But although a ſourneſs of the ſtomach and *primæ viæ* does no doubt frequently occur in theſe complaints, yet it ſeems to be entirely the conſequence of that general relaxation which in ſcrophula ſo univerſally prevails, and which does not render it in the leaſt neceſſary to ſuppoſe a general aceſcency of the fluids to take place; as the one very frequently, it is well known, even in other complaints, occurs without the leaſt ſuſpicion of any acid acrimony exiſting. This is alſo rendered very probable from the indolent nature of ſcrophulous tumours, which have been known to ſubſiſt for years without giving any uneaſineſs; which could not have been the caſe, if an acid, or any other acrimony, had prevailed in them.

Gentle mercurials are ſometimes of uſe as reſolvents in ſcrophulous ſwellings; but nothing has ſuch conſiderable influence as a frequent and copious uſe of Peruvian bark. Cold bathing too, eſpecially in the ſea, together with frequent moderate exerciſe, is often of ſingular ſervice here; as is likewiſe change of air, eſpecially to a warm climate.

In the ſcrophulous inflammation of the eyes, or ophthalmia ſtrumoſa, the bark has alſo been given with extraordinary advantage: and we meet with an inſtance of its having cured the gutta roſacea in the face; a complaint which it is often difficult to remove, and is extremely diſagreeable to the fair ſex.

From the various caſes related of tumefied glands it appears, that when the habit is relaxed and the circulation weak, either from conſtitution or accident, the bark is a moſt efficacious medicine, and that it acts as a reſolvent and diſcutient. It will not, however, ſucceed in all caſes; but there are few in which a trial can be attended with much detriment. Dr Fothergill obſerves, that he has never known it avail much where the bones are affected, nor where the ſcrophulous tumour is ſo ſituated as to be accompanied with much pain, as in the joints, or under the membranous coverings of the muſcles; for when the diſeaſe attacks thoſe parts, the perioſteum ſeldom eſcapes without ſome injury, by which the bone will of courſe be likewiſe affected. Here the bark is of no effect: inſtead of leſſening, it rather increaſes the fever that accompanies thoſe circumſtances; and, if it does not really aggravate the complaint, it ſeems at leaſt to accelerate the progreſs of the diſeaſe.

Various are the modes in which the bark is adminiſtered; but Dr Fothergill makes uſe of a decoction, with the addition of ſome aromatic ingredients and a ſmall quantity of liquorice-root, as a form in which a ſufficient quantity may be given without exciting diſguſt.

The powder ſoon becomes diſagreeable to very young patients; and the extract ſeems not ſo much to be depended upon as may have been imagined. In making the extract, it is expoſed to ſo much heat, as muſt have ſome effect upon its virtues, perhaps to their detriment. In adminiſtering it, likewiſe, if great care be not taken to mix it intimately with a proper vehicle, or ſome very ſoluble ſubſtance, in weak bowels it very often purges, and thereby not only diſappoints the phyſician, but injures the patient. A ſmall quantity of the *cortex Winteranus* added gives the medicine a grateful warmth; and a little liquorice, a few raiſins, gum arabic, or the like, added to the decoction before it is taken from the fire, by making the liquor viſcid enables it to ſuſpend more of the fine particles of the bark; by which proceſs the medicine is not only improved in efficacy, but at the ſame time rendered leſs diſagreeable.

In indolent ſwellings of the glands from viſcid humours, ſea-water alſo has been ſtrongly recommended by Dr Ruſſel.

Dr Fothergill alſo acquaints us, that the cicuta is not without a conſiderable ſhare of efficacy in removing ſcrophulous diſorders. He mentions the caſe of a gentlewoman, about 28 years of age, afflicted from her infancy with ſcrophulous complaints, ſevere ophthalmies, glandular ſwellings, &c. cured by the *extractum cicutæ* taken conſtantly for the ſpace of a year. He obſerves, however, that when given to children even in very ſmall doſes, it is apt to produce ſpaſmodic affections; for which reaſon he rarely exhibits it to them when very young, or even to adults of very irritable habits.

Our author gives ſeveral other inſtances of the ſucceſs of cicuta in ſcrophulous caſes, and even in one which ſeemed to be not far removed from a confirmed phthiſis, but owns that it ſeldom had ſuch good effects afterwards; yet he is of opinion, that where there are ſymptoms of tubercles forming, a ſtrumous habit, and a tendency to phthiſis, the cicuta will often be ſerviceable. It is anodyne, corrects acrimony, and promotes the formation of good matter. With regard to the quality of the medicine, our author obſerves, that the extract prepared from hemlock before the plant arrives at maturity, is much inferior to that which is made when the hemlock has acquired its full vigour and is rather on the verge of decline: juſt when the flowers fade, the rudiments of the ſeeds become obſervable, and the habit of the plant inclines to yellow, ſeems the proper time to collect the hemlock. It has then had the full benefit of the ſummer-heat, and the plants that grow in expoſed places will generally be found more virous than thoſe that grow in the ſhade. The leſs heat it undergoes during the preparation, the better. Therefore, if a conſiderable quantity of the dry powder of the plant, gathered at a proper ſeaſon, is added, the leſs boiling will be neceſſary, and the mecine will be the more efficacious. But let the extract be prepared in what manner ſoever it may, provided it is made from the genuine plant, at a proper ſeaſon, and is not deſtroyed by boiling, the chief difference obſervable in uſing it is, that a larger quantity of one kind is required to produce a certain effect than of another. Twenty grains of one ſort of extract have been found equal in point of efficacy to thirty, nay near forty of another; yet both of them made from the genuine plant, and moſt probably prepared with equal fidelity. To prevent the inconveniencies ariſing from this uncertainty, it ſeems always expedient to begin with ſmall doſes, and proceed, ſtep by ſtep, till the extract produces certain effects, which ſeldom fail to ariſe from a full doſe. Theſe effects are different in different conſtitutions. But, for the moſt part, a giddineſs affecting the head, and motions of the eyes as if ſomething puſhed them outwards, are firſt felt; a ſlight ſickneſs, and trembling agitation of the body; a laxative ſtool or two. One or all theſe ſymptoms are the marks of a full doſe, let the quantity in weight be what it will. Here we muſt ſtop till none of theſe effects are felt; and in three or four days, advance a few grains more. For the general experience of all who have uſed this medicine to any good purpoſe agree, that the cicuta ſeldom procures any benefit, though given for a long time, unleſs in as large a doſe as the patient can bear without ſuffering any of the inconveniencies abovementioned.

Patients commonly bear a greater quantity of the extract at night than at noon, and at noon than in the morning. Two ounces may be divided into thirty pills, not gilt. Adults begin with two in the morning, two at noon, and three or four at night, with directions to increaſe each doſe, by the addition of a pill to each, as they can bear it.

CLXXII. SYPHILIS, the LUES VENEREA, or *French Pox*. Genus LXXV. 447

Syphilis, *Sauv.* gen. 3086. *Lin.* 6. *Vog.* 319. *Sag.* 126.
Lues venerea, *Boerh.* 1440. *Hoffm.* III. 413. *Junck.* 96. *Aſtruc* de lue venerea.

ASTRUC, who writes the hiſtory of the lues venerea, is fully convinced that it is a new diſeaſe, which never appeared in Europe till ſome time between the years 1494 and 1496, having been imported from America by the companions of Chriſtopher Columbus; though this opinion is not without its opponents.

The venereal infection, however, cannot, like the contagious miaſmata of the ſmall-pox and ſome other diſeaſes, be carried through the air, and thus ſpread from place to place: for unleſs it is tranſmitted from the parents to the children, there is no other way of contracting the diſeaſe but by actually touching ſome perſon who is affected. Thus, when a nurſe happens to labour under the diſeaſe, the infant that ſhe ſuckles will receive the infection; as, on the other hand, when the child is infected, the nurſe is liable to receive it: and there have even been inſtances known of lying-in women being infected very violently, from having employed a perſon to draw their breaſts who happened to have venereal ulcers in the throat. It may be caught by touching venereal ſores if the cuticle be abraded or torn, and in this way accoucheurs and midwives have ſometimes been infected ſeverely. Dr Macbride ſays, the moſt inveterate pox he ever ſaw, was caught by a midwife, who happened to have a whitelow on one of her fingers, when ſhe delivered a woman ill of the lues venerea.

But by far the moſt ready way of contracting this diſeaſe is by coition, the genital parts being much more bibulous than the reſt of the body. When the diſorder is communicated, the places where the morbific matter enters are generally thoſe where it firſt makes its appearance; and as coition is the moſt uſual way of contracting it, ſo the firſt ſymptoms uſually appear on or near the pudenda.

The patient's own account will, for the moſt part, help us to diſtinguiſh the diſeaſe: but there are ſometimes caſes wherein we cannot avail ourſelves of this information, and where, inſtead of confeſſing, the parties ſhall conceal all circumſtances; while, on the other hand, there are now and then people to be met with, who perſuade themſelves, that ſymptoms are venereal, which in reality are owing to ſome other cauſe: and therefore it is of the utmoſt importance to inform ourſelves thoroughly of the nature of thoſe ſymptoms and appearances which may be conſidered as pathognomic ſigns of lues venerea.

In the firſt place, when we find that the local ſymptoms, ſuch as chancres, buboes, phymoſis, and the like, do not give way to the uſual methods; or when theſe complaints, after having been cured, break out again without a freſh infection; we may juſtly ſuſpect that the virus has entered the whole maſs of lymph: but if at the ſame time ulcers break out in the throat, and the face is deformed by callous tubercles covered with a brown or yellow ſcab, we may be aſſured that the caſe is now become a confirmed lues, which will require a mercurial courſe.

When eruptions of the furfuraceous and ſuperficial kind are venereal, they are not attended with itching; and the ſcale being picked off, the ſkin appears of a reddiſh brown, or rather copper-colour, underneath; whereas leprous eruptions are itchy, throw off a greater quantity of ſcales, and riſe in greater blotches, eſpecially about the joints of the knees and elbows. Venereal tubercles or puſtules are eaſily diſtinguiſhed from carbuncles of the face, by not occupying the cheeks or the noſe, nor as having a purulent apex, but are covered at top, either with a dry branny ſcurf like the ſuperficial eruptions juſt now mentioned, or elſe with a hard dry ſcab of a tawny yellow hue; they particularly break out among the hair, or near to it, on the forehead, or on the temples.

Venereal ulcers affecting the mouth are diſtinguiſhable from thoſe which are ſcorbutic, in the following manner: 1. Venereal ulcers firſt affect the tonſils, fauces, and uvula; then the gums, but theſe very rarely: on the contrary, ſcorbutic ulcers affect the gums firſt of all; then the fauces, tonſils, and uvula. 2. Venereal ulcers frequently ſpread to the noſe; ſcorbutic ones never. 3. Venereal ulcers are callous in the edges; ſcorbutic ones are not ſo. 4. Venereal ulcers are circumſcribed, and, for the moſt part, are circular, at leaſt they are confined to certain places; ſcorbutic ones are of a more irregular form, ſpread wider, and frequently affect the whole mouth. 5. Venereal ulcers are for the moſt part hollow, and generally covered at bottom with a white or yellow ſlough; but ſcorbutic ones are more apt to grow up into looſe fungi. 6. Venereal ulcers are red in their circumference, but ſcorbutic ones are always livid. 7. Venereal ulcers frequently rot the ſubjacent bones, the ſcorbutic ones ſeldom or ever. 8. And laſtly, Venereal ulcers are moſt combined with other ſymptoms which are known to be venereal; ſcorbutic ones with the diſtinguiſhing ſigns of the ſcurvy, ſuch as ſtrait breathing, liſtneſsneſs, ſwelling of the legs, rotten gums, &c.

Another ſure ſign of the confirmed lues, are certain deep-ſeated nocturnal pains, particularly of the ſhins, arms, and head. As for any ſuperficial wandering pains, that have no fixed ſeat, and which affect the membranes of the muſcles and ligaments of the joints, they, for the moſt part, will be found to belong to the gout or rheumatiſm, and can never be conſidered as venereal unleſs accompanied with ſome other evident ſigns; but with regard to the pains that are deeply ſeated, and always fixed to the ſame place, and which affect the middle and more ſolid part of the ulna, tibia, and bones of the cranium, and rage chiefly and with greateſt violence in the fore-part of the night, ſo that the patient can get no reſt till morning approaches, theſe may ſerve to convince us that the diſeaſe has ſpread itſelf throughout the whole habit, whether they be accompanied with other ſymptoms of the lues or not. *Gummata* in the fleſhy parts, *nodes* in the perioſteum, *ganglia* upon the tendons, *tophi* upon the ligaments, *exoſtoſes* upon the bones, and *fici* at the verge of the anus, are all of them ſigns of the confirmed lues: theſe are hard indolent ſwellings; but as they ſometimes ariſe independent of any venereal infection, and perhaps may proceed from a ſcrophulous taint, unleſs they are accompanied, or have been preceded, by ſome of the more certain and evident ſymptoms of the lues, we muſt be cautious about pronouncing them venereal. When theſe ſwellings are not owing to the ſyphilitic virus, they are very ſeldom painful, or tend to inflame and ſuppurate; whereas thoſe that are venereal uſually do, and if they lie upon a bone generally bring on a caries.

Theſe carious ulcers are moſt commonly met with upon the ulna, tibia, and bones of the cranium; and when accompanied with nocturnal pains, we can never heſitate about declaring their genuine nature. Frequent abortions, or the excluſion of ſcabby, ulcerated, half-rotten, and dead fetuſes, happening without any manifeſt cauſe to diſturb the fetus before its time, or to deſtroy it in the womb, may be reckoned as a ſure ſign that at leaſt one of the parents is infected.

Theſe then are the principal and moſt evident ſigns of the confirmed lues. There are others which are more equivocal, and which, unleſs we can fairly trace them back to ſome that are more certain, cannot be held as ſigns of the venereal diſeaſe: Such are, 1. Obſtinate inflammations of the eyes, frequently returning with great heat, itching, and ulceration of the eye-lids. 2. A ſinging and hiſſing noiſe in the ears, with ulcers or caries in the bones of the meatus auditorius. 3. Obſtinate head-achs. 4. Obſtinate cutaneous eruptions, of the itchy or leprous appearance, not yielding to the milder methods of treatment. 5. Swellings of the bones; and, 6. Wandering and obſtinate pains. None of theſe ſymptoms however can be known to be venereal, except they happen to coincide with ſome one or other of the more certain ſigns.

Upon the whole, we are firſt to diſtinguiſh and conſider the ſeveral ſymptoms apart; and then, by comparing them with each other, a clear judgment may be formed upon the general review.

Prognoſis. Being thoroughly convinced that the caſe is venereal, we are to conſider, firſt of all, whether it be of a longer or ſhorter date; for the more recent it is, it will, *cæteris paribus*, be leſs difficult to remove. But there are other circumſtances which will aſſiſt us in forming a prognoſtic as to the event. As,

1. The age of the patient. This diſorder is more dangerous to infants and old people, than to ſuch as are in the flower and vigour of life, in whom ſome part of the virus may be expelled by exerciſe, or may be ſubdued in ſome degree by the ſtrength of the conſtitution.

2. The ſex. Though women are for the moſt part weaker than men, and therefore ſhould ſeem leſs able to reſiſt the force of any diſeaſe, yet experience ſhews that this is eaſier borne by them than by men: which ſeems owing to the menſtrual and other uterine diſcharges, by which perhaps a good ſhare of the virus may be carried off immediately from the parts where it was firſt applied; for it is obſervable, that whenever theſe diſcharges are obſtructed, or ceaſe by the ordinary courſe of nature, all the ſymptoms of this diſeaſe grow worſe.

3. The habit of body. Perſons who have acrid juices will be liable to ſuffer more from the venereal poiſon than ſuch as have their blood in a milder ſtate; hence, when people of a ſcorbutic or ſcrophulous habit contract venereal diſorders, the ſymptoms are always remarkably violent, and difficult to cure. And for the ſame reaſons, the confirmed lues is much more to be dreaded in a perſon already inclined to an aſthma, phthiſis, dropſy, gout, or any other chronic diſtemper, than in one of a ſound and healthy conſtitution. For, as the original diſeaſe is increaſed by the acceſſion of the venereal poiſon, ſo the lues is aggravated by being joined to an old diſorder. The more numerous the ſymptoms, and the more they affect the bones, the more difficult the cure; but if the acrimony ſhould ſeize on the nobler internal parts, ſuch as the brain, the lungs, or the liver, then the diſeaſe becomes incurable, and the patient will either go off ſuddenly in an apoplectic fit, or ſink under a conſumption.

Cure. Some practitioners have affirmed, that the diſeaſe may be totally extirpated without the uſe of mercury: but, excepting in ſlight caſes, it appears from the moſt accurate obſervations, that this grand ſpecific is indiſpenſable; whether it be introduced through the pores of the ſkin, in the form of ointments, plaſters, waſhes, &c.; or given by the mouth, diſguiſed in the different ſhapes of pills, troches, powders, or ſolutions.

Formerly it was held as a rule, that a ſalivation ought to be raiſed, and a great diſcharge excited. But this is now found to be unneceſſary: for, as mercury acts by ſome ſpecific power in ſubduing and correcting the venereal virus, all that is required is to throw in a ſufficient quantity of the medicine for this purpoſe; and if it can be diverted from the ſalivary glands, ſo much the better, ſince the inconveniencies attending a ſpitting are ſuch as we ſhould always wiſh to avoid.

Mercury, when combined with any ſaline ſubſtance, has its activity prodigiouſly increaſed; hence the great variety of chemical preparations, which have been contrived to unite it with different acids.

Corroſive ſublimate is one of the moſt active of all the mercurial preparations, inſomuch as to become a poiſon even in very ſmall doſes. It therefore cannot be given in ſubſtance; but muſt be diſſolved, in order to render it capable of a more minute diviſion. We may ſee, by looking into Wiſeman, that this is an old medicine, though ſeldom given by regular practitioners. How it came to be introduced into ſo remote a part of the world as Siberia, is not eaſily found out; but Dr Clerc, author of the *Hiſtoire Naturelle de l'Homme Malade*, aſſures us, that the ſublimate ſolution has been of uſe there time out of mind.

It appears to have been totally forgotten in other places, until of late years, when the Baron Van Swieten brought it into vogue; ſo that now, if we credit Dr Locker, they uſe no other mercurial preparation at Vienna. The number of patients cured by this remedy alone in the hoſpital of St Mark, which is under the care of this gentleman, from 1754 to 1761 incluſive, being 4880.

The way to prepare the ſolution is, to diſſolve as much ſublimate in any kind of ardent ſpirit (at Vienna they uſe only corn-brandy) as will give half a grain to an ounce of ſolution. The doſe to a grown perſon is one ſpoonful mixed with a pint of any light ptiſan or barley-water, and this to be taken morning and evening: the patients ſhould keep moſtly in a warm chamber, and lie in bed to ſweat after taking the medicine: their diet ſhould be light; and they ought to drink plentifully throughout the day, of whey, ptiſan, or barley-water. If the ſolution does not keep the belly open, a mild purge muſt be given from time to time; for Locker obſerves, that thoſe whom it purges two or three times a-day, get well ſooner than thoſe whom it does not purge: he alſo ſays, that it very ſeldom affects the mouth, but that it promotes the urinary and cutaneous diſcharges. This courſe is not only to be continued till all the ſymptoms diſappear, but for ſome weeks longer. The ſhorteſt time in which Locker uſed to let the patients out, was ſix weeks; and they were continued on a courſe of decoction of the woods for ſome weeks after they left off the ſolution.

This method has been introduced both in Britain and Ireland, though by no means to the excluſion of others; but it appears, that the ſolution does not turn out ſo infallible a remedy, either in theſe kingdoms, or in France, as they ſay it has done in Germany. It was ſeldom ever found to perform a radical cure, and the frequent uſe of it proved in many caſes highly prejudicial. It has therefore been ſucceeded in practice by a remedy firſt recommended by Dr Plenck, and ſince improved by Dr Saunders; conſiſting of mercury united with mucilage of gum arabic, which is ſaid to render its exhibition perfectly mild and ſafe. For particulars, we refer to Dr Saunders's treatiſe.

But a late French writer, ſuppoſed to be Dr Petit, in a ſmall book, intitled, *A parallel of the different methods of treating the venereal diſeaſe*, inſiſts, that there is neither certainty nor ſafety in any other method than the repeated frictions with mercurial ointment.

If therefore it is determined to have recourſe to the mercurial frictions, the patient muſt be prepared by going into the warm bath ſome days ſucceſſively; having been previouſly blooded if of a plethoric habit, and taking a doſe or two of ſome proper cathartic.

The patient being fitted with the neceſſary apparatus of flannels, is then to enter on the courſe.

If the perſon be of a robuſt habit, and in the prime of life, we may begin with two drachms of the *unguentum cæruleum fortius*, (Ph. Lond.) which is to be rubbed in about the ankles by an aſſiſtant whoſe hands are covered with bladders: then having intermitted a day, we may expend two drachms more of the ointment, and reſt for two days; after which, if no ſoreneſs of the mouth comes on, uſe only one drachm; and at every ſubſequent friction aſcend till the ointment ſhall reach the trunk of the body; after which the rubbings are to be begun at the wriſts, and from thence gradually extended to the ſhoulders. In order to prevent the mercury from laying too much hold of the mouth, it muſt be diverted to the ſkin, by keeping the patient in a conſtant perſpiration from the warmth of the room, and by drinking plentifully of barley-water, whey, or ptiſan; but if, nevertheleſs, the mercury ſhould tend to raiſe a ſpitting, then, from time to time, we are either to give ſome gentle cathartic, or order the patient into a vapour-bath: and thus we are to go on, rubbing in a drachm of the ointment every ſecond, third, or fourth night, according as it may be found to operate; and on the intermediate days, either purging or bathing, unleſs we ſhould chooſe to let the ſalivation come on; which, however, it is much better to avoid, as we ſhall thus be able to throw in a larger quantity of mercury.

It is impoſſible to aſcertain the quantity of mercury that is neceſſary to be rubbed in, as this will vary according to circumſtances; but we are always to continue the frictions for a fortnight at leaſt, after all ſymptoms of the diſeaſe ſhall have totally diſappeared; and when we have done with the mercury, warm bathing, and ſudorific decoctions of the woods, are to be continued for ſome time longer.

Some venereal caſes are ſo very obſtinate as not to yield to mercury; and ſome of the particular ſymptoms will remain even after repeated courſes, particularly the nodes and ſwellings of the perioſteum. Theſe are ſometimes cured by a decoction of the roots of mezereon, an ounce being boiled in a gallon of water down to two quarts; a pint of this decoction is to be conſumed in the courſe of a day. Such other ſymptoms as are found to reſiſt mercury, may perhaps be conquered by a long continuance of the decoction of ſarſaparilla, aided by the warmth of a ſouthern climate.

This is a general ſketch of the methods of treatment for the confirmed lues; but for a complete hiſtory of the diſeaſe, and for ample directions in every ſituation, we refer to Aſtruc, and his abridger Dr Chapman.—We have to add, however, that a method of curing this diſeaſe by fumigation has been lately recommended in France; but it ſeems not to meet with great encouragement. The moſt recent propoſal for the cure of the venereal diſeaſe is that of Mr Clare, and conſiſts in rubbing a ſmall quantity of mercury on the inſide of the cheek; by which means we not only avoid the inconveniencies of unction, but alſo the purgative effects that are often produced by this medicine when taken into the ſtomach.

SCORBUTUS, the SCURVY. Genus LXXXVI.

Scorbutus, *Sauv.* gen. 391. *Lin.* 223. *Vog.* 318. *Sag.* 127. *Boerh.* 1148. *Hoffm.* III. 369. *Junck.* 91. *Lind* on the Scurvy. *Hulme* de ſcorbuto. *Rouppe* de morbis navigantium.

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Deſcription. The firſt indication of the ſcorbutic diatheſis, is generally a change of colour in the face, from the natural and healthy look to a pale and bloated complexion, with a liſtleſſneſs, and averſion from every ſort of exerciſe; the gums ſoon after become itchy, ſwell, and are apt to bleed on the ſlighteſt touch; the breath grows offenſive; and the gums, ſwelling daily more and more, turn livid, and at length become extremely fungous and putrid, as being continually in contact with the external air; which in every caſe favours the putrefaction of ſubſtances diſpoſed to run into that ſtate, and is indeed abſolutely requiſite for the production of actual rottenneſs.

The ſymptoms of the ſcurvy, like thoſe of every other diſeaſe, are ſomewhat different in different ſubjects, according to the various circumſtances of conſtitution; and they do not always proceed in the ſame regular courſe in every patient. But what is very remarkable in this diſeaſe, notwithſtanding the various and immenſe load of diſtreſs under which the patients labour, there is no ſickneſs at the ſtomach, the appetite keeps up, and the ſenſes remain entire almoſt to the very laſt: when lying at reſt, they make no complaints, and feel little diſtreſs or pain; but the moment they attempt to riſe, or ſtir themſelves, then the breathing becomes difficult, with a kind of ſtraitneſs or catching, and great oppreſſion, and ſometimes they have been known to fall into a ſyncope. This catching of the breath upon motion, with the loſs of ſtrength, dejection of ſpirit, and rotten gums, are held as the eſſential or diſtinguiſhing ſymptoms of the diſeaſe. The ſkin is generally dry, except in the very laſt ſtage, when the patients become exceedingly ſubject to faintings, and then it grows clammy and moiſt: in ſome it has an anſerine appearance; but much oftener it is ſmooth and ſhining; and, when examined, is found ſpread over with ſpots not riſing above the ſurface, of a reddiſh, bluiſh, livid, or purple colour, with a ſort of yellow rim round them. At firſt theſe ſpots are for the moſt part ſmall, but in time they increaſe to large blotches. The legs and thighs are the places where they are moſtly ſeen; more rarely on the head and face. Many have a ſwelling of the legs, which is harder, and retains the impreſſion of the finger longer, than the common dropſical or truly œdematous ſwellings. The ſlighteſt wounds and bruiſes, in ſcorbutic habits, degenerate into foul and untoward ulcers. And the appearance of theſe ulcers is ſo ſingular and uniform, that they are eaſily diſtinguiſhed from all others. Scorbutic ulcers afford no good digeſtion, but a thin and fetid ichor mixed with blood, which at length has the appearance of coagulated gore lying caked on the ſurface of the ſore, not to be ſeparated or wiped off without ſome difficulty. The fleſh underneath theſe ſloughs feels to the probe ſoft and ſpungy, and is very putrid. Neither detergents, nor eſcharotics, are here of any ſervice; for though ſuch ſloughs be with great pains taken away, they are found again at the next dreſſing, where the ſame ſanguineous putrid appearance always preſents itſelf. Their edges are generally of a livid colour, and puffed up with excreſcences of proud fleſh ariſing from below the ſkin. As the violence of the diſeaſe increaſes, the ulcers ſhoot out a ſoft bloody fungus, which often riſes in a night's time to a monſtrous ſize; and although deſtroyed by cauteries, actual or potential, or cut away with the knife, is found at next dreſſing as large as ever. It is a good while, however, before theſe ulcers, bad as they are, come to affect the bones with rottenneſs.—Theſe appearances will always ſerve to aſſure us that an ulcer is ſcorbutic; and ſhould put us on our guard with reſpect to the giving mercurials, which are the moſt pernicious things that can be adminiſtered in theſe caſes.

Scorbutic people, as the diſeaſe advances, are ſeldom free from pains; though they have not the ſame ſeat in all, and often in the ſame perſon ſhift their place. Some complain of univerſal pain in all their bones; but moſt violent in the limbs, and eſpecially the joints: the moſt frequent ſeat of their pain, however, is ſome part of the breaſt. The pains of this diſeaſe ſeem to ariſe from the diſtraction of the ſenſible fibres, by the extravaſated blood being forced into the interſtices of the perioſteum and of the tendinous and ligamentous parts; whoſe texture being ſo firm, the fibres are liable to the higher degrees of tenſion, and conſequently of pain.

The ſtate of the bowels are various: in ſome there is an obſtinate coſtiveneſs; in others a tendency to a flux, with extremely fetid ſtools: the urine is alſo rank and fetid, generally high-coloured; and, when it has ſtood for ſome hours, throws up an oily ſcum on the ſurface. The pulſe is variable; but moſt commonly ſlower and more feeble than in the time of perfect health. A ſtiffneſs in the tendons, and weakneſs in the joints of the knees, appear early in the diſeaſe: but as it grows more inveterate, the patients generally loſe the uſe of their limbs altogether; having a contraction of the flexor-tendons in the ham, with a ſwelling and pain in the joint of the knee. Some have their legs monſtrouſly ſwelled, and covered over with livid ſpots or ecchymoſes; others have had tumours there; ſome, though without ſwelling, have the calves of the legs and the fleſh of the thighs quite indurated. As perſons far gone in the ſcurvy are apt to faint, and even expire, on being moved and brought out into the freſh air, the utmoſt care and circumſpection are requiſite when it is neceſſary to ſtir or remove them.

Scorbutic patients are at all times, but more eſpecially as the diſeaſe advances, extremely ſubject to profuſe bleedings from different parts of the body; as from the noſe, gums, inteſtines, lungs, &c. and from their ulcers, which generally bleed plentifully if the fungus be cut away. It is not eaſy to conceive a more diſmal and diverſified ſcene of miſery than what is beheld in the third and laſt ſtage of this diſtemper; it being then that the anomalous and more extraordinary ſymptoms appear, ſuch as the burſting out of old wounds, and the diſſolution of old fractures that have been long united.

Cauſes. The term *ſcurvy* hath been indiſcriminately applied, even by phyſicians, to almoſt all the different kinds of cutaneous foulneſs; owing to ſome writers of the laſt century, who comprehended ſuch a variety of ſymptoms under this denomination, that there are few chronic diſtempers which may not be ſo called, according to their ſcheme: but the diſeaſe here meant is the true putrid ſcurvy, ſo often fatal to ſeamen, and to people pent up in garriſons without ſufficient ſupplies of ſound animal-food and freſh vegetables; or which is ſometimes known to be endemic in certain countries, where the nature of the ſoil, the general ſtate of the atmoſphere, and the common courſe of diet, all combine in producing that ſingular ſpecies of corruption in the maſs of blood, which conſtitutes this diſeaſe; for the appearances, on diſſecting ſcorbutic ſubjects, ſufficiently ſhew that the ſcurvy may, with great propriety, be termed a diſeaſe of the blood.

Dr Lind has, in a poſtſcript to the third edition of his treatiſy on the ſcurvy, given the reſult of his obſervations drawn from the diſſection of a conſiderable number of victims to this fatal malady, from which it appears that the true ſcorbutic ſtate, in an advanced ſtage of the diſtemper, conſiſts in numerous effuſions of blood into the cellular interſtices of moſt parts of the body, ſuperficial as well as internal; particularly the gums, and the legs; the texture of the former, being almoſt entirely cellular, (and theſe cells naturally occupied by pure blood), and the generally dependent ſtate of the latter, rendering theſe parts, of all others in the whole body, the moſt apt to receive, and retain, the ſtagnant blood, when its craſis comes to be deſtroyed, and it loſes that glutinous quality which, during health, hinders it from eſcaping thro' the pores in the coats of the blood-veſſels.

A dropſical indiſpoſition, eſpecially in the legs and breaſt, was frequently, but not always, obſerved in the ſubjects that were opened, and the pericardium was ſometimes found diſtended with water: the water, thus collected, was often ſo ſharp as to ſhrivel the hands of the diſſector; and in ſome inſtances, where the ſkin happened to be broken, it irritated and feſtered the wound.

The fleſhy fibres were found ſo extremely lax and tender, and the bellies of the muſcles in the legs and thighs ſo ſtuffed with the effuſed ſtagnating blood, that it was always difficult, and ſometimes impoſſible, to raiſe or ſeparate one muſcle from another. He ſays that the quantity of this effuſed blood was amazing; in ſome bodies, it ſeemed that almoſt a fourth part of the whole maſs had eſcaped from the veſſels; and it often lay in large concretions on the perioſteum, and in ſome few inſtances under this membrane, immediately

mediately on the bone. And yet, notwithſtanding this diſſolved and depraved ſtate of the external fleſhy parts, the brain always appeared perfectly ſound, and the viſcera of the abdomen, as well as thoſe in the thorax, were, in general, found quite uncorrupted. There were ſpots indeed, from extravaſated blood, obſerved on the meſentery, inteſtines, ſtomach, and omentum; but theſe ſpots were firm, and free from any mortified taint; and, more than once, an effuſion of blood, as large as a hand's breadth, has been ſeen on the ſurface of the ſtomach; and what was remarkable, that very ſubject was not known while living to have made any complaint of ſickneſs, pain, or other diſorder, in either ſtomach or bowels.

Theſe circumſtances, and apppearances, with many others that are not here enumerated, all prove to a demonſtration the putreſcent ſtate of the blood: and yet Dr Lind takes no ſmall pains to combat the idea of the ſcurvy's proceeding from animal-putrefaction; a notion which, according to him, "may, and hath miſled phyſicians to propoſe and adminiſter remedies for it altogether ineffectual."

He alſo, in the preface to this third edition, talks of the miſchief done by an attachment to deluſive theories; ſays, "it is not probable that a remedy for the ſcurvy will ever be diſcovered from a preconceived hypotheſis, or by ſpeculative men in the cloſet, who have never ſeen the diſeaſe, or who have ſeen at moſt only a few caſes of it;" and adds, "that though a few partial facts and obſervations may, for a little, flatter with hopes of greater ſucceſs, yet more enlarged experience muſt ever evince the fallacy of all poſitive aſſertions in the healing art."

Sir John Pringle, however, is of a very different opinion: HE "is perſuaded, after long reflection, and the opportunities he has had of converſing with thoſe who, to much ſagacity, had joined no ſmall experience in nautical practice, that upon an examination of the ſeveral articles which have either been of old approven, or have of late been introduced into the navy, it will appear, that though theſe means may vary in form and in mode of operating, yet they all ſome way contribute towards preventing putrefaction; whether of the air in the cloſer parts of a ſhip, of the meats, of the water, of the clothes and bedding, or of the body itſelf."

What Dr Lind has above advanced is the more ſtrange, as, in the two former editions of his book, he embraced the hypotheſis of animal-putrefaction being the cauſe of the ſcurvy; and if theſe effuſions of blood, from a deſtruction of its craſis and the diſſolved ſtate of the muſcular fibres, together with the rotten condition of the mouth and gums, do not betray putreſcency, it is hard to ſay what does, or what other name we ſhall beſtow on this peculiar ſpecies of depravation which conſtitutes the ſcurvy.

The blood, no doubt, derives its healthy properties, and maintains them, from due ſupplies of wholeſome food; while the inſoluble, ſuperfluous, effete, and acrid parts, are carried off by the ſeveral diſcharges of ſtool, urine, and perſpiration.

Our ſenſes of taſte and ſmell are ſufficient to inform us when our food is in a ſtate of ſoundneſs and ſweetneſs, and conſequently wholeſome; but it is from chemiſtry that we muſt learn the principles on which theſe qualities chiefly depend.

Experiments of various kinds have proved, that the ſoundneſs of animal and vegetable ſubſtances depends greatly, if not entirely, on the preſence of their aerial principle; ſince rottenneſs is never obſerved to take place without an emiſſion of fixed air from the putrefying ſubſtance: and even when putrefaction has made a conſiderable progreſs, if air can be transferred, in ſufficient quantity, from ſome other ſubſtance in a ſtate of efferveſcence or fermentation, into the putrid body, the offenſive ſmell of this will be deſtroyed; and if it be a bit of rotten fleſh with which the experiment is made, the firmneſs of its fibres will be found in ſome meaſure reſtored.

The experiments of Dr Hales, as well as many others made ſince his time, ſhew that the aerial principle is greatly connected with, and remarkably abundant in, the gelatinous parts of animal bodies, and in the mucilage or farina of vegetables. But theſe are the parts of our food which are moſt particularly nutritive; and Dr Cullen, whoſe opinion on this as on every other medical ſubject muſt be allowed of the greateſt weight, affirms (in his Lectures on the Materia Medica), that the ſubſtances on which we feed are nutritious only in proportion to the quantities of oil and ſugar which they reſpectively contain. This oil and ſugar are blended together in the gelatinous part of our animal-food, and in the mucilaginous and farinaceous part of eſculent vegetables; and, while thus intimately combined, are not perceivable by our taſte, though very capable of being developed and rendered diſtinct by the power of the digeſtive organs; for, in conſequence of the changes produced during digeſtion, (in which, notwithſtanding any cavilling that may be raiſed about terms, fermentation muſt be allowed to have a principal ſhare), the oily and the ſaccharine matter become manifeſt to our ſenſes, as we may ſee, and taſte, in the milk of animals, (which is chiefly chyle, a little advanced in its progreſs toward ſanguification), wherein the oil is obſerved to ſeparate ſpontaneouſly, and from which a quantity of actual ſugar may be obtained by a very ſimple proceſs.

Thus much being premiſed, we can now readily comprehend how the blood may come to loſe thoſe qualities of ſmoothneſs, mildneſs, and tenacity, which are natural to it. For if, in the firſt place, the fluids, and organs ſubſervient to digeſtion, ſhould be ſo far diſtempered, or debilitated, that the nutritious parts of the food cannot be properly developed, the blood muſt be defrauded of its due ſupplies; which will alſo be the caſe, if the aliment ſhould not originally contain enough of oily and ſaccharine matter, or ſhould be ſo circumſtanced, from being dried or ſalted, as to hinder the ready extrication of the nutritious parts; or laſtly, if the natural diſcharges ſhould be interrupted or ſuſpended, ſo that the ſuperfluous, acrid, and effete fluids are retained in the general maſs; in all theſe inſtances the blood muſt of neceſſity run into proportionate degrees of depravation.

And hence we may underſtand how it may poſſibly happen, that when perſons are greatly weakened by ſome preceding diſorder, and at the ſame time debarred

barred the uſe of proper bodily exerciſe, the ſcorbutic diatheſis ſhould take place, even though they enjoy the advantages of pure air and wholeſome diet. But theſe are ſolitary caſes, and very rarely ſeen; for whenever the ſcurvy ſeizes numbers, and can be conſidered as an epidemic diſeaſe, it will be found to depend on a combination of the major part, or perhaps all, of the following circumſtances:

1. A moiſt atmoſphere, and more eſpecially if cold be joined to this moiſture. 2. Too long ceſſation from bodily exerciſe, whether it be from conſtraint, or a lazy ſlothful diſpoſition. 3. Dejection of mind. 4. Neglect of cleanlineſs, and want of ſufficient clothing. 5. Want of wholeſome drink, either of pure water, or fermented liquors. And, 6. above all, the being obliged to live continually on ſalted meats, perhaps not well cured, without a due proportion of the milder farinaceous or mucilaginous vegetables, ſufficient to correct the pernicious tendency of the ſalt, by ſupplying the bland oil and ſaccharine matter requiſite for the purpoſes of nutrition.

Prevention and Cure. The ſcurvy may be prevented, by obviating and correcting thoſe circumſtances in reſpect of the non-naturals which were mentioned as contributing to the diſeaſe, and laid down as cauſes. It is therefore a duty highly incumbent on officers commanding at ſea, or in garriſons, to uſe every poſſible precaution; and, in the firſt place, to correct the coldneſs and moiſture of the atmoſphere, by ſufficient fires: in the next, to ſee that their men be lodged in dry, clean, and well ventilated births, or apartments: thirdly, to promote cheerfulneſs, and enjoin frequent exerciſe, which alone is of infinite uſe in preventing the ſcurvy: fourthly, to take care that the cloathing be proper, and cleanlineſs of perſon ſtrictly obſerved: fifthly, to ſupply them with wholeſome drink, either pure water, or ſound fermented liquors; and if ſpirits be allowed, to have them properly diluted with water, and ſweetened with melaſſes or coarſe ſugar: and laſtly, to order the ſalted meats to be ſparingly uſed, or ſometimes entirely abſtained from; and, in their place, let the people live on different compoſitions of the dried vegetables, freſh meat and recent vegetables being introduced as often as they can poſſibly be procured.

A cloſe attention to theſe matters will, in general, prevent the ſcurvy from making its appearance at all, and will always hinder it from ſpreading its influence far. But when theſe precautions have been neglected, or the circumſtances ſuch that they cannot be put in practice, and the diſeaſe hath actually taken place, our whole endeavour muſt be to reſtore the blood to its original ſtate of ſoundneſs: and happily, ſuch is the nature of this diſeaſe (which confirms the hypotheſis that it is ſeated in the groſs fluids, and particularly the blood), that if a ſufficiency of new matter, of the truly mild nutritious ſort, can be thrown into the circulation while the fleſhy fibres retain any tolerable degree of firmneſs, the patient will recover; and that in a ſurpriſingly ſhort ſpace of time, provided a pure air, comfortable lodgings, ſufficient cloathing, cleanlineſs, and exerciſe, lend their neceſſary aid.

This being the caſe, the plan of treatment is to be conducted almoſt entirely in the dietetic way; as the change in the maſs of blood, which it is neceſſary to produce, muſt be brought about by things that can be received into the ſtomach by pints, or pounds and not by thoſe which are adminiſtered in drops or grains, drachms or ounces. For here, as the ſubtile fluids are not ſenſibly affected, and there is no diſorder of the nervous ſyſtem, we have no need of thoſe active drugs, which are indiſpenſibly neceſſary in febrile or nervous diſeaſes; the ſcorbutic diatheſis being quite oppoſite to that which tends to produce a fever, or any ſpecies of ſpaſmodic diſorder; nay Dr Lind ſays, he has repeatedly found, that even the infection of an hoſpital fever is long reſiſted by a ſcorbutic habit.

It will now naturally occur to the reader, what thoſe alimentary ſubſtances muſt be which bid the faireſt to reſtore the blood to its healthy ſtate; and he needs ſcarcely to be told, that they are of thoſe kinds which the ſtomach can bear with pleaſure though taken in large quantities, which abound in jelly or mucilage, and which allow theſe nutritious parts to be eaſily developed; for though the viſcera in ſcorbutic patients may be all perfectly ſound, yet we cannot expect, that either the digeſtive fluids, or organs, ſhould poſſeſs the ſame degrees of power, which enable them, during health, to convert the crude dry farinacea, and the hard ſalted fleſh of animals, into nouriſhment. We muſt therefore ſearch for the *antiſcorbutic virtue* in the tender ſweet fleſh of graminivorous animals; in new milk; and in the mucilaginous juices of recent vegetables, whether they be fruits, leaves, or roots. And provided they be freſh, and ſucculent, and of ſuch mildneſs as will permit them to be abundantly taken, it is of little importance whether they be ſweet or ſour, aceſcent or alkaleſcent; for ſuch is the power of the alimentary fermentation, that by the time the chyle is ready to enter the lacteals, their native qualities are obliterated, and the oily and ſaccharine matter which lay hid in the mucilage entirely extricated.

The ſour juices of lemons, oranges, and limes, have been generally held as antiſcorbutics in an eminent degree, and their power aſcribed to their acid; from an idea that acids of all kinds are the only correctors of putrefaction. But the general current of practical obſervations ſhews, and our experiments confirm it, that the virtue of theſe juices (and, we preſume, of every other that has been known to cure the ſcurvy) depends on their *aërial principle*, and conſequently reſides in the mucilage, whether it be ſweet or ſour; accordingly, while perfectly recent and in the mucilaginous ſtate, and eſpecially if mixed with wine and ſugar, the juices of any one of theſe fruits will be found a moſt grateful and powerful antiſcorbutic.

Dr Lind obſerving, "that the lemon-juice, when given by itſelf undiluted, was apt, eſpecially if overdoſed, to have too violent an operation, by occaſioning pain and ſickneſs at the ſtomach, and ſometimes a vomiting; he therefore found it neceſſary to add wine and ſugar. A pint of Madeira wine, and two ounces of ſugar, were put to four ounces and a half of juice, and this quantity was found ſufficient for weak patients to uſe in 24 hours: ſuch as were very weak ſipped a little of this frequently, according as their ſtrength would permit; others who were ſtronger took about two ounces of it every four hours; and when the patients grew ſtill ſtronger, they were allowed eight ounces of lemon-juice in 24 hours."

While this very pleaſant mixture, which is both a cordial and an antiſeptic, may be had, it would be needleſs to think of preſcribing any other; but when the freſh juice cannot be procured, we muſt have recourſe to ſuch other things as may be obtained. But the various modes of combining and adminiſtering theſe, ſo as to render them perfectly agreeable to the ſtomach, muſt always be regulated by circumſtances, and therefore it will be in vain to lay down particular directions; ſince all that we have to do is, to fix on ſuch fruits and other freſh vegetables as can be moſt conveniently had and taken, and contrive to give them in thoſe forms, either alone or boiled up with fleſh-meat into ſoups, that will allow the patients to conſume the greateſt quantities.

The firſt promiſing alteration from ſuch a courſe is uſually a gentle diarrhœa; and if, in a few days, the ſkin becomes ſoft and moiſt, it is an infallible ſign of recovery; eſpecially if the patient gains ſtrength, and can bear being ſtirred or carried into the open air without fainting.

But if the belly ſhould not be looſened by the uſe of the freſh vegetables, nor the ſkin become ſoft and moiſt, then they muſt be aſſiſted by ſtewed prunes, or a decoction of tamarinds with cream of tartar, in order to abate the coſtiveneſs; and by drinking a light decoction of the woods, and warm bathing, in order to relax the pores of the ſkin; for nothing contributes more to the recovery of ſcorbutic patients than moderate ſweating.

With regard to particular ſymptoms, antiſeptic mouth-waters compoſed of a decoction of the cortex and tincture of roſes, with ſolution of myrrh, muſt be uſed occaſionally, in order to cleanſe the mouth, and give firmneſs to the ſpungy gums. Swelled and indurated limbs, and ſtiffened joints, muſt be bathed with warm vinegar, and relaxed by the ſteam of warm water, repeatedly conveyed to them, and confined to the parts by means of cloſe blankets: ulcers on the legs muſt never be treated with unctuous applications nor ſharp eſcharotics; but the dreſſing ſhould conſiſt of lint or ſoft rags, dipt in a ſtrong decoction of Peruvian bark.

This diſeaſe at no time requires, or indeed bears, large evacuations, either by bleeding or purging; and, as hath been already mentioned, the belly muſt only be kept open by the freſh vegetables, or the mildeſt laxatives. But we are always to be careful that ſcorbutic perſons, after a long abſtinence from greens and fruits, be not permitted to eat voraciouſly at firſt, leſt they fall into a fatal dyſentery.

All this, however, that has been laid down as neceſſary towards the cure, ſuppoſes the patients to be in ſituations where they can be plentifully furniſhed with all the requiſites; but unhappily theſe things are not to be procured at ſea, and often deficient in garriſons: therefore, in order that a remedy for the ſcurvy might never be wanting, Dr Macbride, in the year 1762, firſt conceived the notion, that *infuſion of malt*, commonly called *wort*, might be ſubſtituted for the common antiſcorbutics, and it was accordingly tried.

More than three years elapſed, before any account arrived of the experiment's having been made: at length, ten hiſtories of caſes were received, wherein the wort had been tried, with very remarkable ſucceſs; and this being judged a matter of much importance to the ſeafaring part of mankind, theſe were immediately communicated to the public in a pamphlet with the title of *An hiſtorical account of a new method of treating the ſcurvy at ſea*.

This was in 1767; but ſince that time a conſiderable number of letters and medical journals, ſufficient to make up a ſmall volume, were tranſmitted to the author, particularly by the ſurgeons of his Majeſty's ſhips that have been employed of late years for making diſcoveries in the ſouthern hemiſphere. Certain it is, that in many inſtances it has ſucceeded beyond expectation. In others it has fallen ſhort: but whether this was owing to the untoward ſituation of the patients, or inattention on the part of the perſons who were charged with the adminiſtration of the wort, not preparing it properly, or not giving it in ſufficient quantity, or to its own want of power, muſt be collected from the caſes and journals themſelves.

During Captain Cook's laſt voyage, the moſt remarkable, in reſpect of the healthineſs of the crew, that ever was performed, the wort is acknowledged to have been of ſingular uſe.

In a letter which this very celebrated and ſucceſsful circumnavigator wrote to Sir John Pringle, he gives an account of the methods purſued for preſerving the health of his people; and which were productive of ſuch happy effects, that he performed "a voyage of three years and 18 days, through all the climates from 52° north to 71° ſouth, with the loſs of one man only by diſeaſe, and who died of a complicated and lingering illneſs, without any mixture of ſcurvy. Two others were unfortunately drowned, and one killed by a fall; ſo that out of the whole number (118) with which he ſet out from England, he loſt only four.

He ſays, that much was owing to the extraordinary attention of the admiralty, in cauſing ſuch articles to be put on board as either by experience or conjecture were judged to tend moſt to preſerve the health of ſeamen; and with reſpect to the wort, he expreſſeth himſelf as follows.

"We had on board a large quantity of *malt*, of which was made *ſweet wort*, and given (not only to thoſe men who had manifeſt ſymptoms of the ſcurvy, but to ſuch alſo as were, from circumſtances, judged to be moſt liable to that diſorder) from one or two to three pints in the day to each man, or in ſuch proportion as the ſurgeon thought neceſſary, which ſometimes amounted to three quarts in the 24 hours: this is without doubt one of the beſt antiſcorbutic ſea-medicines yet found out; and, if given in time, will, with proper attention to other things, I am perſuaded, prevent the ſcurvy from making any great progreſs for a conſiderable time: but I am not altogether of opinion that it will cure it, in an advanced ſtate, at ſea."

On this laſt point, however, the Captain and his Surgeon differ; for this gentleman poſitively aſſerts, and his journal (in Dr Macbride's poſſeſſion) confirms it, that the infuſion of malt did effect a cure in a confirmed caſe, and at ſea.

The malt, being thoroughly dried, and packed up in ſmall caſks, is carried to ſea, where it will keep ſound, in every variety of climate, for at leaſt two years: when wanted for uſe, it is to be ground in a hand-mill, and the infuſion prepared from day to day, by pouring three meaſures of boiling water on one of the ground malt; the mixture being well maſhed, is left to infuſe for 10 or 12 hours, and the clear infuſion then ſtrained off. The patients are to drink it in ſuch quantities as may be deemed neceſſary, from one to three quarts in the courſe of the 24 hours: a panado is alſo to be made of it, by adding biſcuit, and currants or raiſins; and this palatable meſs is uſed by way of ſolid food. This courſe of diet, like that of the recent vegetables, generally keeps the bowels ſufficiently open; but in caſes where coſtiveneſs nevertheleſs prevails, gentle laxatives muſt be interpoſed from time to time, together with diaphoretics, and the topical aſſiſtants, fomentations and gargles, as in the common way of management.

Captain Cook was alſo provided with a large ſtock of *ſour krout;* (cabbage-leaves cut ſmall, fermented and ſtopped in the ſecond ſtage of fermentation.) A pound of this was ſerved to each man, twice a-week, while they were at ſea. He had alſo a liberal ſupply of *portable ſoup;* of which the men had generally an ounce, three days in the week, boiled up with their peaſe; and ſometimes it was ſerved to them oftener; and when they could get freſh greens, it was boiled up with them, and made ſuch an agreeable meſs, that it was the means of making the people eat a greater quantity of greens than they would otherwiſe have done. And what was ſtill of further advantage, they were furniſhed with ſugar, in lieu of butter or oil, which is ſeldom of the ſweeteſt ſort; ſo that the crew were undoubtedly great gainers by the exchange.

In addition to all theſe advantages of being ſo well provided with every neceſſary, either in the way of diet or medicine, Captain Cook was remarkably attentive to all the circumſtances reſpecting cleanlineſs, exerciſe, ſufficient cloathing, proviſion of pure water, and purification of the air, in the cloſer parts of the ſhip.

Newly brewed *ſpruce-beer* (made from a decoction of the tops of the ſpruce-fir, and molaſſes) is an excellent antiſcorbutic; acts in the ſame way that the wort does, and will be found of equal efficacy, therefore may be ſubſtituted. But in ſituations where neither the one nor the other can be had, a moſt ſalutary meſs may be prepared from oatmeal, by infuſing it in water, in a wooden veſſel, till it ferments, and begins to turn ſouriſh; which generally happens, in moderately warm weather, in the ſpace of two days. The liquor is then ſtrained off from the grounds, and boiled down to the conſiſtence of a jelly, which is to be eat with wine and ſugar, or with butter and ſugar.

Nothing is more commonly talked off, than a *land-ſcurvy*, as a diſtinct ſpecies of diſeaſe from this which has been now deſcribed; but no writer has yet given a deſcription ſo clear as to enable us to diſtinguiſh it from the various kinds of cutaneous foulneſs and eruption, which indeed are vulgarly termed *ſcorbutic*, but which are akin to the itch or leproſy, and for the moſt part require mercurials.

CLXXIV. ELEPHANTIASIS.

Genus LXXXVIII.

Elephantiaſis, *Sauv.* gen. 302. *Vog.* 321. *Sag.* gen. 128. 449

Elephantia Arabum, *Vog.* 322.

The beſt account of this diſeaſe is that by Dr Heberden, publiſhed in the firſt volume of the Medical Tranſactions. According to him, frequently the firſt ſymptom is a ſudden eruption of tubercles, or bumps of different ſizes, of a red colour, more or leſs intenſe (attended with great heat and itching), on the body, legs, arms, and face; ſometimes in the face and neck alone, at other times occupying the limbs only; the patient is feveriſh; the fever ceaſing, the tubercles remain indolent, and in ſome degree ſcirrhous, of a livid or copper colour, and ſometimes of the natural colour of the ſkin, or at leaſt very little altered; and ſometimes they after ſome months ulcerate, diſcharging a fetid ichorous humour in ſmall quantity, but never laudable pus.

The features of the face ſwell and enlarge greatly; the part above the eye-brows ſeems inflated; the hair of the eye-brows falls off, as does the hair of the beard; but our author has never ſeen any one whoſe hair has not remained on his head. The *alæ naſi* are ſwelled and ſcabrous; the noſtrils patulous, and ſometimes affected with ulcers, which, corroding the cartilage and *ſeptum naſi*, occaſion the noſe to fall. The lips are tumid; the voice is hoarſe; which ſymptom hath been obſerved when no ulcers have appeared in the throat, although ſometimes both the throat and gums are ulcerated. The ears, particularly the lobes, are thickened, and occupied by tubercles. The nails grow ſcabrous and rugoſe, appearing ſomething like the rough bark of a tree; and the diſtemper advancing, corrodes the parts gradually with a dry ſordid ſcab, or gangrenous ulcer; ſo that the fingers and toes rot and ſeparate, joint after joint. In ſome patients the legs ſeem rather poſts than legs, being no longer of the natural ſhape, but ſwelled to an enormous ſize, and indurated, not yielding to the preſſure of the fingers; and the ſuperficies is covered with very thin ſcales, of a dull whitiſh colour, ſeemingly much finer, and not ſo white as thoſe obſerved in the *lepra Græcorum.* The whole limb is overſpread with tubercles, interſperſed with deep fiſſures; ſometimes the limb is covered with a thick moiſt ſcabby cruſt, and not ſeldom the tubercles ulcerate. In others the legs are emaciated, and ſometimes ulcerated; at other times affected with tubercles without ulceration. The muſcular fleſh between the thumb and fore-finger is generally extenuated.

The whole ſkin, particularly that of the face, has a remarkably ſhining appearance, as if it was varniſhed or finely poliſhed. The ſenſation is very obtuſe, or totally aboliſhed; ſo that pinching, or puncturing the part, gives little or no uneaſineſs; and in ſome patients the motion of the fingers and toes is quite deſtroyed. The breath is very offenſive; the pulſe in general weak and ſlow.

The diſeaſe often attacks the patient in a different manner from the above-deſcribed, beginning almoſt inſenſibly; a few indolent tubercles appearing on various parts of the body or limbs, generally on the legs or arms, ſometimes on the face, neck, or breaſt, and ſometimes in the lobes of the ears, increaſing by very ſlow degrees, without any diſorder, previous or concomitant, in reſpect of pain or uneaſineſs.

To diſtinguiſh the diſtemper from its manner of attacking the patient, our author ſtyles the firſt *by fluxion*, and the other *by congeſtion*. That by fluxion is often attended with a crapula, or ſurfeit from groſs foods; whereby, perhaps, the latent ſeeds of the diſorder yet dormant in the maſs of blood are excited; and probably from frequent obſervations of his kind (the laſt meal always having the blame laid on it), it is, that, according to the received opinion there, either fiſh, (the tunny, mackrel, and ſhell-fiſh, in particular), melons, cucumbers, young garden-beans, or mulberries, eaten at the ſame meal with butter, cheeſe, or any preparation with milk, are judged liable to produce the diſtemper, and are accordingly religiouſly avoided.

Violent commotions of the mind, as anger, fear, and grief, have more than once been obſerved to have given riſe to the diſorder; and more frequently, in the female ſex, a ſudden ſuppreſſion of an accuſtomed evacuation, by bathing the legs and feet in cold water at an improper ſeaſon.

The diſorder by fluxion is what is the ofteneſt endeavoured to be remedied by timely application; that by congeſtion, not being ſo conſpicuous, is generally either neglected or endeavoured to be concealed, until perhaps it is too late to be cured, at leaſt unleſs the patients would ſubmit to a longer courſe of medicine and ſtricter regimen of diet than they are commonly inclined to do.

Several incipient diſorders by fluxion have been known to yield to an antiphlogiſtic method, as bleeding, *ſal diuret.* in the ſaline draughts, and a ſolution of *cremor tartari* in water, for their common drink, (by this means endeavouring to precipitate part of the peccant matter, perhaps too groſs to paſs the pores by the kidneys); and when once the fever is overcome, the *cort. Peruv. cum cort. ſaſſafras*, is the only method to be relied on. The only topical medicine preſcribed by Dr Heberden was an attenuating embrocation of brandy and alkaline ſpirit. By the ſame method ſome confirmed caſes have been palliated. But, excepting in one patient, he never ſaw or heard of a confirmed elephantiaſis radically cured. He adds, however, that he never met with another poſſeſſed with prudence and perſeverance enough to proſecute the cure as he ought.

450 CLXXV. LEPRA, the Leproſy.

Genus LXXXVIII.

Lepra, *Sauv.* gen. 303. *Lin.* 262. *Sag.* 129.
Lepra *Græcorum*, *Vog.* 320.

This diſtemper is but little known to phyſicians in the weſtern parts of Europe. Wallis tells us, that it firſt begins with red pimples, or puſtules, breaking out in various parts of the body. Sometimes they appear ſingle; ſometimes a great number ariſe together, eſpecially on the arms and legs: as the diſeaſe increaſes, freſh pimples appear, which, joining the former, make a ſort of cluſters; all which enlarge their borders, and ſpread in an orbicular form. The ſuperficies of theſe puſtules are rough, whitiſh, and ſcaly; when they are ſcratched the ſcales fall off, upon which a thin ichor oozes out, which ſoon dries and hardens into a ſcaly cruſt. Theſe cluſters of puſtules are at firſt ſmall and few; perhaps only three or four in an arm or leg, and of the ſize of a ſilver penny. But if the diſeaſe be ſuffered to increaſe, they become more numerous, and the cluſters increaſe to the ſize of a crown-piece, but not exactly round. Afterwards it increaſes to ſuch a degree, that the whole body is covered with a leprous ſcurf.—The cure of this diſtemper is the ſame with that of the Elephantiasis.

451 CLXXVI. FRAMBOESIA, the Yaws.

Genus LXXXIX.

Frambœſia. *Sauv.* gen. 125. *Sag.* 125.

Deſcription The deſcription which is given of this diſtemper by the anonymous author of a paper in the ſixth volume of the Edinburgh Medical Eſſays, (art. 76.) differs, in ſome circumſtances, from one that Sauvages received from M. Virgile, an eminent ſurgeon of Montpelier, who practiſed 12 years in the iſland of St Domingo; and therefore he diſtinguiſhes the *frambœſia* into two ſpecies, *Guineenſis*, and *Americana*.

The *frambœſia Guineenſis* is ſaid by the firſt mentioned writer to be ſo common on the coaſt of Guinea and other parts of Africa, that it ſeldom fails to attack each individual of both ſexes, one time or other, in the courſe of their lives; but moſt commonly during childhood or youth. "It makes its appearance in little ſpots on the cuticle, level with the ſkin, at firſt no larger than a pin's head, which increaſe daily, and become protuberant like pimples: ſoon after, the cuticle frets off, and then, inſtead of finding pus, or ichor, in this ſmall tumour, only white ſloughs or ſordes appear, under which is a ſmall red fungus, growing out of the cutis, increaſing gradually to very different magnitudes, ſome leſs than the ſmalleſt wood ſtrawberry, ſome as big as a raſpberry, and others exceeding in ſize even the largeſt mulberries; which berries they very much reſemble, being knobbed as they are." Theſe protuberances, which give the name to the diſeaſe, appear on all parts of the body: but the greateſt numbers, and the largeſt ſized, are generally found in the groins, and about the pudenda or anus; in the arm-pits, and on the face: when the yaws are very large, they are few in number; and when remarkably numerous, they are leſs in ſize. The patients, in all other reſpects, enjoy good health, do not loſe their appetite, and ſeem to have little other uneaſineſs than what the ſores occaſion.

Mr Virgile deſcribes the ſpecies of yaws that is common among the Negroes of St Domingo, and which Sauvages has termed *frambœſia Americana*, as beginning from an ulcer that breaks out indiſcriminately in different parts of the body, though moſt commonly on the legs; at firſt ſuperficial, and not different from a common ulcer in any other circumſtances ſave its not healing by the uſual applications; ſooner or later, numerous fungous excreſcences break out on the ſurface of the body as before deſcribed, like little berries, moiſt, with a reddiſh mucus. Beſides theſe, the ſoles of the feet and palms of the hands became raw, the ſkin fretting off, ſo as to leave the muſcles bare; theſe excoriations are ſometimes moiſt with ichor and ſometimes dry, but always painful, and conſequently very diſtreſſing. They are alſo mentioned by the author of the article in the Medical Eſſays; and both he and M. Virgile obſerve, that there is always one excreſcence, or yaw, of an uncommon ſize, which is longer in falling off than the others, and which is conſidered as the *maſter-yaw*, and ſo termed. Theſe two, are the only accounts that have hitherto been publiſhed of this diſeaſe.

The yaws may be communicated by any kind of contact; nay, it is even believed that flies often convey the infection, when, after having gorged themſelves with the virulent matter by ſucking the ulcers of thoſe who are diſeaſed, they make punctures in the ſkin of ſuch as are ſound, and thus inoculate them; in conſequence of which, the diſorder will ſoon appear, provided the *morbific diſpoſition* of body be preſent.

It is believed, that the diſeaſe never appears twice in the ſame perſon; ſince all the Negroes who have had the yaws in Africa, and have been cured there, remain exempt from the diſorder ever after; and the writer of the paper in the Medical Eſſays affirms, that, in nine years practice in the Weſt Indies, he never knew any patient to relapſe after having been once thoroughly cured.

Prognoſis. The yaws are not dangerous, if the cure be ſkilfully managed at a proper time; but if the patient has been prematurely ſalivated, or has taken any quantity of mercury, and his ſkin been ſuddenly cleared thereby, the cure will be very difficult, if not impracticable.

Cure. This is effected by mercurial ſalivation, after the virulent matter has been completely thrown out to the ſurface of the body by ſudorifics. The following are the particular directions given on this head by the author of the article in the Medical Eſſays. The yaws being an infectious diſeaſe, as ſoon as they begin to appear on a Negro, he muſt be removed to a houſe by himſelf; or, if it is not certain whether the eruption be the yaws or not, ſhut him up ſeven days, and look on him again, as the Jews were commanded to do with their lepers, *Lev.* xiii. and in that time you may be commonly certain.

As ſoon as you are convinced that it is the yaws, give a bolus of flowers of ſulphur, with camphire and theriaca. Repeat this bolus every night for a fortnight or three weeks, or till the yaws come to the height; that is, when they neither increaſe in ſize or number: then throw your patient into a gentle ſalivation with calomel given in ſmall doſes, without farther preparation; five grains repeated once, twice, or thrice a-day, is ſufficient, as the patient can bear it. If he ſpits a quart in 24 hours, it is enough. Generally, when the ſalivation is at this height, all the yaws are covered with a dry ſcaly cruſt or ſcab; which, if numerous, look terribly. Theſe fall off daily in ſmall white ſcales; and in ten or twelve days leave the ſkin ſmooth and clean. Then the calomel may be omitted, and the ſalivation permitted to go off of itſelf. [A dram of corroſive ſublimate diſſolved in an ounce of rum or brandy, and the ſolution daubed on the yaws, will clear the ſkin in two days time.]

After the ſalivation, ſweat the patient twice or thrice in a frame or chair, with ſpirits of wine; and give an alterative electuary of æthiops and gum guaiac. He may likewiſe uſe the decoction of guaiacum and ſaſſafras fermented with melaſſes, for his conſtant drink while the electuary is taking, and a week or a fortnight after the electuary is ſpent.

The maſter-yaw muſt be conſumed an eighth or a tenth part of an inch below the ſkin, with *Mercur. corroſ. rub. & alum. uſt. an. part. æqual.* and digeſted with *Ung. baſil. flav.* ℥j. and *mercur. corroſ. rub.* ʒj. and cicatrized with lint preſſed out of ſpirits of wine, and with the vitriol ſtone.

After the yaws are cured, ſome patients are afflicted with carbuncles in their feet; which ſometimes render them incapable of walking, unleſs with pain. The method of cure is, by bathing and paring, to deſtroy the cuticle, and then proceed as in the maſter-yaw. The gentle eſcharotics are to be preferred, eſpecially here; and all imaginable care is to be taken to avoid the tendons and perioſteum.

To children under ſix or ſeven years old, at the proper time of ſalivating, (when the yaws are come to their full growth), give a grain or two of calomel in white ſugar, once a-day, once in two days, or once in three days, ſo as only to keep their mouths a little ſore till the yaws dry, and, falling off in white ſcales, leave the ſkin clean. This ſucceeds always, but requires a longer time than in adults.

In St Domingo they ſalivated by unction; but it does not appear that ſucceſs always followed this practice. It is alſo uſual in that iſland to give the ſolution of corroſive ſublimate, along with a decoction of ſarſaparilla. Twelve ounces of this root, and 12 pounds of the coarſeſt ſugar, macerated for 15 days in 12 quarts of water, is mentioned as a ſpecific, and ſaid to be the preſcription of an Engliſh phyſician; the doſe is four ounces every ſixth hour.

CLXXVII. TRICHOMA, the Plica Polonica, or *Plaited Hair*. Genus XC. 452

Trichoma, *Sauv.* gen. 311. *Sag.* 137.
Plica, *Lin.* 313.
Plica ſive rhopaloſis, *Vog.* 323.

This diſorder is only met with in Poland and Lithuania, and conſiſts of ſeveral blood-veſſels running from the head into the ends of the hairs; which cleave together, and hang from the head in broad flat pieces, generally about an ell in length, but ſometimes they are five or ſix yards long; one patient hath more or leſs of theſe, up to 20, and ſometimes 30. They are painful to the wearer, and odious to every ſpectator. At the approach of winter an eruptive fever happens to many in theſe countries: the eruptions principally infeſt the head, and when at the height an ichorous humour flows from them. In this ſtate they are too tender to admit of being touched, and the matter running down the hairs mats them together; the ſkin by degrees breaking, the ramifications of the capillary veſſels following the courſe of the hair, or prolonged out of the ſkin, are increaſed to a vaſt length.

No method of relief is known; for if the diſcharge be checked, or the veſſels cut off, the conſequence is an increaſe of more miſerable ſymptoms, and in the iſſue death. Sennertus ſays, when all the morbid matter is thrown out of the body the plicæ fall off ſpontaneouſly. He further obſerves, that the only ſafe practice in this caſe is, to ſolicit the peccant matter to the hairs, to which it naturally tends; and that this is beſt anſwered by lotions of bear's-breech. Some ſay that a decoction of the herb club-moſs, and its ſeeds, with which the head is to be waſhed, is a ſpecific.

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CLXVIII. ICTERUS, the JAUNDICE.
Genus XCI.

Icterus, *Lin.* 224. *Vog.* 306. *Boerh.* 918. *Junck.* 90.
Aurigo, *Sauv.* gen. 306. *Sag.* 132.
Cachexia icterica, *Hoffm.* III. 301.

Deſcription. The jaundice firſt ſhews itſelf by a liſtleſsneſs and want of appetite, the patient becomes dull, oppreſſed, and generally coſtive. Theſe ſymptoms have continued but a very ſhort time, when a yellow colour begins to diffuſe itſelf over the *tunica albuginea*, or white part of the eye, and the nails of the fingers; the urine becomes high-coloured, with a yellowiſh ſediment capable of tinging linen; the ſtools are whitiſh or grey. In ſome there is a moſt violent pain in the epigaſtric region, which is conſiderably increaſed after meals. Sometimes the patient hath a continual propenſity to ſleep; but in others there is too great watchfulneſs; and ſometimes the pain is ſo great, that tho' the patient be ſleepy he cannot compoſe himſelf to reſt. The pains come by fits; and all the women who have had the jaundice and born children, agree, that they are more violent than labour-pains. As the diſeaſe increaſes, the yellow colour becomes more and more deep; an itching is felt all over the ſkin; and even the internal membranes of the viſcera, the bones, and the brain itſelf, become tinged, as hath been ſhewn from diſſections, where the bones have been found tinged ſometimes for years after the jaundice hath been cured.

In like manner, all the ſecretions are affected with the yellow colour of the bile, which in this diſeaſe is diffuſed throughout the whole maſs of fluids. The ſaliva becomes yellow and bitter; the urine exceſſively high-coloured, in ſuch a manner as to appear almoſt black; nay, the blood itſelf is ſometimes ſaid to appear of a yellow colour when drawn from a vein; yet Dr Heberden ſays that he never ſaw the milk altered in its colour, even in caſes of very deep jaundice. In proceſs of time the blood begins to acquire a tendency to diſſolution and putrefaction; which is known by the patient's colour changing from a deep yellow to a black or dark yellow. Hæmorrhages enſue from various parts of the body, and the patients frequently die of an apoplexy; though in ſome the diſeaſe degenerates into an incurable dropſy; and there have not been wanting inſtances of ſome who have died of the dropſy after the jaundice itſelf had been totally removed.

Cauſes. As the jaundice conſiſts in a diffuſion of the bile throughout the whole ſyſtem, it thence follows, that whatever may favour this diffuſion is alſo to be reckoned among the cauſes of jaundice. Many diſputes have ariſen concerning the manner in which the bile is reſorbed into the blood; but it is now generally agreed that it is taken up by the lymphatics of the gall-bladder and biliary ducts. Hence, a jaundice may ariſe from any thing obſtructing the paſſage of the bile into the duodenum, or from any thing which alters the ſtate of the lymphatics in ſuch a manner as to make them capable of abſorbing the bile in its natural ſtate. Hence, the jaundice may ariſe from ſcirrhi of the liver or other viſcera preſſing upon the biliary ducts, and obſtructing the paſſage of the bile; from flatus diſtending the duodenum, and ſhutting up the entrance of the ductus communis choledochus into it; from the ſame orifice being plugged up by viſcid bile, or other ſordes: but by far the moſt frequent cauſe of jaundice is the formation of calculi. Theſe are found of almoſt all ſizes, from that of a ſmall pea to that of a walnut, or bigger; are of different colours; and ſometimes appear as if formed in the inward part by cryſtallization, but of lamellæ on the outer part; tho' ſometimes the outward part is covered with rough and ſhining cryſtals, while the inward part is lamellated. Theſe enter into the biliary ducts, and obſtruct them, cauſing a jaundice, with violent pain for ſome time; and which can be cured by no means till the ſtone is either paſſed entirely through the ductus communis, or returned into the gall-bladder. Sometimes, in the opinion of many celebrated phyſicians, the jaundice is occaſioned by ſpaſmodic conſtrictions of the biliary ducts; but this is denied by others, and it is not yet aſcertained whether theſe ducts are capable of being affected by ſpaſm or not, as the exiſtence of muſcular fibres in them hath not with certainty been diſcovered. It cannot, however, be denied that violent fits of paſſion have often produced jaundice, ſometimes temporary, but frequently permanent. This hath been by ſome deemed a ſufficient proof of the ſpaſmodic contraction of the ducts; but their opponents ſuppoſe, that the agitation occaſioned by the paſſion might puſh forward ſome biliary concretion into a narrow part of the duct, by which means a jaundice would certainly be produced, till the concretion was either driven backward or forward into the duodenum altogether.

In a very relaxed ſtate of the body there is alſo an abſorption of the bile, as in the yellow fever; and indeed in all putrid diſorders there is a kind of yellowiſh taint over the ſkin, though much leſs than in the true jaundice. The reaſon of this is, that in theſe diſorders there is uſually an increaſed ſecretion of bile, commonly of a thinner conſiſtence than in a healthy ſtate, while the orifices of the lymphatics are probably enlarged, and thus ready to abſorb a fluid ſomewhat thicker than what they ought to take up in a healthy ſtate; but theſe diſorders are of ſhort duration in compariſon with the real jaundice, which ſometimes laſts for many years.

It is obſervable, that women are more ſubject to jaundice than men, which probably ariſes from their more ſedentary life; for this, together with ſome of the depreſſing paſſions of the mind, are found to promote the acceſſion of the diſeaſe, if not abſolutely to produce it. Pregnant women alſo are frequently attacked by the jaundice, which goes off after their delivery.

Prognoſis. As jaundice may ariſe from many different cauſes, ſome of which cannot be diſcovered during the patient's life, the prognoſis muſt on this account be very uncertain. The only caſes which admit of a cure are thoſe depending upon biliary concretions, or obſtructions of the biliary ducts by viſcid bile; for the ſtones are ſeldom of ſuch a ſize but that the ducts will let them paſs through, though frequently not without extreme pain. Indeed this pain, though ſo violent, and almoſt intolerable to the ſick perſon, affords the beſt prognoſis; as the phyſician may readily aſſure his patient that there is great hope of his being relieved from it. The coming on of a gentle diarrhœa attended with bilious ſtools, together with the ceſſation of pain, are ſigns of the diſeaſe being cured. We are not, however, always to conclude, becauſe the diſeaſe is not attended with acute pain, that it is therefore incurable; for frequently the paſſage of a ſtone through the biliary ducts is accompanied only with a ſenſation of ſlight uneaſineſs.

Cure. When the jaundice ariſes from indurated ſwellings or ſcirrhi of the viſcera, it is abſolutely incurable; nevertheleſs, as theſe cannot always be diſcovered, the phyſician muſt proceed in every caſe of jaundice as if it aroſe from calculi. The indications here are, 1. To diſſolve the concretions; and, 2. To prevent their formation a ſecond time. But unhappily the medical art hath not yet afforded a ſolvent for biliary concretions. They cannot even be diſſolved when taken out of the body either by acids or alkalies, or any thing beſides a mixture of oil of turpentine and ſpirit of wine; and theſe ſubſtances are by far too irritating to be given in ſufficient quantity to affect a concretion in the biliary ducts. Boerhaave obſerves, that diſeaſes of the liver are much worſe to cure than thoſe in any other part of the body; becauſe of the difficulty there is in getting at the part affected, and the tedious and round-about paſſage the blood hath to it. The juice of common graſs hath indeed been recommended as a ſpecific in the jaundice, but on no very good foundation. Gliſſon obſerves, that black cattle are ſubject to biliary concretions when fed with hay or dried ſtraw in winter, but are cured by the ſucculent graſs in the ſpring; and Van Swieten tells a ſtrange ſtory of a man who cured himſelf of the jaundice by living almoſt entirely on graſs, of which he devoured ſuch quantities, that the farmers were wont to drive him out of their fields: but other practitioners have by no means found this in any degree effectual. The only method of cure now attempted in the jaundice is, to expel the calculus into the inteſtines; for which vomits and exerciſe are the principal medicines. The former are juſtly reckoned the moſt efficacious medicines, as they powerfully ſhake all the abdominal and thoracic viſcera; and thus tend to diſlodge any obſtructing matter that may be contained in them. But if there be a tendency to inflammation, vomits muſt not be exhibited till bleeding has been premiſed. We muſt alſo proceed with caution if the pain is very ſharp; for in all caſes where the diſeaſe is attended with violent pain, it will be neceſſary to allay it by opiates before the exhibition of an emetic. There is alſo danger, that, by a continued uſe of vomits, a ſtone which is too large to paſs, may be ſo impacted in the ducts, that it cannot even be returned into the gall-bladder, which would otherwiſe have happened. In all caſes therefore, if no relief follows the exhibition of the ſecond or third doſe, it will be prudent to forbear their farther uſe for ſome time.

Of all kinds of exerciſe, that of riding on horſeback is moſt to be depended upon in this diſeaſe. It operates in the ſame manner with vomits, namely, by the ſhake it gives to the viſcera; and therefore the cautions neceſſary to be obſerved in the uſe of vomits are alſo neceſſary to be obſerved in the uſe of riding. Cathartics alſo may be of ſervice, by cleanſing the *primæ viæ*, and ſoliciting a diſcharge of the bile into the inteſtines; but they muſt not be of too draſtic a nature, or they may produce incurable obſtructions, by bringing forward ſtones that are too large to paſs. Anodynes, the warm bath, and ſaponaceous medicines, are ſerviceable by their relaxing quality. Soap hath been ſuppoſed to do ſervice as a ſolvent; but this is now found to be a miſtake, and it acts in no other way than as a relaxant.

But when all means of relief fail, as in caſes of ſcirrhus, we can then only attempt to palliate the ſymptoms, and preſerve the patient's life as long as poſſible. This is beſt accompliſhed by diuretics; for thus a great quantity of bilious matter is evacuated, and the ſyſtem is freed from the bad conſequences which enſue on its ſtagnation in the habit. But even this is by no means equal to the common evacuation by ſtool; nor can all the attempts to ſupply the want of bile in the inteſtines, by bitters and other ſtomachics, reſtore the patient to his wonted appetite and vigour. If the pain be very violent, we muſt on all occaſions have recourſe to opiates; or if the blood hath acquired a tendency to diſſolution, it muſt be counteracted by proper antiſeptics.

If the diſeaſe goes off, its return muſt be prevented by a courſe of tonic medicines, particularly the Peruvian bark and antiſeptics: but we can by no means be certain that the jaundice will not return, and that at any imaginable interval; for there may be a number of ſtones in the gall-bladder, and though one hath paſſed, another may very quickly follow, and produce a new fit of jaundice; and thus ſome people have continued to be affected with the diſtemper, at ſhort intervals, during life.

In the Eaſt-Indies, mercury hath been lately recoummended as exceedingly efficacious in diſorders of the liver, eſpecially thoſe which follow intermitting and remitting fevers. Dr Monro, in his Obſervations on the means of preſerving the health of ſoldiers, acquaints us, that he has ſeen ſome icteric caſes which, he thought, received benefit from taking a few grains of *mercurius dulcis* at night, and a purge next morning; and this repeated two or three times a-week.

Infants are ſubject to a temporary jaundice, commonly called the *gum*, ſoon after birth, the cauſe of which is not well underſtood. It differs remarkably from the common jaundice; as, in the latter, the diſeaſe is firſt diſcoverable in the white of the eyes; but though the ſkin of infants in the gum is all over yellow, their eyes always remain clear. The diſorder goes off ſpontaneouſly, or by the uſe of a gentle purgative or two.

CLASS IV. LOCALES.

Vitia, *Sauv.* Claſs I. *Lin.* Cl. XI. *Vog.* Cl. X. *Sag.* Cl. I.

Plagæ, *Sag.* Cl. II.
Morbi organici Auctorum.

ORDER I. DYSÆSTHESIÆ.

Dyſæſtheſiæ, *Sauv.* Cl. VI. Ord. I. *Sag.* Cl. IX. Ord. I.

CLXXIX. CALIGO, the CATARACT.
454 Genus XCII.

Caligo, *Sauv.* gen. 153. *Vog.* 288. *Sag.* gen. 259.
Cataracta, *Lin.* 109.

A *cataract* is an obſtruction of the pupil, by the interpoſition of ſome opaque ſubſtance which either diminiſhes or totally extinguiſhes the ſight. It is generally an opacity in the cryſtalline humour. In a recent or beginning *cataract*, the ſame medicines are to be uſed as in the *gutta ſerena*; and they will ſometimes ſucceed. But when this does not happen, and the *cataract* becomes firm, it muſt be couched, or rather extracted; for which operation, ſee SURGERY.—Dr Buchan ſays he has reſolved a recent *cataract* by giving the patient ſome purges with calomel, keeping a poultice of freſh hemlock conſtantly upon the eye, and a perpetual bliſter on the neck.

455 CLXXX. AMAUROSIS, the GUTTA SERENA.
Genus XCIII.

Amauroſis, *Sauv.* gen. 155. *Lin.* 110. *Vog.* 238. *Sag.* gen. 261.
Amblyopia, *Lin.* 108. *Vog.* 236.

A *gutta ſerena* is an abolition of the ſight without any apparent cauſe or fault in the eyes. When it is owing to a decay or waſting of the optic nerve, it does not admit of a cure; but when it proceeds from a compreſſion of the nerves by redundant humours, theſe may be in ſome meaſure drained off, and the patient relieved. For this purpoſe, the body muſt be kept open with the laxative mercurial pills. If the patient be young, and of a ſanguine habit, he may be bled. Cupping with ſcarifications on the back part of the head will likewiſe be of uſe. A running at the noſe may be promoted by volatile ſalts, ſtimulating powders, &c. But the moſt likely means of relieving the patient, are iſſues or bliſters kept open for a long time on the back part of the head, behind the ears, or on the neck; which have been known to reſtore ſight even after it had been for a conſiderable time loſt.—Should theſe fail, recourſe muſt be had to a mercurial ſalivation; or, what will perhaps anſwer the purpoſe better, 12 grains of the corroſive ſublimate of mercury may be diſſolved in an Engliſh pint and a half of brandy, and a table-ſpoonful of it taken twice a-day, drinking half a pint of the decoction of ſarſaparilla after it.—Of late electricity hath been much celebrated as efficacious, when no other thing could do ſervice. See below on *Electricity*.

In the amauroſis, Dr Porterfield obſerves, that it is of the utmoſt conſequence to know of how long ſtanding the diſeaſe has been; which is not always eaſily done if one eye only is affected. This is a very eſſential point; becauſe an amauroſis of long ſtanding is altogether incurable. Mr Boyle mentions the caſe of a man who had a cataract for ſeveral years without knowing it himſelf, though others did. He diſcovered it at laſt by happening to rub his ſound eye, and was ſurpriſed to find himſelf in the dark. When a perſon therefore has a gutta ſerena only in one of the eyes, he may think that the eye was but lately loſt, though perhaps it hath been ſo for years before. On the other hand, he may imagine that a recent diſeaſe of this kind is really of long ſtanding. But by inquiring at what time he firſt became ſubject to miſtakes in all actions that require the diſtance to be exactly diſtinguiſhed, as in pouring liquor into a glaſs, ſnuffing a candle, threading a needle, we may diſcover the age of the diſeaſe, and thence be aſſiſted to form a more juſt prognoſtic with reſpect to its cure. Our author gives an inſtance of his conjecturing in this manner concerning the caſe of a young lady who had diſcovered a loſs of ſight in one of her eyes only the day before. The diſeaſe was thought to be of long ſtanding; but as the Doctor found that ſhe had only been ſubject to miſtakes of the kind abovementioned for about a month, he drew a favourable prognoſtic, and the diſeaſe was cured.

CLXXXI. DYSOPIA, or DEPRAVED VISION. 456
Genus XCIV.

Amblyopia, *Sauv.* gen. 154. *Sag.* 258.

THERE are ſeveral ſpecies referable to this genus, *viz.*

1. *Dyſopia* TENEBRARUM; 2. *Dyſopia* LUMINIS.—The former of theſe is properly the *nyctalops*, or night-blindneſs, of ancient authors. But amongſt both the Greek and Latin writers, there is a direct oppoſition in the uſe of this word *nyctalops*; ſome ſaying it ſignifies thoſe who *cannot* ſee by night, and others expreſs by it thoſe who cannot ſee during the day, but during the *night*.—The difference in the account of this diſorder, as to its appearing in the night or in the day, is reconciled by conſidering it as of the intermitting kind: the difference then will conſiſt in the different times of its approach; ſo may be called *periodical blindneſs*. Intermittents appearing in a variety of modes, and the ſucceſs of the bark in ſome inſtances of this ſort of blindneſs, both favour the opinion of its being an intermittent diſeaſe of the eyes. See *Lond. Med. Tranſ.* Vol. I. and *Lond. Med. Obſ. and Inquir.* Vol. I. p. 111, &c.

3. *Dyſopia* DISSITORUM, (*Preſbytopia*;) or the defect of thoſe who *ſee only at too great a diſtance*. 4. *Dyſopia* PROXIMORUM, (*Myopia*,) or the defect of thoſe who are *ſhortſighted*.—Theſe are diſorders which depend on the original ſtructure or figure of the eye, therefore admit of no cure. The inconveniencies ariſing from them may however be, in ſome meaſure, remedied by the help of proper glaſſes. The former requires the aid of a concave, and the latter of a convex glaſs.

5. *Dyſopia* LATERALIS; a defect by which objects cannot be viewed diſtinctly but in an oblique poſition.—Thus, in viewing an object placed on the left, they turn their face and eye to the right, and *vice verſa*.—This diſorder may proceed from various cauſes both natural and accidental, ſome of which admit of no remedy,

medy. If it is occaſioned by a partial adheſion of the eye-lids, the hand of the ſurgeon is required: if by a tranſverſe poſition of the pupil, ſome mechanical contrivance is neceſſary; (ſee *Strabiſmus*, below.) If it is owing to an *albugo* covering part of the pupil, or to a film rendering a portion of the cornea opaque, the remedy for theſe affections are to be here applied.

457 CLXXXII. PSEUDOBLEPSIS, or IMAGINARY VISION of Objects which do not exiſt. Genus XCV.

Suffuſio, *Sauv.* gen. 217. *Sag.* 329.
Phantaſma, *Lin.* 73. *Sag.* 289.

THIS very often takes place when the body is diſeaſed, and then the patient is ſaid to be delirious. Sometimes, however, in theſe caſes, it does not amount to delirium; but the perſon imagines he ſees gnats or other inſects flying before his eyes; or ſometimes, that every thing he looks at hath black ſpots in it, which laſt is a very dangerous ſign. Sometimes alſo ſparks of fire appear before the eyes; which appearances are not to be diſregarded, as they frequently precede apoplexy or epilepſy. Sometimes, however, people have been affected in this manner during life, without feeling any other inconvenience. Such a diſorder can rarely if ever be cured.

458 CLXXXIII. DYSECOEA, DEAFNESS, or *Difficulty of Hearing*. Genus XCVI.

459 CLXXXIV. PARACUSIS, or *Depravation of* HEARING. Genus XCVII.

Paracuſis, *Sauv.* gen. 159. *Sag.* 265.
Syrigmus, *Sauv.* gen. 219. *Sag.* 231.

THE functions of the ear may be injured by wounds, ulcers, or any thing that hurts its fabric. The hearing may likewiſe be hurt by exceſſive noiſe; violent colds in the head; fevers; hard wax, or other ſubſtances ſticking in the cavity of the ear; too great a degree of moiſture or dryneſs of the ear. Deafneſs is very often the effect of old age, and is incident to moſt people in the decline of life. Sometimes it is owing to an original fault in the ſtructure or formation of the ear itſelf. When this is the caſe it admits of no cure; and the unhappy perſon not only continues deaf, but generally likewiſe dumb, for life.

When deafneſs is the effect of wounds or ulcers of the ears, or of old age, it is not eaſily removed. When it proceeds from cold of the head, the patient muſt be careful to keep his head warm, eſpecially in the night; he ſhould likewiſe take ſome gentle purges, and keep his feet warm, and bathe them frequently in lukewarm water at bed-time. When deafneſs is the effect of a fever, it generally goes off after the patient recovers. If it proceeds from dry wax ſticking in the ears, it may be ſoftened by dropping oil into them; afterwards they muſt be ſyringed with warm milk and water.

If deafneſs proceeds from dryneſs of the ears, which may be known by looking into them, half an ounce of the oil of ſweet almonds, and the ſame quantity of liquid apodeldoch, or tincture of aſafœtida, may be mixed together, and a few drops of it put into the ear every night at bed-time, ſtopping them afterwards with a little wool or cotton. Some, inſtead of oil, put a ſmall ſlice of the fat of bacon into each ear, which is ſaid to anſwer the purpoſe very well.—When the ears abound with moiſture, it may be drained off by an iſſue or ſeton, which ſhould be made as near the affected parts as poſſible.

Some, for the cure of deafneſs, recommend the gall of an eel mixed with ſpirit of wine, to be dropped into the ear; others, equal parts of Hungary-water and ſpirit of lavender. Etmuller extols amber and muſk; and Brookes ſays, he has often known hardneſs of hearing cured by putting a grain or two of muſk into the ear with cotton-wool. But theſe and other applications muſt be varied according to the cauſe of the diſorder.

Though ſuch applications may ſometimes be of ſervice, yet they much oftener fail, and frequently they do hurt. Neither the eyes nor ears ought to be tampered with; they are tender organs, and require a very delicate touch. For this reaſon, what we would chiefly recommend in deafneſs, is to keep the head warm. From whatever cauſe the diſorder proceeds, this is always proper; and more benefit has often been derived from it alone, in the moſt obſtinate caſes of deafneſs, than from any medicines whatever.

CLXXXV. ANOSMIA, or *Defect of* SMELLING. Genus XCVIII. 460

Anoſmia, *Sauv.* gen. 156. *Lin.* 113. *Vog.* 248. *Sag.* 262.

Cauſes. THE ſenſe of ſmelling may be diminiſhed or deſtroyed by diſeaſes; as, the moiſture, dryneſs, inflammation or ſuppuration of that membrane which lines the inſide of the noſe, commonly called the *olfactory membrane*; the compreſſion of the nerves which ſupply this membrane, or ſome fault in the brain itſelf at their origin. A defect, or too great a degree of ſolidity, of the ſmall ſpungy bones of the upper jaw, the caverns of the forehead, &c. may likewiſe impair the ſenſe of ſmelling. It may alſo be injured by a collection of fetid matter in thoſe caverns, which keeps conſtantly exhaling from them. Few things are more hurtful to the ſenſe of ſmelling than taking great quantities of ſnuff.

Cure. When the noſe abounds with moiſture, after gentle evacuations, ſuch things as tend to take off irritation and coagulate the thin ſharp ſerum may be applied; as the oil of aniſe mixed with fine flour, camphire diſſolved in oil of almonds, &c. The vapours of amber, frankincenſe, gum-maſtic, and benjamin, may likewiſe be received into the noſe and mouth. For moiſtening the mucus when it is too dry, ſome recommend ſnuff made of the leaves of marjoram, mixed with oil of amber, marjoram, and aniſeed; or a ſternutatory of calcined white vitriol, 12 grains of which may be mixed with two ounces of marjoram-water and filtrated. The ſteam or vapour of vinegar upon hot iron received up the noſtrils is likewiſe of uſe for ſoftening the mucus, opening obſtructions, &c.

If there be an ulcer in the noſe, it ought to be dreſſed with ſome emollient ointment, to which, if the pain be very great, a little laudanum may be added. If it be a venereal ulcer, it is not to be cured without mercury. In that caſe, the ſolution of the corroſive ſublimate in brandy may be taken, as directed in the gutta ſerena. The ulcer ought likewiſe to be waſhed with it; and the fumes of cinnabar may be received up the noſtrils.

If there be reaſon to ſuſpect that the nerves which ſupply the organs of ſmelling are inert or want ſtimulating, volatile ſalts, ſtrong ſnuffs, and other things which occaſion ſneezing, may be applied to the noſe. The forehead may likewiſe be anointed with balſam of Peru, to which may be added a little of the oil of amber.

461 CLXXXVI. AGHEUSTIA, or *Defect of* Tasting. Genus XCIX.

Ageuſtia, *Sauv.* gen. 157. *Sag.* 263.
Ageuſtia, *Lin.* 114.
Apogeuſis, *Vog.* 449.

Cauſe. The taſte may be diminiſhed by cruſts, filth, mucus, aphthæ, pellicles, warts, &c. covering the tongue: it may be depraved by a fault of the ſaliva, which, being diſcharged into the mouth, gives the ſame ſenſation as if the food which the perſon takes had really a bad taſte; or it may be entirely deſtroyed by injuries done to the nerves of the tongue and palate. Few things prove more hurtful either to the ſenſe of taſting or ſmelling than obſtinate colds, eſpecially thoſe which affect the head.

Cure. When the taſte is diminiſhed by filth, mucus, &c. the tongue ought to be ſcraped, and frequently waſhed with a mixture of water, vinegar, and honey, or ſome other detergent. When the ſaliva is vitiated, which ſeldom happens unleſs in fevers or other diſeaſes, the curing of the diſorder is the cure of this ſymptom. To relieve it, however, in the mean time, the following things may be of uſe: if there be a bitter taſte, it may be taken away by vomits, purges, and other things which evacuate bile: what is called a *nidorous taſte*, ariſing from putrid humours, is corrected by the juice of citrons, oranges, and other acids: a ſalt taſte is cured by plentiful dilution with watery liquors: an acid taſte is deſtroyed by abſorbents and alkaline ſalts, as powder of oyſter-ſhells, ſalt of wormwood, &c.

When the ſenſibility of the nerves which ſupply the organs of taſte is diminiſhed, the chewing of horſe-radiſh, or other ſtimulating ſubſtances, will help to recover it.

462 CLXXXVII. ANÆSTHÆSIA, or *Defect of the Senſe of* Feeling. Genus C.

Sauv. gen. 161. *Lin.* 218. *Vog.* 267.

Cauſes, &c. This ſenſe may be hurt by any thing that obſtructs the nervous influence, or prevents its being regularly conveyed to the organs of touching, as preſſure, extreme cold, &c. It may likewiſe be hurt by too great a degree of ſenſibility, when the nerve is not ſufficiently covered by the cuticle or ſcarf-ſkin, or where there is too great a tenſion of it, or it is too delicate. Whatever diſorders the functions of the brain and nerves, hurts the ſenſe of touching. Hence it appears to proceed from the ſame general cauſes as palſy and apoplexy, and requires nearly the ſame method of treatment.

In a *ſtupor*, or defect of touching, which ariſes from an obſtruction of the cutaneous nerves, the patient muſt firſt be purged; afterwards ſuch medicines as excite the action of the nerves, or ſtimulate the ſyſtem, may be uſed. For this purpoſe the ſpirit of hartſhorn, *ſal volatile oleoſum*, horſe-radiſh, &c. may be taken inwardly; the diſordered parts, at the ſame time, may be frequently rubbed with freſh nettles or ſpirit of *ſal ammoniac*. Bliſters and ſinapiſms applied to the parts will likewiſe be of uſe; as alſo warm bathing, eſpecially in the natural hot baths.

Order II. DYSOREXIA.

Sect. I. *APPETITUS ERRONEI.*

Moroſitates, *Sauv.* Claſs VIII. Order II. *Sag.* Claſs XIII. Order II.
Pathetici, *Lin.* Claſs V. Order II.
Hyperæſtheſes, *Vog.* Claſs VII.

CLXXXVIII. BULIMIA, Insatiable Hunger, or *Canine Appetite.* Genus CI. 463

Bulimia, *Sauv.* gen. 223. *Lin.* 79. *Sag.* gen. 335.
Bulimus, *Vog.* 296.
Addephagia, *Vog.* 297.
Cynorexia, *Vog.* 298.

This diſeaſe is commonly owing to ſome fault in the ſtomach or viſcera, by which the aliments are thrown out too ſoon; and unleſs the perſon is indulged in his deſire for eating, he frequently falls into fainting fits. Sometimes it is attended with ſuch a ſtate of the ſtomach that the aliment is rejected by vomit almoſt immediately after being ſwallowed; after which, the appetite for food returns as violent as ever. Such things are proper for the cure as may enable the ſtomach to perform its office: chalybeates and other tonics will generally be proper. In ſome, brandy drunk in a morning hath been uſeful; and frequent ſmoking tobacco hath relieved ſome. Oil, fat meat, pork, opiates, and in ſhort every thing which in a ſound perſon would be moſt apt to pall the appetite, may alſo be uſed as temporary expedients, but cannot be expected to perform a cure. In ſome the pylorus has been found too large; in which caſe the diſeaſe muſt have been incurable.

CLXXXIX. POLYDIPSIA, Excessive Thirst. Genus CII. 464

Polydipſia, *Sauv.* gen. 224. *Lin.* 80. *Vog.* 275. *Sag.* 336.

This is almoſt always ſmptomatic; and occurs in fever, dropſy, fluxes, &c.

CXC. PICA, Longing, or *Falſe Appetite.* Genus CIII. 465

Pica, *Sauv.* gen. 222. *Sag.* 334.
Citta, *Lin.* 78.
Allotriophagia, *Vog.* 299.
Malacia, *Vog.* 300.

The pica is alſo ſymptomatic of chloroſis, pregnancy, &c. See the article Longing in the order of the Alphabet.

CXCI. SATYRIASIS. Genus CIV. 466

Satyriaſis, *Sauv.* gen. 228. *Lin.* 81. *Sag.* 340.

Satyriaſis is a violent deſire of venery in men, even ſo that reaſon is depraved by it. The pulſe is quick, and the breathing ſhort; the patient is ſleepleſs, thirſty, and loathes his food; the urine is evacuated with difficulty, and a fever ſoon comes on. The nature and cure are much the ſame as are thoſe of the following diſeaſe.

467 CXCII. NYMPHOMANIA, or Furor Uterinus.
Genus CV.

Nymphomania, *Sauv.* gen. 229. *Sag.* 341.
Satyriaſis, *Lin.* 81.

The *furor uterinus* is a ſpecies of madneſs, or an high degree of hyſterics. Its immediate cauſe is a preternatural irritability of the uterus and pudenda of women (to whom the diſorder is proper), or an unuſual acrimony of the fluids in theſe parts.—Its preſence is known by the wanton behaviour of the patient: ſhe ſpeaks and acts with unreſtrained obſcenity; and as the diſorder increaſes, ſhe ſcolds, cries, and laughs, by turns. While reaſon is retained ſhe is ſilent, and ſeems melancholy, but her eyes diſcover an unuſual wantonneſs. The ſymptoms are better and worſe, until the greateſt degree of the diſorder approaches, and then by every word and action her condition is too manifeſt.—In the beginning a cure may be hoped for; but if it continues, it degenerates into a mania.—In order to the cure, bleed in proportion to the patient's ſtrength. Camphor in doſes of 15 or 20 grains, with nitre, and ſmall doſes of the *tinct. Theb.* ſhould be repeated at proper intervals. Some venture to give the *ſac. ſaturn.* in doſes of three to five grains. Beſides bleeding, cooling purges ſhould alſo be repeated in proportion to the violence of ſymptoms, &c. What is uſeful in maniacal and hypochondriac diſorders, is alſo uſeful here, regard being had to ſanguine or phlegmatic habits, &c. When delirium is at the height, give opiates to compoſe; and uſe the ſame method as in a phrenitis or a mania. Injections of barley-water, with a ſmall quantity of hemlock-juice, according to Riverius, may be frequently thrown up into the uterus: this is called *ſpecific;* but matrimony, if poſſible, ſhould be preferred.

468 CXCIII. NOSTALGIA, *a Vehement* Desire *of* revisiting *one's* Country. Genus CVI.

Noſtalgia, *Sauv.* gen. 226. *Lin.* 83. *Sag.* 338.

This is to be reckoned a ſpecies of melancholy.

Sect. II. *APPETITUS DEFICIENTES.*

Anepithymiæ. *Sauv.* Claſs VI. Ord. II. *Sag.* IX. Ord. II.
Privativi, *Lin.* Claſs VI. Order III.
Adynamiæ, *Vog.* Claſs VI.

469 CXCIV. ANOREXIA, *Want of* Appetite.
Genus CVII.

Anorexia, *Sauv.* gen. 162. *Lin.* 116. *Vog.* 279. *Sag.* 268.

The anorexia is ſymptomatic of almoſt all diſeaſes, but ſeldom appears as a primary. See Anorexia in the order of the alphabet.

470 CXCV. ADIPSIA, or *Want of* Thirst.
Genus CVIII.

Adipſia, *Sauv.* gen. 163. *Lin.* 117. *Vog.* 281. *Sag.* 269.

This by Dr Cullen is reckoned to be always ſymptomatic of ſome diſtemper affecting the *ſenſorium commune.*

471 CXCVI. ANAPHRODISIA, *Impotence to* Venery.
Genus CIX.

Anaphrodiſia, *Sauv.* gen. 164. *Sag.* 270.
Alechnia, *Lin.* 119.
Ageneſia, *Vog.* 283.

For this, ſee the article **Impotence** in the alphabetical order.

Order III. DYSCINESIÆ.

472 CXCVII. APHONIA, or *Loſs of* Voice.
Genus CX.

Aphonia, *Sauv.* gen. 166. *Lin.* 115. *Vog.* 253. *Sag.* 272.

The loſs of voice may proceed from various cauſes. If one of the recurrent nerves, which are formed by the *par vagum* and the *nervus acceſſorius,* and reach the larynx, is cut, the perſon is capable of only as it were a half-pronunciation; but if both are cut, the ſpeech and voice are both loſt. The loſs of ſpeech happening in hyſteric patients is alſo called *aphonia;* but more properly that loſs of ſpeech is thus named which depends on ſome fault of the tongue.

Seeing that the motion of any part is deſtroyed, or leſſened at leaſt, by the interception of the nervous fluid in its paſſage thither, and that the nerves deſtined for the motion of the tongue ariſe principally from the fifth pair, it appears that the ſeat of this diſorder is in the ſaid fifth pair of nerves, and that the immediate cauſe is a diminution or total deſtruction of the nervous fluid through them. Hence a palſy of the tongue, which is either antecedent or ſubſequent to hemiplectic or apoplectic diſorders, demand our utmoſt attention.

If an aphonia appears alone, it generally beſpeaks an approaching hemiplexy or apoplexy; but if it ſucceed theſe diſorders, and is complicated with a weak memory and a ſluggiſhneſs of the mental powers, it threatens their return. That aphony uſually terminates the beſt, which proceeds from a ſtagnation of ſerous humours compreſſing the branches of the fifth pair of nerves, which run to the tongue; but it is no leſs afflictive to the patient, and is very obſtinate of cure.

Other cauſes of this diſorder are, the ſtriking in of eruptions on the ſkin, a congeſtion of blood in the fauces and tongue, obſtructed periodical evacuations in plethoric habits, ſpaſmodic affections, worms, a crumb of bread falling into the larynx, fear, too free a uſe of ſpirituous liquors; alſo whatever deſtroys the ligaments which go from the arytænoid to the thyroid cartilages, will deſtroy the voice.

The *prognoſtics* vary according to the cauſe or cauſes. That ſpecies which is owing immediately to ſpaſms, ſoon gives way on the removal of them. If a palſy of the tongue is the cauſe, it is very apt to return, if relieved, but often continues incurable.

In order to the *cure,* endeavour firſt to remove whatever obſtructs the influx of the nervous fluid into the tongue, and ſecondly to ſtrengthen the weak parts. Theſe general intentions, in all caſes, being regarded, the particular cauſes muſt be removed as follows.

If worms are the cauſe, antiſpaſmodics give preſent relief, but the cure depends on the deſtruction of theſe vermin.—In caſe of a congeſtion of blood about the head, bleeding and nitrous antiſpaſmodics are to be uſed.—That ſpecies of aphony which remains after the ſhock of an hemiplexy or apoplexy, requires bliſters to be applied to the nape of the neck; other means are rarely effectual.—If ſpaſmodic conſtrictions about the fauces and tongue are the cauſe, external paregorics are of the greateſt ſervice, anodyne antiſpaſmodics may be laid under the tongue, and the feet bathed in warm water; carminative clyſters alſo are uſeful.—When a palſy of the tongue produces this complaint, evacuations, according to the patient's habit, muſt be made, and warm nervous medicines muſt be externally applied, and internally adminiſtered; bliſters alſo ſhould be placed between the ſhoulders.—In caſe of repelled cuticular eruptions, ſudorifics ſhould be given, and the patient's drink ſhould be warm. The *ſp. C. C. ſuccin.* or the *vin. antim.* may be mixed with *balſ. traumat.* or with the *balſ. Peruv.* and given, at proper diſtances of time, in the patient's drink, or on a lump of ſugar.—Sometimes the ſerum flows ſo rapidly to the fauces and adjacent parts, in a ſalivation, as to deprive the patient of all power to ſpeak; in this caſe diaphoretics and laxatives, with a forbearance of all mercurials, are the ſpeedieſt remedies.

473 CXCVIII. MUTITAS, DUMBNESS. Genus CXI.

Mutitas, *Sauv.* gen. 165. *Vog.* 257. *Sag.* 271.

DUMB people are generally born deaf; in which caſe the diſtemper is incurable by medicine: though even ſuch people may be taught not only to read and write, but alſo to ſpeak and to underſtand what others ſay to them *. When it proceeds from a defect of any of the organs neceſſary for ſpeech, the tongue for inſtance, it is alſo incurable; but if it ariſes from a palſy, the medicines applicable in that caſe will ſometimes reſtore the ſpeech.

474 CXCIX. PARAPHONIA, or *Change in the Sound of the* VOICE. Genus CXII.

Paraphonia, *Sauv.* gen. 168.
Cacophonia, *Sag.* 274.
Raucedo, *Lin.* 146.
Raucitas, *Vog.* 252.
Aſaphia, &c. *Vog.* 250, 251, 254, 255, 256.

THE voice may be changed from various cauſes. In males it becomes much more harſh about the time of puberty; but this can by no means be reckoned a diſeaſe. In others it proceeds from a catarrh, or what we call a *cold;* it ariſes alſo from affections of the noſe and palate, as polypi, ulcers, &c. in which caſe the cure belongs properly to SURGERY. In ſome it ariſes from a laxity of the *velum pendulum palati,* and glottis, which makes a kind of ſnoring noiſe during inſpiration. The cure of this laſt caſe is to be attempted by tonics and ſuch other medicines as are of ſervice in diſeaſes attended with laxity.

CC. PSELLISMUS, or DEFECT *in* PRONUNCIATION. Genus CXIII. 475

Pſelliſmus, *Sauv.* gen. 167. *Lin.* 138. *Sag.* 273.
Traulotis, &c. *Vog.* 258, 259, 260, 261.

OF this diſeaſe (if ſuch it may be called), there are many different kinds. Some cannot pronounce the letter S; others labour under the ſame difficulty with R, L, M, K, &c.; while ſome who can with ſufficient eaſe pronounce all the letters, yet repeat their words, or the firſt ſyllables of them, in ſuch a ſtrange manner, that they can ſcarce be underſtood. Very frequently theſe defects ariſe entirely from habit, and may then be got the better of by thoſe who have the reſolution to attempt it; as we are told that Demoſthenes the celebrated orator got the better of a habit of ſtammering, by declaiming with pebbles in his mouth. Sometimes, however, pronunciation may be impeded by a wrong conformation of the tongue, or organs of ſpeech; and then it cannot by any pains whatever be totally removed.

CCII. STRABISMUS, or SQUINTING. Genus CXIV. 476

Strabiſmus, *Sauv.* gen. 116. *Lin.* 304. *Vog.* 514. *Sag.* 222.

Deſcription. THIS diſeaſe ſhews itſelf by an uncommon contraction of the muſcles of the eye; whereby the axis of the pupil is drawn towards the noſe, temples, forehead, or cheeks, ſo that the perſon cannot behold an object directly.

Cauſes, Prognoſis, &c. I. This diſeaſe may proceed from cuſtom and habit; while in the eye itſelf, or in its muſcles, nothing is preternatural or defective.

Thus children, by imitating thoſe that ſquint, and infants, by having many agreeable objects preſented to them at once, which invite them to turn one eye to one and the other eye to another, do frequently contract a habit of moving their eyes differently, which afterwards they cannot ſo eaſily correct. Infants likewiſe get a cuſtom of ſquinting, by being placed obliquely towards a candle, window, or any other agreeable object capable of attracting their ſight: for though, to ſee the object, they may at firſt turn both eyes towards it; yet, becauſe ſuch an oblique ſituation is painful and laborious, eſpecially to the moſt diſtant eye, they ſoon relax one of the eyes, and content themſelves with examining it with the eye that is next it; whence ariſes a diverſity of ſituation, and a habit of moving the eyes differently.

In this caſe, which may admit of a cure if not too much confirmed, it is evident, that objects will be ſeen in the ſame place by both eyes, and therefore muſt appear ſingle as to other men; but becauſe, in the eye that ſquints, the image of the object to which the other eye is directed falls not on the moſt ſenſible and delicate part of the retina, which is naturally in the axis of the eye, it is eaſy to ſee that it muſt be but faintly perceived by this eye. Hence it is, that while they are attentive in viewing any object, if the hand be brought before the other eye, this object will be but obſcurely ſeen, till the eye change its ſituation, and have its axis directed to it; which change of ſituation is indeed very eaſy for them, becauſe it depends on the muſcles of the eyes, whoſe functions are entire; but, by reaſon of the habit they have contracted of moving their eyes differently, the other eye is at the ſame time frequently turned aſide, ſo that only one at a time is directed to the object.

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* See the article DUMBNESS.

That all this may be the better perceived; for an object, cauſe them to look at the image of the upper-part of your noſe in a plain mirror, while you ſtand directly behind them, to obſerve the direction of their eyes.

II. The *ſtrabiſmus* may proceed from a fault in the firſt conformation, by which the moſt delicate and ſenſible part of the retina is removed from its natural ſituation, which is directly oppoſite to the pupil, and is placed a little to a ſide of the axis of the eye; which obliges them to turn away the eye from the object they would view, that its picture may fall on this moſt ſenſible part of the organ.

When this is the caſe, the diſeaſe is altogether incurable, and the phænomena that ariſe therefrom differ in nothing from the phænomena of the former caſe, excepting only that here, 1. The object to which the eye is not directed will be beſt ſeen; which is the reverſe of what happens when this diſeaſe ariſes barely from habit and cuſtom. 2. No object will appear altogether clear and diſtinct: for all objects to which the eye is directed, by having their image painted on the retina at the axis of the eye, where it is not very ſenſible, will be but obſcurely ſeen; and objects that are placed ſo far to a ſide of the optic axis as is neceſſary for making their image fall on the moſt ſenſible and delicate part of the retina, muſt appear a little confuſed, becauſe the ſeveral pencils of rays that come therefrom fall too obliquely on the cryſtalline to be accurately collected in ſo many diſtinct points of the retina; though it muſt be acknowledged, that this confuſion will, for the moſt part, be ſo ſmall as to eſcape unobſerved.

III. This diſeaſe may proceed from an oblique poſition of the cryſtalline, where the rays that come directly to the eye from an object, and that ought to converge to the point of the retina, which is in the axis of the eye, are, by reaſon of the obliquity of the cryſtalline, made to converge to another point on that ſide of the viſual axis where the cryſtalline is moſt elevated; and therefore the object is but obſcurely ſeen, becauſe its image falls not on the retina at the axis of the eye, where it is moſt ſenſible: But the rays that fall obliquely on the eye, will, after refraction, converge to this moſt ſenſible part of the retina; and, by converging there, muſt impreſs the mind with a clearer idea of the object from whence they came. It is for this reaſon that the eye never moves uniformly with the other, but turns away from the object it would view, being attentive to the object to which it is not directed. When this is the caſe, it is in vain to expect any good from medicine.

The ſymptoms that naturally ariſe from it are, 1. The object to which the eye is directed will be but faintly ſeen, becauſe its image falls on the retina where it is not very ſenſible. 2. The object to which the eye is not directed, by having its image painted on the retina at the axis of the eye, will be clearly perceived. But, 3. This ſame object muſt appear ſomewhat indiſtinct, becauſe the pencils of rays that flow from it are not accurately collected in ſo many diſtinct points in the retina, by reaſon of their oblique incidence on the cryſtalline. And, 4. It muſt be ſeen, not in its proper place, but thence tranſlated to ſome other place ſituated in the axis of viſion. And, 5. Being thus tranſlated from its true place, where it is ſeen by the other eye that does not ſquint, it muſt neceſſarily appear double; and the diſtance between the places of its appearance will be ſtill greater, if the cryſtalline of the other eye incline to the contrary ſide.

IV. This diſeaſe may ariſe from an oblique poſition of the cornea; which, in this caſe, is generally more arched and prominent than what it is naturally.

When the eye has this conformation, no object to which it is directed can be clearly ſeen, becauſe its image falls not on the retina at the axis of the eye; and therefore the eye turns aſide from the object it would view, that its image may fall on the moſt ſenſible part of the retina.

When the ſtrabiſmus proceeds from this cauſe, the prognoſtic and the phenomena that attend it will be much the ſame as in the caſe immediately preceding; from which nevertheleſs it may be diſtinguiſhed by the obliquity of the cornea, which is manifeſt to the ſenſes; and if the cornea be alſo more arched and prominent than what it is naturally, which is commonly the caſe, the eye will alſo be ſhort-ſighted.

V. This want of uniformity in the motions of our eyes, may ariſe from a defect, or any great weakneſs or imperfection, in the ſight of both or either of the eyes; and this, according to Dr Porterfield, is the moſt common cauſe of this diſeaſe. The prognoſtic in this caſe is the ſame with that of the diſeaſe from which it proceeds.

VI. Another cauſe from which the ſtrabiſmus may proceed, lies in the muſcles that move the eye. When any of thoſe muſcles are too ſhort or too long, too tenſe or too lax, or are ſeized with a ſpaſm or paralyſis, their equilibrium will be deſtroyed, and the eye will be turned towards or from that ſide where the muſcles are faulty.

In this caſe, the diſeaſe frequently yields to medicine, and therefore admits of a favourable prognoſtic; excepting only when, by a fault in the firſt conformation, any of the muſcles are longer or ſhorter than their antagoniſt; in which caſe, if ever it ſhould happen, no medicine can be of any value.

As to what concerns the optical phenomena, they are the ſame here as in caſe firſt: only when the diſeaſe commences not till, by cuſtom and habit, the uniform motion of the eyes has been rendered neceſſary, all objects do for ſome time appear double; but in time they appear ſingle.

Laſtly, This want of uniformity in the motions of our eyes, may proceed from a preternatural adheſion or attachment to the eye-lids: of this we have an inſtance in Langius. And that the ſame thing may alſo be occaſioned by a tumour of any kind within the orbit, preſſing the eye aſide, and reſtraining it from following the motions of the other, is ſo evident, that inſtances need not be brought to prove it. Here alſo the caſe may admit of a favourable prognoſtic;

and as for what concerns the optical phenomena, they muſt be the ſame as in the caſe immediately preceding.

Cure. This, in confirmed caſes, is to be effected by mechanical contrivances, by which the perſon may be obliged to look ſtraight upon objects, or not ſee them at all; or at leaſt that he may ſee with uneaſineſs and confuſedly when he ſquints. In the 68th volume of ths Philoſophical Tranſactions we have an account of a confirmed caſe of ſquinting of a very uncommon kind. The patient was a boy of five years old, and viewed every object which was preſented to him with but one eye at a time. If the object was preſented on his right ſide, he viewed it with his left eye; and if it was preſented on his left ſide, he viewed it with his right eye. He turned the pupil of that eye which was on the ſame ſide with the object in ſuch a direction that the image of the object might fall on that part of the bottom of the eye where the optic nerve enters it. When an object was held directly before him, he turned his head a little to one ſide, and obſerved it with but one eye, viz. that moſt diſtant from the object, turning away the other in the manner above deſcribed; and when he became tired of obſerving it with that eye, he turned his head the contrary way, and obſerved it with the other eye alone, with equal facility; but never turned the axis of both eyes on it at the ſame time. He ſaw letters which were written on bits of paper, ſo as to name them with equal eaſe, and at equal diſtances, with one eye as with the other. There was no perceptible difference in the diameters of the iriſes, nor in the contractility of them after having covered his eyes from the light. Theſe obſervations were carefully made by writing ſingle letters on ſhreds of paper, and laying wagers with the child that he could not read them when they were preſented at certain diſtances and in certain directions.

As from theſe circumſtances it appeared that there was no defect in either eye, which is frequently the caſe with perſons who ſquint, and hence that the diſeaſe was ſimply a depraved habit of moving his eyes, the diſeaſe ſeemed capable of a cure. A paper gnomen was made for this purpoſe, and fixed to a cap; and when this artificial noſe was placed over his real noſe, ſo as to project an inch between his eyes, the child rather than turn his head ſo far to look at oblique objects, immediately began to view them with that eye which was next to them. But, having the misfortune to loſe his father ſoon after this method was begun to be followed, the child was neglected for ſix years, during which time the habit was confirmed in ſuch a manner as ſeemed to leave little room to hope for a cure. The ſame phyſician, however, being again called, attempted a ſecond time to remove the deformity by a ſimilar contrivance. A gnomon of thin braſs was made to ſtand over his noſe, with a half circle of the ſame metal to go round his temples: theſe were covered with black ſilk, and by means of a buckle behind his head, and a croſs-piece over the crown of his head, this gnomon was worn without any inconvenience, and projected before his noſe about two inches and a half. By the uſe of this machine he ſoon found it leſs inconvenient to view all oblique objects with the eye next to them inſtead of the eye oppoſite to them.

After this habit was weakened by a week's uſe of the gnomon, two bits of wood, about the ſize of a gooſe-quill, were blackened all but a quarter of an inch at their ſummits; theſe were frequently preſented to him to look at, one being held on one ſide the extremity of his black gnomon, and the other on the other ſide of it. As he viewed theſe, they were gradually brought forwards beyond the gnomon, and then one was concealed behind the other: by theſe means, in another week, he could bend both his eyes on the ſame object for half a minute together; and by continuing the uſe of the ſame machine, he was in a fair way of being cured when the paper was written.

Dr Darwin, who writes the hiſtory of the above caſe, adds, that all the other ſquinting people he had occaſion to attend, had one eye much leſs leſs perfect than the other: theſe patients, ſays he, are certainly cureable by covering the beſt eye many hours in a day; as by a more frequent uſe of the weak eye, it not only acquires a habit of turning to the objects which the patient wiſhes to ſee, but gains at the ſame time a more diſtinct viſion; and the better eye at the ſame time ſeems to loſe ſomewhat in both theſe reſpects, which alſo facilitates the cure.

CCII. CONTRACTURA, *Contractions of the* Limbs. Genus CXV. 477

Contractura, *Sauv.* gen. 119. *Lin.* 299. *Sag.* 225.
Obſtipitas, *Sauv.* gen. 11.
Caput obſtipum, *Vog.* 513.
Digitium, *Vog.* 221.

The contraction of various muſcles of the body is generally the conſequence of ſome other diſeaſe, as the rheumatiſm, gout, ſcurvy, or palſy, eſpecially that ſpecies of the latter which follows the *colica Pictonum*. It is exceedingly difficult of cure; though the warm medicinal waters are much recommended, and have ſometimes done great ſervice. Of late electricity hath been found to perform ſurpriſing cures in this way.

Order IV. APOCENOSES.

Apocenoſes, *Vog.* Claſs II. Ord. II.
Fluxus, *Sauv.* Claſs IX. *Sag.* Claſs V.
Morbi evacuatorii, *Lin.* Claſs IX.

CCIII. PROFUSIO, or Flux of Blood. Genus CXVI. 478

Profuſio, *Lin.* 239.
Hæmorrhagia, *Vog.* 81. *Boerh.* 218.

For the treatment of this genus, ſee Menorrhagia, Hæmoptysis, &c. above.

CCIV. EPHIDROSIS, or Exceſſive Sweating. Genus CXVII. 479

Ephidroſis, *Sauv.* gen. 258. *Sag.* gen. 194.
Sudor, *Lin.* 208.
Hydropedeſis, *Vog.* 121.

This is generally ſymptomatic; and occurs in almoſt all fevers, but eſpecially in the latter ſtages of the hectic. Sometimes it is a primary diſeaſe, ariſing merely from weakneſs; and then eaſily admits of a cure by the uſe of the Peruvian bark, the cold bath, and other tonics.

480 CCV. EPIPHORA, or FLUX of the LACHRYMAL HUMOUR. Genus CXVIII.

Epiphora, *Sauv.* gen. 259. *Lin.* 172. *Vog.* 99. *Sag.* 195.

THIS by Sauvages is deſcribed as an involuntary effuſion of tears without any remarkable itching, heat, or pain. It follows long-continued ophthalmias; or it may be occaſioned by immoderate ſtudy, or any thing that weakens the eyes: hence it comes on about the age of 50 years, when the eyeſight naturally becomes weak. It becomes worſe in the winter-time, and is very hard to cure. Some authors recommend purgatives, and bliſters on the nape of the neck, in order to draw off the abundant humours; but as the diſeaſe evidently proceeds from weakneſs, it would rather ſeem proper to purſue a contrary method. Sauvages recommends to the patients to abſtain from ſtudy, wine, and ſalted meats; alſo to avoid ſmoke or wind, and at night to foment the eyes with an infuſion of four cloves in two ounces of proof-ſpirit. Hungary water, roſe water with white vitriol diſolved in it, &c. have alſo been recommended.

481 CCVI. PTYALISMUS, SALIVATION. Genus CXIX.

Ptyaliſmus, *Sauv.* gen. 261. *Lin.* 176. *Vog.* 103. *Sag.* 197.

A ſalivation is often ſymptomatic, but rarely a primary diſeaſe. Dr Cullen is of opinion, that when the latter happens to be the caſe, it ariſes from laxity; and then is to be cured by aſtringents and tonics. In the Medical Tranſactions we have the following account of a ſalivation brought on by a foreign ſubſtance irritating one of the parotid glands.

In the month of April 1751, a young lady about the age of 16 years, of a delicate habit, but ſubject to no particular complaints, perceived the beginning of a diſeaſe which afterwards proved moſt obſtinate and loathſome, *viz.* an inceſſant ſpitting. The quantity of this diſcharge was different at different times, varying from one pint to two pints and an half in 24 hours. As to its quality, it ſeemed to be no other than the ordinary ſecretion of the ſalival glands. By ſo large and conſtant an evacuation, her ſtrength became extremely impaired, and the moſt efficacious medicines had proved uſeleſs. She had taken large quantities of the Peruvian bark, both alone, and combined with preparations of iron: and afterwards the fetid gums, opium, amber, alum, and the Neville-Holt-water, had in ſucceſſion been given her. In the mean time an exact regimen had been preſcribed: ſhe had been ordered to ride conſtantly; and to confine herſelf to a mucilaginous diet, ſuch as veal, calve's feet, &c. Likewiſe a gently opening medicine had now and then been interpoſed. The diſeaſe ſtill continuing unaltered, ſhe had afterwards tried the *tinctura ſaturnina;* and had, at the ſame time, been encouraged to chew the Peruvian bark, and to ſwallow the ſaliva. But all theſe attempts had been vain; and after that ſhe had taken ſome or other of the medicines abovementioned, until the end of September 1753, namely, above two years, it appeared to her phyſician (Dr Baker) unreaſonable to expect relief in ſuch a caſe from any internal medicines whatever.

He now conceived a ſuſpicion, that ſome extraneous body having accidentally found its way into the *meatus auditorius,* might poſſibly be the cauſe of this extraordinary ſecretion, by keeping up a continued irritation in the parotid glands. With this view he examined her ears, and extracted from them a quantity of fetid wool. How, or when, it came thither, no account could be given.

To this ſubſtance he attributed the beginning of the ſalivation, notwithſtanding that the diſeaſe did not immediately abate on the removal of the wool; as it appeared to be no improbable ſuppoſition that the diſcharge might be continued by the force of habit, tho' the original cauſe no longer remained.

It ſeemed therefore expedient to introduce ſome other habit, in the place of the increaſed ſecretion of ſaliva; which habit might afterwards be gradually left off. With this intention, he prevailed on the patient to chew perpetually a little dry bread, and to ſwallow it with her ſpittle. In a few weeks, it became neceſſary for her to chew the bread only at certain hours in the day; and thus, after two months, ſhe became entirely free from a moſt diſguſtful and tedious diſorder.

It is worthy of obſervation, that, at firſt, the ſwallowing of ſo much ſaliva frequently occaſioned a nauſea; and that then, for a few hours, ſhe was obliged to ſpit it out as uſual; and that, during the greateſt part of the time, when ſhe chewed the bread, ſhe had a ſtool or two every day more than common.

482 CCVII. ENURESIS, *an Involutary* FLUX *of* URINE. GENUS CXX.

Enureſis, *Sauv.* gen. 264. *Lin.* 195. *Vog.* 113. *Sag.* 200.

THIS is a diſtemper which frequently affects children, otherwiſe healthy, when aſleep; and is extremely diſagreeable. Often it is merely the effect of lazineſs, and may be driven off by proper correction; but ſometimes it proceeds from an atony or weakneſs of the ſphincter of the bladder. Many ridiculous cures have been preſcribed for it, and among the reſt fieldmice dried and powdered. Tonics are frequently of uſe; but ſometimes the diſtemper proves obſtinate, in ſpite of every thing we can uſe. In the London Medical Obſervations we find bliſters greatly recommended in this diſeaſe, when applied to the region of the os ſacrum. A girl of 13 years of age had been ſubject to an enureſis for four years. She could retain her water but a very little while in the day-time, but it flowed continually in the night. She had taken bark and elixir of vitriol in conſiderable quantities, alſo Valerian and the volatile julep, without effect. She was ſeverely threatened, as the phyſician ſuſpected it might ariſe from a bad habit; but this producing no effect, a bliſter was applied to the os ſacrum, which in 24 hours totally removed the diſeaſe.—A man aged 32, having been ſeized with an incontinence of urine and palſy of the lower extremities in conſequence of taking a quack medicine, was cured of the incontinence of urine in 24 hours by one bliſter, and of the palſy itſelf by another. A woman of 50 having been ſeized with an enureſis and paralytic affection of the right thigh and leg in conſequence of a ſtrain, was cured of both by a ſingle bliſter. Several other caſes are there mentioned, by which the power of bliſters in removing this diſtemper ſeems to exceed that of every other medicine whatever.

483 CCVIII. GONORRHOEA. Genus CXXI.

Gonorrhœa, *Sauv.* gen. 208. *Lin.* 200. *Vog.* 118. *Sag.* 204.

The gonorrhœa is a flux of viſcid matter of various colours, from the urethra in men, and the vagina in women. It commonly proceeds from coition with a perſon infected with the venereal diſeaſe, and is the firſt ſymptom by which that diſeaſe uſually ſhews itſelf.

Deſcription. The firſt ſymptoms of the diſeaſe in men, are commonly a ſenſation at the end of the penis not unlike a flea-bite, together with a fulneſs of the lips of the urethra, and ſome degree of tenſion in the penis, the urinary canal feeling as if tightened, and the urine flowing in a ſmall and unequal ſtream: a little whitiſh mucus is to be ſeen about the orifice of the urethra, and oozing from it when ſlightly preſſed, eſpecially if the preſſure is made on the ſpot where the ſoreneſs is moſt felt. The diſcharge ſoon increaſes in quantity, and varies in its colour according to the degree of inflammation. The patient feels a ſenſation of heat and pain in evacuating his urine, particularly at certain ſpots of the urethra, and above all towards its orifice; and the involuntary erections to which he is ſubject from the ſtimulus, particularly when warm 482 in bed, occaſion a diſtortion or curvature of the penis, attended with exquiſite pain. When the inflammation is violent, the glans appears tumid and tranſparent, the tenſion extends through the whole of the penis, the perinæum is affected with ſwelling and redneſs, and even the loins, buttocks, and anus, ſympathize and afford a very uneaſy ſenſation. Sometimes the prepuce inflames about the end of the penis, and cannot be drawn back, occaſioning what is called a *phymoſis;* at others, as in the *paraphymoſis*, it remains in an inflamed ſtate below the glans, ſo that it cannot be drawn forwards; and, if the ſtricture and inflammation are violent, may terminate in gangrene. Now and then, eſpecially when there is a phymoſis, we may perceive a hard chord extending along the back of the penis. This is an inflamed lymphatic, and may be conſidered as a prelude to a bubo.

In mild caſes, the ſeat of the diſeaſe is in the urethra, not far from its orifice; but it frequently happens that the virus inſinuates itſelf much higher up, ſo as to affect Cowper's glands, the proſtate, and parts very near to the neck of the bladder.

In the generality of caſes, the inflammation goes on increaſing for ſeveral days, commonly for a week or a fortnight; after which the ſymptoms begin to abate; and the running, when left to itſelf, gradually leſſens in quantity, and becomes whiter and thicker, till at length it totally ſtops. The colour of the mucus, however, is by no means a certain guide in theſe caſes: for in many patients it is of a yellowiſh, and ſometimes of a greeniſh hue to the very laſt; but in general it becomes more conſiſtent towards the cloſe of the diſeaſe.

In women, the parts of generation being fewer and more ſimple, the diſeaſe is leſs complicated than in men. Sometimes the vagina only is affected; and when this happens, the ſymptoms are very trifling: but in general it comes on with an itching and ſenſation of heat as in the other ſex; and is attended with inflammation of the nymphæ, inſide of the *labiæ*, *clitoris*, *carunculæ myrtiformes*, the orifice and ſometimes the whole of the *meatus urinarius*. Very often the deep-ſeated glands of the vagina are affected, and it is ſometimes difficult to diſtinguiſh the diſcharge of a gonorrhœa from that of the fluor albus.

Cauſes, &c. Many ingenious arguments have of late been advanced to prove, that the gonorrhœa and the lues venerea are different affections, originating from two diſtinct ſpecies of virus. It would be happy for mankind if this opinion were well founded; but, unfortunately, every day's experience ſhews it to be erroneous. It has been proved, that the matter of a chancre introduced into the urethra will generate a gonorrhœa; and that the diſcharge of a gonorrhœa will produce a chancre, bubo, and lues.

The matter of a gonorrhœa itſelf, when abſorbed into the patient's own body, will alſo produce a lues: but in order for it to do this, it is perhaps neceſſary (though this is by no means certain) that it ſhould be taken up from an ulcerated ſurface; and there are many practitioners, of no inconſiderable eminence, who deny that any ſuch ulceration is ever produced in the urethra by a gonorrhœa. They contend that the increaſed ſecretion in theſe caſes is exactly ſimilar to what happens in the catarrh. But the compariſon will by no means hold good: in the latter the whole membrane of the noſe is equally irritated; whereas in the gonorrhœa, only particular parts of the urethra ſeem to be affected. The diſeaſe, in the generality of caſes, ſeldom extends more than an inch and a half along that canal, and in many is confined (at leaſt in the beginning) to a ſmall ſpot about an inch from the extremity of the glans. The diſcharge is produced from that part of the urethra where the pain is felt; and the patient, when he voids his urine, feels no ſmarting till it reaches the inflamed ſpot, but as the diſorder increaſes, the inflammation affects a greater number of points, juſt in the ſame manner as chancres affect different parts of the glands. It might be ſuppoſed that diſſection would at once clear up this matter, and put an end to the diſpute; but this is far from being the caſe. Dr Simmons has ſeen ſeveral urethras opened in perſons who had a gonorrhœa at the time of their death: in three of them the ſurface of the urethra, as in the caſes related by Morgagni, appeared for ſome way down of a ſlight red colour, and in all of them was covered with mucus; but without any appearance of ulceration, except in two diſſections at Paris, in which moſt of the gentlemen preſent were convinced that they ſaw evident marks of it; but Dr Simmons ſays that the appearances were to him not ſufficiently ſatisfactory to enable him to decide with certainty on the ſubject. On the other hand, when we conſider that the diſcharge in a gonorrhœa is ſometimes tinged with blood, and that when this happens a little blood-veſſel is no doubt ruptured, we can have no reaſon to doubt that an ulceration may, and ſometimes does, happen in theſe caſes; eſpecially as we often obſerve an excoriation near the orifice of the urethra. It is certain, that wherever there is conſider-ſiderable inflammation, there will be danger of ulceration. Beſides, from a neglected or badly-treated gonorrhœa, we often ſee fiſtulas *in perineo*, and other ulcers of the urethra penetrating through its ſubſtance, and affording a paſſage to the urine. And there can be no doubt that ſlight ulcerations of this canal often occur, and are afterwards perfectly obliterated, in a ſimilar manner to what happens in the papillæ of the tongue, the tonſils, &c. Such an obliteration will the more readily take place in a part like the urethra, defended with mucus, and not expoſed to the air, which is known to have no little effect in hardening a cicatrix.

Perhaps, all things conſidered, the moſt rational idea we can form of the cauſes and phænomena of this diſeaſe, will be, that particles of the venereal virus being blended with the ſemen, and with the mucus that oozes from the urethra, during coition, may be drawn up a certain way into that canal, where the irritation they occaſion will be in proportion to the virulence of the infecting matter, and the irritability, habit of body, &c. of the patient. The conſequences of this irritation will be inflammation and an increaſed ſecretion of mucus, and ſo far the complaint will be local. But now and then it will happen, as in other inflammations, that ulceration will take place, and expoſe the patient to the danger of a conſtitutional infection. Nay, we are not certain but this may happen without ulceration. Draſtic purges are known to be great promoters of abſorption, and ſome inſtances of lues venerea have been met with which ſeemed to be owing to the imprudent uſe of ſuch remedies in a previous gonorrhœa.

Nothing can be more variable than the period at which the diſeaſe makes its appearance after infection. Perhaps, at a medium, we may place it between the 4th and 14th day: but in ſome caſes it happens within 24 hours; and in others, not before the end of five, or even ſix weeks: neither of theſe extremes, however, are common.

Cure. From the foregoing deſcription of the progreſs of the diſeaſe, it will eaſily be perceived that the chief curative indications are to ſubdue the inflammation, and remove the virus that occaſions it.

There are practitioners who, ſuppoſing that the body poſſeſſes powers to expel the virus, and that the diſeaſe has a certain period to run through its ſeveral ſtages of progreſs, acme, and decline, are for leaving the cure to nature; or at leaſt content themſelves with aſſiſting her by an antiphlogiſtic regimen, gentle evacuations, and the like.

That in many caſes the diſorder admits of a natural cure, there can be no doubt; the increaſed ſecretion of mucus carrying off the virus faſter than it is formed, till at length the infection is wholly removed. But it is equally certain, that in every caſe, by the application of ſuitable remedies to the inflamed part, we may ſhorten the duration of the complaint, and abridge the ſufferings of the patient, with the ſame certainty and ſafety as we are enabled to remove the effects of an ophthalmia, or any other local inflammation, by proper topical applications. General remedies, ſuch as occaſional blood-letting, a cooling diet, the liberal uſe of diluting liquors, and mild purges, are by all allowed to be uſeful and even neceſſary. Aſtruc was of opinion that in theſe caſes blood-letting ought to be repeated five or ſix times; and there are ſtill many practitioners who depend much on repeated evacuations of this ſort for a removal of the inflammation. But there is, perhaps, not one caſe in ten in which it is at all requiſite; and this ſmall number of caſes will conſiſt only of the ſtrong and plethoric: in ſuch, when the chordee is frequent and painful, and the pulſe hard and full, the loſs of from eight to twelve ounces of blood will be beneficial, but it will be ſeldom neceſſary to repeat the operation. The inflammation in theſe caſes is kept up by the local ſtimulus of the virus and the urine; and all that we can expect from veneſection is to moderate the pain and the frequency of erection. In perſons of a delicate habit, and of an irritable fibre, the evacuation will do no good; but, if repeated, will certainly be liable to do harm, by increaſing irritability, and of courſe rendering the patient more ſuſceptible of ſtimulus.

The utility, and even the neceſſity of a cooling regimen are ſufficiently obvious; wine and ſpirituous liquors, ſpiceries, a fiſh-diet, much animal-food, and ſalted and high-ſeaſoned diſhes of every ſort, will conſtantly add to the complaint. The patient ſhould eat meat only once a-day, and that ſparingly. He ſhould abſtain from hot ſuppers. Milk, mild vegetables, and fruit, ſhould conſtitute the principal part of his diet while the inflammatory ſymptoms continue. Every thing that tends to excite the venereal imagination ſhould be ſtudiouſly avoided; for whatever promotes erections of the penis will increaſe the inflammation, and of courſe add fuel to the diſeaſe. For the ſame reaſons much walking or riding on horſeback will be hurtful, from the irritation kept up in the perinæum by ſuch means. Violent exerciſe of any kind, or any thing that is liable to increaſe the heat and momentum of the blood, will of courſe be improper.

The drinking freely of mild, cooling, mucilaginous liquors, ſuch as linſeed-tea, orgeat, whey, milk and water, almond emulſion, and the like, will be extremely uſeful, by diluting the urine, and preventing its ſalts from ſtimulating the urethra. When the heat and pain in making water are very conſiderable, mucilaginous ſubſtances are found to have the beſt effect, particularly the gum tragacanth. It is a common practice to give equal doſes of this gum or gum-arabic, and nitre, and to diſſolve nitre in the patient's drink, with a view to leſſen the inflammation. But in theſe caſes nitre is always improper: it is known to be a powerful diuretic, its chief action being upon the urinary paſſages; ſo that the ſtimulus it occaſions will only ſerve to increaſe the evil it is intended to alleviate. Cream of tartar, on account of its diuretic quality, will be equally improper. Our view here is not to promote a preternatural flow of urine; for the virus, being inſoluble in water, cannot be waſhed away by ſuch means: but our object ought to be, to render the urine that is ſecreted as mild and as little ſtimulating as poſſible.

Mild purges, which conſtitute another material part of the general remedies, are no doubt extremely uſeful when exhibited with prudence; but it is well known that the abuſe of purgative medicines in this diſeaſe has been productive of numerous evils. Formerly it was a pretty general practice to give a large doſe of calomel at bed-time, three or four times a-week; and to work it off the next morning, with a ſtrong doſe of the *pilulæ cocciæ*, or ſome other draſtic purge. This method was perſevered in for ſeveral weeks: and as the conſtant effect of a violent draſtic purge is to promote abſorption from every cavity, the venereal virus was frequently carried into the ſyſtem, and produced a confirmed lues; or, if the patient eſcaped this evil, he at leaſt found himſelf troubled with an obſtinate gleet, and, perhaps, his conſtitution materially injured: the effect of ſuch a method being (eſpecially in irritable habits) to weaken the ſtomach and bowels, and lay the foundation of hypochondrial complaints. Violent purging likewiſe often occaſions ſtrangury, hernia humoralis, and other troubleſome ſymptoms. Now that we are well acquainted with the doctrine of abſorption, this abſurd practice is very deſervedly fallen into diſrepute; for ſurely no man, who is converſant with anatomy, will, at this time of day, attempt to diſcharge the virus of a gonorrhœa by ſtool, when he knows that it muſt firſt be taken up by the lymphatics, and carried into the circulation: and yet, ſtrange as it may ſeem, ſuch is our attachment to old cuſtoms, that we ſtill every now and then meet with caſes in which this pernicious method has been adopted.

The purges employed in theſe caſes ſhould be gentle; ſuch as Rochelle ſalt, manna, tartar. ſolub. and the like. They ſhould be given only in a doſe ſufficient to procure two or three ſtools, and be repeated only every two or three days. The daily uſe of the purgative electuaries that are ſtill given by ſome practitioners, ſerves only to keep up a continual irritation on the bladder, and of courſe to prolong the inflammation.

The topical remedies that are uſed conſiſt chiefly of different ſorts of injections, the ingredients of which are extremely various; but their modes of operation may in general be referred to their mucilaginous and ſedative, or to their detergent, ſtimulating, and aſtringent qualities. In the hands of ſkilful practitioners, great advantages may doubtleſs be derived from the uſe of theſe remedies; but, on the other hand, the improper and unſeaſonable adminiſtration of them may prove a ſource of irreparable miſchief to the patient.

We know that mucilaginous and oily injections will tend to allay the local inflammation; and that a ſedative injection, ſuch as a ſolution of opium, will leſſen the irritability of the parts, and of courſe produce a ſimilar effect: the utility of ſuch applications is therefore ſufficiently obvious.

A detergent injection, or one that will act upon the mucus of the urethra, increaſe the diſcharge of it, waſh it away, and with it the venereal virus that is blended with it, can only be uſed as a prophylactic before the ſymptoms of infection have made their appearance. A ſolution of cauſtic, properly diluted, will anſwer this purpoſe. But great circumſpection is neceſſary in the uſe of this kind of injection. If it be too weak, it can be of no efficacy; and if it be too ſtrong, it may prove dangerous to the patient. A ſuppreſſion of urine hath been brought on by the improper uſe of an injection of this kind. When the ſymptoms of inflammation have once made their appearance, the ſtimulus of ſuch an injection muſt be extremely hazardous. Excoriation of the urethra has but too often been produced by remedies of this ſort in the hands of adventurous and unſkilful practitioners.

While the inflammation of the urethra continues, every thing that ſtimulates it muſt be hurtful. If the injection excites a painful ſenſation in the urethra, as is but too often the caſe, it will be liable to produce ſwelled teſticles, difficulty in making water, excoriation, and other effects of increaſed inflammation: if, by its aſtriagency, the running is checked before the virus that excited the diſcharge is properly ſubdued, the patient will be expoſed to all the dangers of a confirmed lues; and, perhaps, to a variety of local complaints, ſuch as obſtructions in the urethra, and abſceſſes *in perinæo*, which are well known to be ſometimes owing to applications of this ſort improperly managed.

When the inflammation has ſubſided, gently ſtimulating and aſtringent injections may be uſed with ſafety, and with conſiderable advantage: for as the inflammation is at firſt excited by the ſtimulus of the venereal virus, ſo when the former begins to leſſen, we may be aſſured that the activity of the latter has abated in proportion; and, in general, when the inflammatory ſymptoms are entirely removed, it will be found that the mucus is no longer of an infectious nature, but is merely the effect of an increaſed ſecretion, and of relaxation. Mild aſtringents will therefore ſerve to brace and ſtrengthen the veſſels ſecreting mucus, and in this way will leſſen the diſcharge, and greatly promote the cure. It is certain, that in the greater number of caſes, a gonorrhœa, which if treated by internal remedies alone would continue for five or ſix weeks, or longer, may, when judiciouſly treated with injections, be cured in a fortnight, and very often in leſs time. The great aim, therefore, of the practitioner ought to be at firſt to make uſe of ſuch injections only as will tend to lubricate the ſurface of the urethra, and to counteract and deſtroy the ſtimulus of the virus: as the inflammation abates, he may add ſome gently aſtringent preparation to a mucilaginous and ſedative injection; taking care that its aſtringency be ſuited to the ſtate of the diſeaſe, and to the irritability of the patient. Amongſt a great variety of ſubſtances, mercury in different forms is one of thoſe that is the moſt frequently employed in injections. All theſe mercurial injections have more or leſs of aſtringency; and, according to Dr Simmons, it is ſolely to this property that we are to aſcribe their effects; for the idea of their correcting the venereal virus was originally introduced, and has been continued upon miſtaken principles.

Calomel, mixed with the mucus diſcharged in a gonorrhœa, has no more power in deſtroying the infectious properties of that mucus than ceruſſe or any other preparation would have. A diluted ſolution of ſublimate injected into the urethra will, like a ſolution of verdigriſe, or blue vitriol, or any other ſtyptic, conſtringe the mouths of the lacunæ; but this is all that it will do, for it will never leſſen the infectious nature of the virus. The ſame thing may be obſerved of crude mercury extinguiſhed by means of mucilage, or of mercurial unction, blended with the yolk of an egg, and which, when thrown up into the urethra, will act nearly in the ſame manner as balſam of copaiva, or any other ſtimulating injection. For the truth is, that mercury has no power over the venereal virus, until it has been introduced into the body, and undergone certain changes, with which we are, and probably ſhall for ever remain, unacquainted. The local application of mercury can therefore have no other effects than what it derives from its ſtimulating and aſtringent properties: for the mercury not being abſorbed in the urethra, of courſe cannot be carried into the ſyſtem; and even if it could, the quantity that would be introduced in this way would be too minute to be of any efficacy. The ſtimulus of calomel, however, has often been found of conſiderable efficacy; and in women, when the vagina only was affected, after waſhing the parts well, the cure hath been accompliſhed by rubbing them repeatedly with mercurial ointment.

As the gonorrhœa is often a local affection, it may be imagined, perhaps, that the internal uſe of mercury is unneceſſary towards the cure. Very often indeed this complaint may be removed without having recourſe to mercurials. Sometimes patients have been met with whoſe general health has been greatly impaired by a long continued uſe of mercury in ſuch caſes, while the original diſeaſe, the gonorrhœa, was rendered much worſe by it. In ſome it degenerated into a gleet, that was cured with extreme difficulty; in others it brought on a variety of diſtreſſing ſymptoms. In caſes of gonorrhœa, therefore, whenever mercury is adminiſtered, it ought not to be with a view to expedite the cure, but merely to obviate the dangers of abſorption. When the infection is apparently ſlight, and the inflammation and the ſymptoms trifling, we may proceed without the aſſiſtance of mercury, eſpecially if the patient is of a weak, relaxed, and irritable habit, likely to be injured by mercurial medicines. On the other hand, whenever the diſcharge is violent, the inflammation conſiderable, or the ſeat of the diſeaſe high up in the urethra, it is adviſeable to give mercurials in ſmall doſes, and in ſuch forms as ſeem the beſt adapted to the conſtitution of the patient.

The mercurial pill of the London Diſpenſatory, on account of the turpentine that enters into its compoſition, will ſometimes paſs through the body undiſſolved, and of courſe can then be of no uſe; but when the mercury is extinguiſhed by means of honey, and made into pills, in the manner directed in the laſt edition of the Edinburgh pharmacopœia, it becomes as mild and perhaps as efficacious a preparation as any. Its efficacy will depend on its not irritating the bowels, and ſo paſſing off by ſtool; care muſt likewiſe be taken to prevent its affecting the mouth. Of the chemical preparations of mercury the mildeſt and leaſt irritating is calomel. It may be given from gr. iſs. to gr. iii. at bed-time, occaſionally interpoſing a mild purgative to prevent it from ſalivating; but in general the mercurial pill juſt mentioned is to be preferred.

When there is no chancre or bubo, no appearance, in ſhort, that the infection is likely to be carried into the ſyſtem, it would be improper to adminiſter corroſive ſublimate, the mercurius calcinatus, or any other of the more acrid preparations of mercury.

After a gonorrhœa proceeding from venereal cauſes hath been removed, another kind of running without pain, called the *gonorrhœa mucoſa*, or *gleet*, ſometimes remains. Sometimes it ariſes from a conſtriction and excoriation of the urethra, and frequently it is the effect of an enlargement and diſeaſed ſtate of the proſtate. In each of theſe caſes, as the gleet is the effect of irritation, the cure will depend on the removal of the local diſeaſe that occaſions it. But there is another ſpecies of gleet that ſeems to depend chiefly on relaxation. It is in general free from infection, and is moſt common in thoſe who have had long and frequent gonorrhœas. It is likewiſe often the effect of a debilitated habit, from ſevere purging, or a long continued uſe of mercurials. A diſcharge of this kind is more frequent in women than in men; or, at leaſt, the fluor albus, after a gonorrhœa, will often be miſtaken for a gleet.

When there is no reaſon to ſuſpect a venereal taint, aſtringent injections will be of the greateſt ſervice. It will be neceſſary, at the ſame time, to attend to the health of the patient, by giving the bark, chalybeate waters, cold bathing, and ſuch other remedies as will tend to ſtrengthen the ſyſtem. When there is no tendency to inflammation, the balſam of copaiva may be preſcribed with advantage in large doſes. Dr Simmons ſays he once ſaw a complaint of this ſort removed by applying a bliſter to the perinæum, after it had reſiſted a variety of other remedies. In the Medical Obſervations alſo we have an account of a gleet and incontinence of urine removed at once by a bliſter to the os ſacrum. In general, however, the other methods abovementioned will be ſufficient to remove it, though ſometimes it will continue for a long time in ſpite of all our endeavours to check it.—Other kinds of gonorrhœa, in which the ſemen itſelf is ejected, eſpecially during ſleep, may be cured by tonics, and a mild cooling regimen.

ORDER V. EPISCHESES.

CCIX. OBSTIPATIO; COSTIVENESS. 484

Genus CXXII.

Obſtipatio, *Lin.* 166. *Vog.* 128. *Sag.* 221.

COSTIVENESS is ſometimes occaſioned by debility in dyſpeptic perſons, ſometimes it is the effect of rigidity, and ſometimes it is ſymptomic of the colic. It may proceed from an exceſſive heat of the liver; drinking rough red wines, or other aſtringent liquors; too much exerciſe, eſpecially on horſeback: it may likewiſe proceed from a long uſe of cold inſipid food, which does not ſufficiently ſtimulate the inteſtines. Sometimes it is owing to the bile not deſcending to the inteſtines, as in the jaundice; and at other times it proceeds from diſeaſes of the inteſtines themſelves, as a palſy, ſpaſms, tumors, a cold dry ſtate of the inteſtines, &c.

Exceſſive coſtiveneſs is apt to occaſion pains of the head, vomiting, colics, and other complaints of the bowels. It is peculiarly hurtful to hypochondriac and hyſteric perſons, as it generates wind and other grievous ſymptoms.

Perſons who are generally coſtive ſhould live upon a moiſtening and laxative diet; as roaſted or boiled apples, pears, ſtewed prunes, raiſins, gruels with currants, butter, honey, ſugar, and ſuch like. Broths with ſpinage, leeks, and other ſoft pot-herbs, are likewiſe proper. Rye-bread, or that which is made of a mixture of wheat and rye together, ought to be eat. No perſon troubled with coſtiveneſs ſhould eat white bread alone, eſpecially that which is made of fine flower. The beſt bread for keeping the belly ſoluble is what in ſome parts of England they call *meſlin*. It is made of a mixture of wheat and rye, and is very agreeable to thoſe who are accuſtomed to it.

Coſtiveneſs is increaſed by keeping the body too warm, and by every thing that promotes the perſpiration; as wearing flannel, lying too long a-bed, &c. Intenſe thought, and a ſedentary life, are likewiſe hurtful. All the ſecretions and excretions are promoted by moderate exerciſe without doors, and by a gay, cheerful, ſprightly temper of mind.

The drink ſhould be of an opening quality. All ardent ſpirits, auſtere and aſtringent wines, as port, claret, &c. ought to be avoided. Malt-liquor that is fine and of a moderate ſtrength, is very proper. Butter-milk, whey, and other watery liquors, are likewiſe proper, and may be drank in turns, as the patient's inclination directs.

Thoſe who are troubled with coſtiveneſs ought, if poſſible, to remedy it by diet, as the conſtant uſe of medicines for that purpoſe is attended with many inconveniencies, and often with bad conſequences. In time the cuſtom becomes neceſſary, and generally ends in a total relaxation of the bowels, indigeſtion, loſs of appetite, waſting of the ſtrength, and death.

The learned Dr Arbuthnot adviſes thoſe who are troubled with coſtiveſs to uſe animal-oils, as freſh-butter, cream, marrow, fat broths, eſpecially thoſe made of the internal parts of animals, as the liver, heart, midriff, &c. He likewiſewiſe recommends the expreſſed oils of mild vegetables, as olives, almonds, piſtaches, and the fruits themſelves; all oily and mild fruits, as figs; decoctions of mealy vegetables;
484 theſe lubricate the inteſtines; ſome ſaponaceous ſubſtances which ſtimulate gently, as honey, hydromel, or boiled honey and water, unrefined ſugar, &c.

The doctor obſerves, that ſuch lenitive ſubſtances are proper for perſons of dry atrabilarian conſtitutions, who are ſubject to aſtriction of the belly and the piles, and will operate when ſtronger medicinal ſubſtances are ſometimes ineffectual; but that ſuch lenitive diet hurts thoſe whoſe bowels are weak and lax. He likewiſe obſerves, that all watery ſubſtances are lenitive; and that even common water, whey, ſour milk, and butter-milk, have that effect:—That new milk, eſpecially aſſes milk, ſtimulates ſtill more when it ſours on the ſtomach; and that whey, turned ſour, will purge ſtrongly:—That moſt garden-fruits are likewiſe laxative; and that ſome of them, as grapes, wlil throw ſuch as take them immoderately, into a cholera morbus, or incurable diarrhœa.

When the body cannot be kept open without medicine, gentle doſes of rhubarb may be taken twice or thrice a-week. This is not near ſo injurious to the ſtomach as aloes, jalap, or the other draſtic purgatives ſo much in uſe. Infuſions of ſenna and manna may likewiſe be taken, or half an ounce of ſoluble tartar diſſolved in water-gruel. About the ſize of a nutmeg of lenitive electuary taken twice or thrice a-day, generally anſwers the purpoſe very well.

485 CCX. ISCHURIA, or Suppression of *Urine*.

Genus CXXIII.

Iſchuria, *Sauv.* gen. 293. *Lin.* 167. *Vog.* 129. *Sag.* 212. *Home's* Clinical experiments, ſect. xv.

This diſtemper is diſtinguiſhed into various ſpecies, according as the ſeat of is in the kidneys, the ureters, the bladder, or the urethra; and hence theſe ſpecies are named *renalis*, *ureterica*, *veſicalis*, and *urethralis*.

1. *Iſchuria renalis*, or a ſuppreſſion of urine from an affection of the kidneys, happens but rarely; however, Dr Home in his Clinical Experiment deſcribes ſuch a caſe. In the end of December 1774, a man of a full habit, aged 35, was ſeized with ſhivering, coldneſs, and ſevere cough. Three days after, his urine appeared high-coloured, was paſſed with pain, and in ſmall quantity. About the 8th of January 1775, he was attacked with violent pains in the ſmall of his back, over the whole abdomen, and in the ankles, with pain in the region of the liver when preſſed. A general ſwelling was afterwards obſerved all over the body, but moſtly in the ankles and abdomen, which laſt was tenſe and hard. Theſe were attended with vomiting, bad appetite, and conſiderable thirſt. When he entered the clinical ward, (January 21ſt), the cough, ſickneſs, and vomiting, had gone off, but the ſuppreſſion of urine remained. The little which he made was paſſed with his ſtools, ſo that Dr Home ſaw it but once; and then it was pale, and had a white powder at bottom. The pains and ſwellings, which retained the impreſſion of the finger, continued; he had a head-ach, and a very ſlow pulſe, beating only 48 ſtrokes in a minute. He had taken a great many diuretic medicines before he came in. The day after his reception, he was ſeized with a ſpontaneous diarrhœa, which continued during the remainder of his life. Cream of Tartar was exhibited in doſes of half an ounce each morning; at bed-time he took 20 drops of laudanum with a ſcruple of nitre, and continued this courſe for eight days without any increaſe of urine. The ſtronger and heating diuretics were then tried, as *Infuſ. bacc. junip.* and *Pilul. ex allio*; but they were attended with no ſenſible advantage. Whenever the pulſe became ſo ſtrong that he could bear bleeding, eight ounces of blood were taken away, and which was ſizy. This was thrice repeated; he appeared eaſier after each bleeding, his pulſe bore it well, and the ſwellings and other ſymptoms abated. The heating diuretics, in this ſtate, were given up; and a mixture of vinegar and nitre was ſubſtituted in their place, in each doſe of which, taken every two hours, there was a ſcruple of nitre. Fomentations were applied to the region of the kidneys, and camphorated oil was afterwards rubbed on the part. He was ordered the ſemicupium, which from a deficiency of water in the town he got only once; and which then ſeemed to have a good effect, as he paſſed a gill of urine when he was in it. Notwithſtanding this, however, the diſeaſe continually gained ground; he became comatoſe, delirious, and died ten days after his admiſſion.—On diſſection, the kidneys were found of an irregular form; ſome watery veſicles appeared on their ſurface, containing black

gritty particles like fine ſand; and the lower part of the right kidney was conſiderably inflamed. The pylorus, part of the duodenum, and a conſiderable part of the ſmall inteſtines were much inflamed. In the abdomen were found about five pounds of fluid, and in the cavities of the thorax about half a pound. The lungs were a little inflamed, and full of ſmall tubercles on their ſurface and in their ſubſtance: the heart was large, and a polypus in each ventricle. About ſix ounces of fluid were found in the pericardium: in the brain nothing preternatural appeared, except about an ounce of water in each ventricle.

Dr Home ſeems to have been at a loſs for the remote cauſe of this ſuppreſſion of urine, which manifeſtly had its immediate orgin from the kidneys having loſt the power of performing their functions. He thinks the inflammation which appeared in the right kidney was ſcarce ſufficient to have occaſioned the diſtemper, as the other would have ſupplied its place: for which reaſon alſo he thinks that the iſchuria was owing to a general affection of the ſyſtem; and that it was of an arthritic nature, the patient having been troubled with complaints of this kind for a long time before.

2. The *iſchuria ureterica* is alſo a rare diſeaſe, unleſs the obſtruction proceeds from a ſtone or clot of blood ſtopping up the paſſage. Gravel or ſtones, indeed, are very frequently formed in the kidneys; and, by falling into the ureters, occaſion an iſchuria, with violent pain, and ſymptoms more or leſs urgent in proportion to the ſize and ſhape of the ſtones. Sometimes it is attended with coldneſs of the extremities, nauſea and vomiting, and ſpaſtic conſtriction of the præcordia, a difficulty of making water, conſtipation of the belly, difficulty of breathing, ſtupor of the thigh, retraction of the teſticle to the *os pubis*, inquietude, loſs of ſtrength, ſyncope, and convulſion-fits. When the violent pain has continued for ſeveral days and nights without intermiſſion, and has brought the patient exceeding low, and the ſuppreſſion of urine is complete, with coldneſs of the extremities and convulſions of the tendons, death is at hand. Nor is it a good ſign when the ſtone continues long in the ureter; for then the appetite decays, a nauſea and retching to vomit ſupervene, and the patient is conſumed with a hectic heat. Sometimes the pain is attended with an inflammation of the ſtomach and inteſtines; and ſometimes the diſeaſe ends in a dropſy of the breaſt, or lethargy, which ſoon carry off the patient.

The indications of cure are, to exclude the ſtone as eaſily as poſſible, and prevent the breeding of others. If the patient is of a ſanguineous temperament, Sydenham recommends to take away ten ounces of blood from the affected ſide; and then to give the patient a gallon of poſſet-drink in which two ounces of marſhmallow roots have been boiled, injecting at the ſame time an emollient clyſter. After the poſſet-drink has been vomited up, and the clyſter returned, give a pretty large doſe of an opiate. But if the patient is old or weak, or ſubject to the vapours, bleeding may be omitted, eſpecially if his urine at the beginning of the fit is coffee-coloured, and mixed with gravel; but as to other things, the cure is the ſame.—Huxham greatly recommends an emollient bath prepared of a decoction of marſh-mallow root, linſeed, fœnugreek ſeed, and flowers of chamomile, to which may be added a few white-poppy ſeeds. By the uſe of this bath he ſays he has ſeen the moſt cruel fit of the gravel ſuddenly ended, when neither copious bleeding nor opiates had the leaſt effect. Mild diuretics are alſo of ſervice. Hoffman recommends dulcified ſpirit of nitre as proper to relax the ſpaſtic ſtricture. It is to be taken with ſuitable diſtilled waters, and ſyrup of poppies; or in broth, with a few ſpoonfuls of oil of ſweet almonds. Turpentine glyſters are alſo accounted very ſerviceable; and may be prepared of ten ounces decoction of chamomile, with half an ounce of turpentine diſſolved in the yolk of an egg, with as much honey. The *ſal diureticus*, or *terra foliata tartari*, is much eſteemed by ſome, when taken along with an opiate. But when the ſtone is too big to paſs, Arbuthnot recommends a cool and diluent diet to hinder the further growth of it. Whey, linſeed, decoction of marſhmallows, and gently reſolving diuretics, are alſo proper. To put a ſtop to the vomiting, *balſamum traumaticum* may be uſed with ſucceſs when almoſt every other means have failed.

3. The *iſchuria veſicalis* may ariſe from a ſtone in the bladder; and this indeed is the moſt common cauſe of it: but there are certain caſes in which, though the uſual quantity of urine, or perhaps more, is paſſed, the patient dies from the retention of a ſtill greater quantity in the bladder. Of this Dr Home gives the following inſtances. A man of 58 years of age, of a ſtrong ſpare habit, and never ſubject to the gravel, had, during the winter of 1777, a cough with expectoration, which went off in the beginning 1778. About the 17th of February 1778 he felt ſome difficulty in paſſing his urine, and much pain about the region of the bladder. He continued in this way for ten days, after which he became eaſier on application of ſome medicines. The abdomen then ſwelled, and he had pains in his loins and thighs. On the 3d of March he was admitted into the clinical ward: his abdomen was then ſwelled and tenſe; and an evident fluctuation was felt, which ſome that touched him thought was ſonorous and produced by wind. A tumour was diſcovered betwixt the navel and ſpine of the os ilium on the left ſide, which gave him much pain, eſpecially when preſſed. This tumour became more eaſily felt after the ſwelling of the abdomen decreaſed, ſeemed round, and very near as large as the head of a child. It appeared very much on the left ſide, even when the patient lay on the right, and the tumour then became dependent. He paſſed urine frequently, and rather more than in health, as it was computed at four pints a-day. It was always clear, and of a light colour. His body had a ſtrong diſagreeable ſmell; his ſkin was dry, belly bound, and his appetite entirely gone, ſo that he had hardly taken any food for 12 days. His legs ſwelled ſlightly for ſome days in the evening. His pulſe was generally regular, ſometimes ſlower than natural, and ſometimes a little quicker; being once felt at 64, and another time at 92. He was often ſeized, eſpecially after eating or drinking, with hickup, which increaſed and laſted till his death. On the 20th day of his diſeaſe, after ſome doſes of ſquills, the general ſwelling of his abdomen fell, became much ſofter and

more diſtinctly diſcovered the ſwelling of the left ſide. The next day a vomiting came on; he became more delirious, and died the day following. The body being opened, it appeared that the tumour which was ſo diſtinctly felt in the left ſide of the abdomen, was owing to a diſtenſion of the bladder with urine. Its fundus reached to about the diviſion of the aorta into the iliacs; it entirely filled the pelvis, and contained between five and ſix pounds of urine of a pale colour. On examining the external ſurface, its neck, and the beginning of the urethra, were found to be ſurrounded with a ſcirrhoſity, which impeded the evacuation of the urine. The bladder itſelf was much thickned, but not more in one part than another. The ureters entered naturally; but were much thickened in their upper half near the kidney. The kidneys were ſomewhat enlarged; particularly the left, which had ſeveral watery veſicles on its external ſurface. Theſe organs were not in their uſual ſituation; but lay cloſe on each ſide of the ſpine, and very near the aorta; ſo that the renal veſſels were very ſhort. What was very ſingular, the lower end of each roſe over the ſpine, and they were united together by their membranes and ſubſtances, the aorta paſſing beneath the union. The bladder had preſſed conſiderably on this part; and the peritoneum covering them was conſiderably thicker than natural. The lungs adhered every-where to the pleura, and in ſome places very firmly; they were of a looſe texture and black colour; and the veins of the lower extremities were turgid with blood. It doth not appear that this patient got any medicines farther than a few dried ſquills, which diminiſhed the ſwellings and brought off much wind. He alſo got a mixture of muſk and afterwards of opium for his hickup, but without ſucceſs. His diſeaſe was miſtaken for an aſcites; and the catheter was not tried: but in another caſe the uſe of this inſtrument was apparently of more ſervice than any internal medicines. This laſt patient was about 60 years of age, and laboured under ſymptoms very ſimiliar to thoſe already mentioned. When admitted into the clinical ward, he had the the hypogaſtric region ſwelled, and difficulty of paſſing his water; but without pain, vomiting, or hickup. He had loſt all appetite; was thirſty, and coſtive. His pulſe was 110, and weak. In the evening about three Engliſh pints of pale clear urine were drawn off by means of the catheter: the next day all the ſymptoms were gone off or abated. After this he continued to paſs ſome urine, ſometimes voluntarily, ſometimes involuntarily and inſenſibly; but ſo much always remained behind, that his bladder was conſtantly full, unleſs when the urine was drawn off, which was done twice every day. The urine was ſometimes pale, ſometimes of a deep red colour; and once there was ſome blood mixed with it, which perhaps might have been occaſioned by the catheter. About the ſixth day the urine was very putrid, with much purulent-like matter at the bottom, and was paſſed with more pain. About the 11th, the putrid ſmell went off. The next day all the urine paſſed inſenſibly except what was drawn off; and an hickup, though not very ſevere, had come on. In this way he continued without fever, though frequently troubled with the hickup, eſpecially during thoſe nights in which the urine had not been drawn off. A month after admittance, the bladder, with the aſſiſtance of the catheter, was almoſt entirely, though inſenſibly evacuated, and the hickup had left him; he had no other complaint but that of voiding his urine inſenſibly, the natural effect of a ſcirrhous bladder, and which was probably incurable. With this patient the hot bath and mercurials were tried, in order to ſoften the ſcirrhoſity of the bladder, but without effect.

4. The *iſchuria urethralis* ariſes from ſome tumour ſtopping up the paſſage of the urethra, and thus hindering the flow of urine. It is an uncommon diſtemper, and generally follows a gonorrhœa. Dr Home gives us an example of this alſo.—The patient was a man of 60 years of age, who had laboured under a gonorrhœa ſix months before, and which was ſtopped by ſome medicines in two or three days. He felt, ſoon afterwards, a difficulty in paſſing his urine, which gradually increaſed. About 10 days before his admiſſion into the clinical ward, it was attended with pains in the glands, and *ardor urinæ;* he had paſſed only about eight ounces the day before his admiſſion, and that with very great difficulty; and the hypogaſtric region was ſwelled and pained. On introducing the catheter, three pounds of urine were drawn off, by which the pain and ſwelling were removed. The inſtrument required force to make it paſs the neck of the bladder, and blood followed the operation; and the finger, introduced into the anus, felt a hard tumour about its neck. He was treated with mercurial pills and ointment, by which the ſwelling about the neck of the bladder ſoon began to decreaſe; but at the ſame time a ſwelling of the right teſticle appeared. He was vomited with four grains of turbith-mineral, which operated gently; and here Dr Home obſerves, that, though theſe vomits are little uſed, from a miſtaken notion of their ſeverity, he never ſaw them operate with more violence than other vomits, or than he could have wiſhed. The ſwelling diminiſhed in conſequence of the vomit and ſome external applications; and the cure was completed by bleeding, and a decoction of mezereon-root.

CCXII. DYSURIA, or DIFFICULTY *of* MAKING WATER. Genus CXXIV. 486

Dyſuria, *Sauv.* gen. 265. *Lin.* 57. *Vog.* 164. *Sag.* 213.
Stranguria *auctorum.*

A DIFFICULTY of making water may ariſe from many different cauſes; as from ſome acrid matter in the blood, cantharides, for inſtance: and hence a ſtrangury very often ſucceeds the application of bliſters. In many caſes it ariſes from a compreſſion of ſome of the neighbouring parts; of the uterus, for inſtance, in a ſtate of pregnancy. Or it may ariſe from a ſpaſmodic affection of the bladder, or rather its ſphincter; or from an inflammation of theſe parts, or others near them. Hence the diſeaſe is diſtinguiſhed into ſo many ſpecies, the cure of which depends upon the remedies indicated by their different cauſes.

But the moſt common, as well as the moſt dangerous ſpecies is that ariſing from a calculous concretion, or

STONE *in the* BLADDER.

Dyſuria calculoſa, *Sauv.* ſp. 12.

The ſigns of a ſtone in the bladder are, Pain, eſpecially about the ſphincter; and bloody urine, in conſequence of riding or being jolted in a carriage; a ſenſe of weight in the *perinæum;* an itchineſs of the *glans penis;* ſlimy ſediment in the urine; and frequent ſtoppages in making water; a *teneſmus* alſo comes on while the urine is diſcharged: but the moſt certain ſign is, when the ſtone is felt by the finger introduced into the anus, or by the catheter.

Cauſes, &c. It is not eaſy to ſay what the particular cauſes are that occaſion the earthy particles of the fluids to run together, and form thoſe calculous concretions which are found in different parts of the body, and eſpecially in the organs for ſtraining off and diſcharging the urine.

The gout and ſtone are generally ſuppoſed to have ſome affinity, becauſe gouty people are for the moſt part afflicted with the gravel. But perhaps this is chiefly owing to their long confinement, and to the lying on the back, which people who labour under the gout are often obliged to ſubmit to; ſince the want of exerciſe, and this poſture, will naturally favour the ſtagnation of groſs matters in the kidneys: beſides, there are many inſtances of people ſeverely afflicted with the ſtone for the greateſt part of a long life, who have never had the leaſt attack of the gout.

Whatever may be the particular cauſe of the diſpoſition to *lithiaſis*, the kidneys appear to be the moſt likely places for the earthy particles to concrete or run together, becauſe of the great quantity of blood which paſſes through the renal arteries, and which comes immediately from the heart, fraught with various newly-received matters, that have not undergone much of the action of the veſſels, and therefore cannot as yet be ſuppoſed to be thoroughly aſſimilated.

Anatomiſts who have carefully examined the kidneys in the human ſubject, particularly M. Bertin, inform us, that there are two ſets of *tubuli uriniferi;* the one continued directly from the extremities of the renal artery, and the other ſpringing from that veſicular texture which is conſpicuous in the kidney.

It is in this veſicular part of the kidney that we preſume the earthy particles firſt ſtagnate and coaleſce: for it is hardly to be ſuppoſed, that ſuch ſolid matters could be allowed to ſtop in the extremities of the renal arteries, ſince the blood, and the urine ſeparated from it, muſt flow through theſe veſſels with great degrees of force and velocity; but in the intermediate veſiculæ the earthy particles may lie, and there attracting each other, ſoon come to acquire ſenſible degrees of magnitude, and thus become ſand or gravel. As long as this ſand or gravel formed in the veſicular part of the kidney lies quiet, there will be no pain or uneaſineſs, until the concretions become large enough to preſs either on the adjoining *tubuli*, or on the blood-veſſels; then a ſenſe of weight, and a kind of obtuſe pain in the loins, will be felt. But when the ſmall pieces of earthy matter ſhall be diſlodged and waſhed off by the force of the circulating fluids, or looſened by ſome ſpaſmodic action of the motory fibres in theſe parts, they will in their paſſage create pain, raiſe different degrees of inflammation, or perhaps lacerate ſome blood-veſſels, and cauſe bloody urine. When theſe little earthy concretions happen to be detained in the pelvis of the kidney, or any other place where a flow of urine continually paſſes, they ſoon increaſe in ſize, and become calculi, from the conſtant acceſſion of earthy particles, which are attracted by the original bit of ſand, which thus becomes the nucleus of a ſtone.

It is an opinion which Hippocrates firſt advanced, and which has been almoſt univerſally adopted by his followers, and hath remained till lately uncontroverted, that the ſtone and gravel are generated by the uſe of hard water. And from this quality, which the waters of certain ſprings poſſeſs, of depoſiting a large earthy ſediment, either in the aquæducts thro' which they are conveyed, or in the veſſels in which they are boiled or preſerved, it was obvious to infer, that in paſſing through the kidneys, and eſpecially whilſt retained in the bladder, they would let fall their groſſer particles, which by the continued appoſition of freſh matter, connected by the animal gluten, and compacted by the muſcular action of that organ, would in time form a calculus, ſufficiently large to produce a train of the moſt excruciating ſymptoms. And this reaſoning *à priori* has been ſuppoſed to be confirmed by facts and experience; for not to mention the authority of Hippocrates, Dr Liſter has obſerved, that the inhabitants of Paris are peculiarly ſubject to the ſtone in the bladder. Nicholas de Blegny has related the hiſtory of one who was diſſected at Paris, in whom the pylorus, a great part of the duodenum, and the ſtomach itſelf, were found incruſtated with a ſtony matter, to the thickneſs of a finger's breadth. And it is well known, that the water of the river Seine, with which that city is ſupplied, is ſo impregnated with calcareous matter, as to incruſtate, and in a ſhort time to choak up, the pipes through which it runs. But on the other hand it is objected, that the human calculus is of animal origin, and by chemical analyſis appears to bear very little analogy to the ſtony concretions of water: and though it is allowed, that more perſons are cut for the ſtone in the hoſpitals at Paris, than in moſt other places; yet upon inquiry it is found, that many of thoſe patients come from different provinces, and from towns and villages far diſtant from the Seine.

Dr Percival conjectures, that though this diſeaſe may chiefly depend upon a peculiar diſpoſition to concrete in the animal-fluids, which in many inſtances is hereditary, and in no inſtance can with certainty be imputed to any particular cauſe; yet, hard water is at leaſt negatively favourable to this diatheſis, by having no tendency to diminiſh it. The urine of the moſt healthy perſon is generally loaded with terreous matter, capable, in favourable circumſtances, of forming a calculus; as is evident from the thick cruſt which it depoſits on the ſides of the veſſels in which it is contained. And it ſeems as if nature intended by this excretion to diſcharge all the ſuperfluous ſalts of the blood, together with thoſe earthy particles, which are either derived from our aliment, and fine enough to paſs thro' the lacteals, though inſuperable by the powers of circulation, or which ariſe from the abraſion of the ſolids, or from the diſſolution of the red globular part of our fluids. Now water, whether uſed as nature preſents us with it, or mixed with wine, or taken under the form of beer or ale, is the great diluter, vehicle, and menſtruum, both of our food, and of the ſaline, earthy, and recrementitious parts of the animal-juices. And it is more or leſs adapted to the performance of theſe offices, in proportion to its degree of purity. For it muſt appear evident to the moſt ordinary underſtanding, that a menſtruum already loaded, and perhaps ſaturated with different contents, cannot act ſo powerfully as one which is free from all ſenſible impregnation. Nor is this reaſoning founded upon theory alone; for it is obſerved, that Malvern water, which iſſues from a ſpring in Worceſterſhire remarkable for its uncommon purity, hath the property of diſſolving the little ſabulous ſtones which are often voided in nephritic complaints. And the ſolution too, which is a proof of its being complete, is perfectly colourleſs. Hence this water is drunk with great advantage in diſorders of the urinary paſſages. And during the uſe of it, the patient's urine is generally limpid, and ſeldom depoſits any ſandy ſediment. Yet notwithſtanding this appearance of tranſparency, it is certainly at ſuch times loaded with impurities, which are ſo diluted and diſſolved as not to be viſible. For it is attended with a ſtrong and fetid ſmell, exactly reſembling that of aſparagus. Hoffman mentions a pure, light, ſimple water in the principality of Henneberg, in Germany, which is remarkable for its efficacy in the ſtone and gravel; and a water of ſimilar virtues was diſcovered not many years ago in the black foreſt, near Oſterod, which upon examination did not afford a ſingle grain of mineral matter. Indeed it is worthy of obſervation, that moſt of the ſprings which were formerly held in great eſteem, and were called *holy wells*, are very pure, and yield little or no ſediment.

Dr Percival informs us that a gentleman of Mancheſter, who had been long ſubject to nephritic complaints, and often voided ſmall ſtones, was adviſed to refrain from his own pump-water, which is uncommonly hard, and to drink conſtantly the ſofter water of a neighbouring ſpring; and that this change alone, without the uſe of any medicine, hath rendered the returns of his diſorder much leſs frequent and painful. A lady alſo, much affected with the gravel, was induced by the peruſal of the firſt edition of Dr Percival's Eſſay, to try the effect of ſoft water; and by the conſtant uſe of it remained two years entirely free from her diſorder.

In nephritic caſes, diſtilled water would be an excellent ſubſtitute for Malvern Water, as the following experiment evinces.

Two fragments of the ſame calculus, nearly of equal weights, were immerſed, the one in three ounces of diſtilled water, the other in three ounces of hard pump-water. The phials were hung up cloſe together in a kitchen-chimney, at a convenient diſtance from the fire. After 14 days maceration, the calculi were taken out, and carefully dried by a very gentle heat. The former, *viz.* that which had been immerſed in diſtilled water, was diminiſhed in its weight a grain and half; the latter had loſt only half a grain.

It is the paſſage of theſe calculi from the kidneys down into the bladder, which occaſions the pain, vomiting, and other ſymptoms, that conſtitute what is uſually termed a *fit of the gravel* or *ſtone*.

When an inflammation is actually raiſed, the diſeaſe is known by the name of *nephritis*, and has been already treated of.

As ſoon as the ſtone paſſes through the ureter, and falls into the bladder, the pain and other nephritic ſymptoms ceaſe; and every thing will remain quiet, either till the ſtone is carried into the urethra, or until it has remained long enough in the bladder to acquire weight ſufficient to create new diſtreſs.

If a ſtone happens to be ſmooth and of a roundiſh form, it may lie in the bladder and acquire conſiderable bulk before it can be perceived by the patient; but when it is angular, or has a rugged ſurface, even though it may be ſmall in ſize, yet it ſeldom fails to raiſe pain, and occaſion bloody urine, or the diſcharge of a ſlimy fluid, with teneſmus, and difficulty in making water.

There have been various attempts and pretences made to diſſolve the ſtone. The things which have been found moſt effectual are thoſe that powerfully abſorb the fixed air from bodies, and at the ſame time readily combining with oils, render them miſcible with water. There is ſcarce any earthy ſubſtance that abounds more in oil, and alſo contains ſuch a quantity of fixed air as the human *calculus;* and hence it is that the cauſtic fixed alkaline ſalt is ſuch a powerful diſſolvent of the ſtone: but this being of a very acrid nature, it requires to be well ſheathed by means of ſome gelatinous or mucilaginous vehicle. Veal-broth is as convenient as any for this purpoſe, and accordingly it is uſed by thoſe who make a ſecret of the cauſtic alkali as a vehicle for the ſoap-lees.

Mr Blackrie, who has taken much pains in this inquiry, has proved very ſatisfactorily, that Chittick's noſtrum is no other than ſoap-lees given in veal-broth, which the patients ſend every day to the Doctor, who returns it mixed up with the medicine, in a cloſe veſſel ſecured by a lock.

It is not every caſe, however, that either requires or will bear a courſe of the cauſtic alkali. Some calculi are of that ſoft and friable nature, that they will diſſolve even in common water; and there are caſes wherein it appears that the conſtant uſe of ſome very ſimple decoction or infuſion of an inſignificant vegetable, has brought away large quantities of earthy matter, in flakes which apparently have been united together in layers to form a ſtone. Dr Macbride aſſures us, that a decoction of raw coffee, only 30 berries in a quart of water, boiled till it acquired a deep greeniſh colour, taken morning and evening to the quantity of eight or ten ounces, with ten drops of ſweet ſpirit of nitre, had the powerful effect of bringing away, in the courſe of about two months, as much earthy matter in flakes as filled a large tea-cup. The patient was far advanced in years; and, before he began this decoction, had been reduced to great extremities by the continuance of pain and other diſtreſſing ſymptoms: he was purged occaſionally with *oleum ricini*.

An infuſion of the ſeeds of *daucus ſylveſtris* ſweetened with honey, is another ſimple and approved remedy; and has been found to give conſiderable eaſe in caſes where the ſtomach could not bear any thing of an acrid nature: the leaves of the *uva urſi* were ſtrongly recommended by the late very celebrated De Haen. But where the ſtomach will bear it, and there is no ulceration in the caſe, nor exceſſive ſenſibility in the uropoietic organs, either the ſoap-lees in new-milk or veal-broth, or ſoap-pills and lime-water, will bid faireſt to do effectual ſervice, either by diſſolving the ſtony concretions, or at leaſt rendering the ſharp points and rugged ſurface leſs capable of injuring the ſenſible membranes of the parts where theſe hard bodies lodge, or happen to paſs through.

In the Medical Commentaries, vol. 3. we have an account of a method uſed by the inhabitants of Arabia Petræa for curing the ſtone, to which they are very much ſubject, and which the author (an Engliſh gentleman of experience and candour) aſſures us he has ſeen frequently performed with never-failing ſucceſs. By means of a catheter they inject into the bladder a weak lee of alkali with the purified fat of a ſheep's tail and a proper quantity of opium all put together. Their catheters are made of gold, and in performing the operation they introduce them quite into the bladder; ſo that the compoſition is ſafely conveyed to the ſtone without hurting any other part. But when a ſtone is ſituated in the kidney, they have no method of cure.

If this method of curing by injection could be ſafely practiſed, it would no doubt greatly have the advantage over that of taking alkalies by the mouth, where the medicine is not only much weakened, but the conſtitution of the patient runs the riſk of being greatly injured. But from ſome experiments mentioned in the ſecond volume of the Medical Tranſactions, it appears that the human calculi are very different from one another in their natures. Some, for inſtance, will eaſily yield to an alkaline menſtruum, and very little to an acid; while others are found to reſiſt the alkali, and yield to the acid; and ſome are of ſuch a compact nature, that they yield neither to acids nor alkalies. Dr Percival and others have ſhewn by experiments, that fixed air will diſſolve ſome kinds of calculi; but whether theſe would not more readily be diſſolved by alkalies or acids, hath not yet been diſcovered. This ſolvent, however, is much more ſafe than either of the other two, and ought always to be firſt employed; as it may perhaps facilitate the action of the others, though its own ſolvent powers ſhould not be ſufficient. An attention, however, to the fragments, ſcales, or films, which the ſtone may caſt off, and alſo to the contents and ſediment of the urine, may lead to the diſcovery of what ſolvent is proper, or whether the ſtone can be diſſolved by any. To uſe either alkalies or acids improperly may be hurtful; though there may be ſuch kinds of calculi as demand the alternate uſe of acids and alkalies; nay, there may be found calculi of oppoſite kinds in the ſame ſubject.

In ſuch caſes as will not allow us to think of diſſolving the ſtony concretions, and where the only ſcheme is to palliate and procure eaſe from time to time, little more can be done than to keep the bowels open occaſionally by ſome gentle cathartic, and waſh off as much of the looſe gravelly matter and ſlime as can be removed by ſuch mild diuretic infuſions and decoctions as ſhall be found to paſs freely and ſit well on the ſtomach. Perſons afflicted with the ſtone ſhould be careful in reſpect of their diet, and ſtudiouſly avoid all heavy and flatulent food, as well as high ſauces that are apt to turn rancid. For the ſame reaſon, butter and acids are to be ſhunned; for theſe often create heart-burning, and every thing that offends the ſtomach raiſes the nephritic pain; ſuch is the ſympathy that obtains between the digeſtive and the uropoietic organs.

There have been ſurgeons bold enough to entertain an idea of cutting even into the kidney, in order to extract a ſtone: this, however, except in caſes where an abſceſs has been formed, and nature points out the way, is merely chimerical. But cutting into the bladder for the ſame purpoſe, is an ancient and well-known operation, and often crowned with ſucceſs. But a deſcription of this operation belongs to the article SURGERY, to which we refer; and here ſhall only make this remark, that a ſurgeon ſhould never begin his operation, until he and his aſſiſtants are perfectly ſatisfied, from actually feeling the ſtone, that there is one in the bladder; becauſe it has ſometimes happened, that when the inciſion has been made, no ſtone could be found: and the patient having died in conſequence of the operation, and the body being opened, it has appeared that the ſymptoms which occaſioned the belief of a ſtone in the bladder aroſe from ſome other cauſe.

WHEN a dyſuria proceeds from any acrimonious matter thrown into the blood, it may be readily cured by bleeding, emollient clyſters, cooling and diluting drinks with gum arabic or gum tragacanth, linſeed tea, or the warm bath. When it ariſes from inflammations of the bladder or parts adjoining to it, we are to regard it only as a ſymptomatic affection; and the remedies uſed to remove the primary diſeaſe will alſo remove the dyſuria. Sometimes it may ariſe from an ulcer of the bladder, in which caſe it is generally incurable; a mild nutritious diet will, however, protract the patient's life.

CCXIII. DYSPERMATISMUS, or *Difficult* EMISSION *of* SEMEN. Genus CXXV. 487

Dyſpermatiſmus, *Sauv.* gen. 260.
Sterilitas, *Lin.* 171. *Sag.* 211.
Ageneſia, *Vog.* 283.

THIS impediment proceeds generally from obſtructions in the urethra, either by tumours in itſelf, or in the cavernous bodies of the penis; in which caſe the treatment is the ſame as in the iſchuria urethralis; ſometimes it is owing to a kind of epileptic fit which ſeizes the man in the venereal act; and ſometimes the ſemen, when ejected from the proper receptacles, is again abſorbed by them, or flows into the bladder, and is expelled along with the urine. The laſt caſe is very difficult, or indeed impoſſible to cure; as proceeding from ſcirrhi, or other indiſſoluble tumours of the verumontanum, or the neighbouring parts. In ſome it proceeds merely from too violent an erection; in which caſe emollient and relaxing medicines will be of ſervice, and we have an example of a cure performed by means of theſe in the firſt volume of the Edinburgh Medical Eſſays.

CCIV. AMENORRHOEA, SUPPRESSION *of the* MENSES. Genus CXXVI. 48

Amenorrhœa, *Vog.* 130.
Dyſmenorrhœa, *Lin.* 168. *Sag.* 218.

THIS, with ſome other ſymptoms, as dyſpepſia, yellowiſh,

yellowiſh or greeniſh colour of the ſkin, unuſual appetites, &c. conſtitutes the *chloroſis* already treated off, and which ſeldom or never appears without a ſuppreſſion of the menſes. In Dr Home's Clinical Experiments we find the virtues of ſeveral emmenagogues ſet forth in the following manner. Chalybeates ſeldom or never ſucceeded: they were always found more uſeful in diminiſhing the evacuation when too violent, than in reſtoring it when deficient. The tincture of black hellebore proved ſucceſsful only in one of nine or ten caſes, though given to the length of four tea-ſpoonfuls a-day, which is double the quantity recommended by Dr Mead. Compreſſion of the crural artery, recommended by Dr Hamilton in the Phyſical and Literary Eſſays, Vol. II. proved ſucceſsful only in one of ſix caſes. From the effects produced by this compreſſion, it has the ſtrongeſt appearance of loading the uterus with blood; from the ſenſations of the patient it produces the ſame effects as the approach of the menſes, and has every appearance in its favour; yet does not ſucceed. Dr Home ſuppoſes that the uterus is more frequently in too plethoric and inflammatory a ſtate, when this remedy will do hurt, than in a ſtate of inanition; however, he owns, that in the caſe in which it did ſucceed, the patient was plethoric and inflammatory. Veneſection is recommended as an excellent remedy; the Doctor gives three inſtances of its ſucceſs, and ſays he could give many more. It acts by removing the plethoric ſtate of the uterus, relaxing the fibres, and giving the veſſels full play; ſo that their action overcomes all reſiſtance, and the evacuation takes place. It is of no great moment from whence the blood is taken: the ſaphæna vein will perhaps empty the uterus moſt; but it is difficult to get the proper quantity from it, and it cannot be ſo well meaſured. The powder of ſavine is a powerful remedy; and proved ſucceſsful in three caſes out of four in which it was tried. 487 It was given in the quantity of half a drachm twice a-day. It is a ſtrong topical ſtimulus, and ſeems improper in plethoric habits. Madder root is a very powerful medicine in this diſeaſe; and proved ſucceſsful in 14 out of 19 caſes in which it was tried, being ſometimes exhibited in the quantity of two ſcruples, or a drachm, four times a-day. It has ſcarce any ſenſible effects; never quickens the pulſe, or excites inflammatory ſymptoms: on the contray, the heat, thirſt, and other complaints abate; and ſometimes theſe ſymptoms are removed, though the diſeaſe is not cured; but when it ſucceeds, the menſes appear from the third to the 12th day.—For other methods of curing the amenorhœa, ſee CHLOROSIS.

We have now conſidered all thoſe diſeaſes enumerated in Dr Cullen's Noſology, whoſe cure is to be attempted chiefly by internal medicines. The other genera either require particular manual operations, or a very conſiderable uſe of external applications; and therefore properly fall under the article SURGERY. It now remains to treat of ſome diſeaſes which are not yet yet arranged in his ſyſtem. 48

489 CCXV. ANGINA PECTORIS.

DR HEBERDEN was the firſt who deſcribed this diſeaſe, though it is extremely dangerous, and, by his account, not very rare. It ſeizes thoſe who are ſubject to it, when they are walking, and particularly when they walk ſoon after eating, with a moſt diſagreeable and painful ſenſation in the breaſt, which ſeems to threaten immediate deſtruction: but the moment they ſtand ſtill, all the uneaſineſs vaniſhes. In all other reſpects the patients at the beginning of this diſorder are well, and have no ſhortneſs of breath; from which the *angina pectoris* is totally different. After it has continued ſome months, the fits will not ceaſe inſtantaneouſly on ſtanding ſtill; and it will come on not only when the patients are walking, but when they are lying down, and oblige them to riſe up out of their beds every night for many months together. In one or two very inveterate caſes, it has been brought on by the motion of a horſe or carriage; and even by ſwallowing, coughing, going to ſtool, ſpeaking, or by any diſturbance of mind. The perſons affected were all men, almoſt all of whom were above 50 years of age, and moſt of them with a ſhort neck and inclining to be fat. Something like it, however, was obſerved in one woman, who was paralytic; and one or two young men complained of it in a ſlight degree, and other practitioners have obſerved it in very young perſons.

When a fit of this ſort comes on by walking, its duration is very ſhort, as it goes off almoſt immediately upon ſtopping. If it come on in the night, it will laſt an hour or two. Dr Heberden met with one in whom it once continued for ſeveral days, during which time the patient ſeemed to be in imminent danger of death. Moſt of thoſe attacked with the diſtemper died ſuddenly: though this rule was not without exceptions; and Dr Heberden obſerved one who ſunk under a lingering illneſs of a different nature.

The *os ſterni* is uſually pointed to as the ſeat of this malady; but it ſeems as if it was under the lower part of that bone, and at other times under the middle or upper part, but always inclining more to the left ſide; and ſometimes there is joined with it a pain about the middle of the left arm.

The appearance of Dr Heberden's paper in the Medical Trrnſactions very ſoon raiſed the attention of the faculty, and produced other obſervations from phyſicians of eminence; namely, Dr Fothergill, Dr Wall of Worceſter, Dr Haygarth of Cheſter, and Dr Percival of Mancheſter. It alſo induced an unknown ſufferer under the diſeaſe to write the Doctor a very ſenſible letter, deſcribing his feelings in the moſt natural manner; which, unfortunately, in three weeks after the date of this anonymous epiſtle, terminated in a ſudden death, as the writer himſelf had apprehended.

The youngeſt ſubject that Dr Fothergill ever ſaw afflicted with this diſorder, was about 30 years of age; and this perſon was cured. The method that ſucceeded with him, was a courſe of pills, compoſed of the maſs of gum pill, ſoap, and native cinnabar; with a light chalybeate bitter: this was continued for ſome months, after which he went to Bath ſeveral ſucceſſive ſeaſons, and acquired his uſual health: he was ordered to be very ſparing in his diet; to keep the bowels open; and to uſe moderate exerciſe on horſeback, but not to take long or fatiguing walks.

The only ſymptom in this patient that is mentioned, was a ſtricture about the cheſt, which came on if he was walking up hill or a little faſter than ordinary, or if he was riding a very briſk trot; for moderate exerciſe of any kind did not affect him: and this uneaſy ſenſation always obliged him to ſtop, as he felt himſelf threatened with immediate death if he had been obliged to go forward.

It is the ſharp conſtrictive pain acroſs the cheſt, that (according to Dr Fothergill's obſervation) particularly marks this ſingular diſeaſe; and which is apt to ſupervene a certain degree of muſcular motion, or whatever agitates the nervous ſyſtem.

In ſuch caſes as fell under the inſpection of Dr Fothergill, he very ſeldom met with one that was not attended with an irregular and intermitting pulſe; not only during the exacerbations, but often when the patient was free from pain and at reſt: but Dr Heberden obſerves, that the pulſe is, at leaſt ſometimes, not diſturbed; and mentions his having once had an opportunity of being convinced of this circumſtance, by feeling the pulſe during the paroxyſm.

But no doubt theſe varieties, as well as many other little circumſtances, will occur in this diſeaſe as they do in every other, on account of the diverſity of the human frame; and if thoſe which in general are found to predominate and give the diſtinguiſhing character be preſent, they will always authoriſe us in giving the name to the diſeaſe: thus, when we find the conſtrictory pain acroſs the cheſt, accompanied with a ſenſe of ſtrangling or ſuffocation; and ſtill more, if this pain ſhould ſtrike acroſs the breaſt into one or both arms; we ſhould not heſitate to pronounce the caſe an *angina pectoris*.

As to the nature of this diſeaſe, it appears to be purely ſpaſmodic: and this opinion will readily preſent itſelf to any one who conſiders the ſudden manner of its coming on and going off; the long intervals of perfect eaſe; the relief afforded by wine, and ſpirituous cordials; the influence which paſſionate affections of the mind have over it; the eaſe which comes from varying the poſture of the head and ſhoulders, or from remaining quite motionleſs; the number of years which it will continue, without otherwiſe diſordering health; its bearing ſo well the motion of a horſe or carriage, which circumſtance often diſtinguiſhes ſpaſmodic pains from thoſe which ariſe from ulcers; and laſtly, from its coming on for the moſt part after a full meal, and in certain patients at night, juſt after the firſt ſleep, at which time the incubus, convulſive aſthma, and other ills, juſtly attributed to the diſordered functions of the nerves, are peculiarly apt to return or to be aggravated.

But though it ſhould be admitted, that the whole diſtreſs in theſe caſes ariſes from ſpaſm, it may not be ſo eaſy to aſcertain the particular muſcles which are thus affected.

The violent ſenſe of ſtrangling or choaking, which ſhews the circulation through the lungs to be interrupted during the height of the paroxyſm; and the peculiar conſtrictive pain under the ſternum, always inclining (according to Dr Heberden's obſervation) to the left-ſide; together with that moſt diſtreſſing and alarming ſenſation, which, if it were to increaſe or continue, threatens an immediate extinction of life; might authoriſe us to conclude that the heart itſelf is the muſcle affected: the only objection to this idea, and, if it had been conſtantly obſerved, it would be inſurmountable, is, that the pulſe is not always interrupted during the paroxyſm. The appearances in two of the diſſections, favour the opinion that the ſpaſm affects the heart; as in one ſubject the left ventricle (and, tho' it be not mentioned, we may preſume the right one alſo), was found as empty of blood as if it had been waſhed; and in another, the ſubſtance of the heart appeared whitiſh, not unlike a ligament; as it ſhould ſeem, in both caſes, from the force of the ſpaſm ſqueezing the blood out from the veſſels and cavities.

If this hypotheſis be allowed, we muſt conclude that the ſpaſm can only take place in an inferior degree, as long as the patient continues to ſurvive the paroxyſm; ſince an affection of this ſort, and in this part, of any conſiderable duration or violence, muſt inevitably prove fatal: and accordingly, as far as could be traced, the perſons who have been known to labour under this diſeaſe have in general died ſuddenly.

The diſſections alſo ſhew, that whatever may be the true ſeat of the ſpaſm, it is not neceſſary for the bringing of it on, that the heart, or its immediate appendages, ſhould be in a morbid ſtate; for in three out of the ſix that have as yet been made public, theſe parts were found in a ſound ſtate.

On opening the body of the poor gentleman who wrote the letter to Dr Heberden, " upon the moſt careful examination, no manifeſt cauſe of his death could be diſcovered; the heart, in particular, with its veſſels and valves, were all found in a natural condition."

In the caſe communicated by Dr Percival to the publiſhers of the Medical Commentaries, " the heart and aorta deſcendens were found in a ſound ſtate." And in Dr Haygarth's patient, " on opening the thorax, the lungs, pericardium, and heart, appeared perfectly ſound." Not to mention Dr Fothergill's patient (R. M.), in whoſe body the only morbid appearance about the heart was a ſmall white ſpot near the apex. So that the cauſe, whatever its nature might have been, was at too great a diſtance, or of too ſubtile a nature, to come under the inſpection of the anatomiſt. But there was a circumſtance in two of the ſubjects that is worthy of remembrance; and which ſhews that the craſis of the blood, while they were living, muſt have been greatly injured, namely, its not coagulating, but remaining of a cream-like conſiſtence, without any ſeparation into ſerum and craſſamentum.

From all that we have ſeen hitherto publiſhed, it does not appear that any conſiderable advances have been made towards the actual cure of this anomalous ſpaſm.

The very judicious and attentive Dr Heberden (to whom the public are highly obliged for firſt making the diſorder known) confeſſes, that bleeding, vomits, and other evacuations, have not appeared to do any good: wine and cordials, taken at bed-time, will ſometimes prevent or weaken the fits; but nothing does this ſo effectually as opiates: in ſhort, the medicines uſually called *nervous* or *cordial*, ſuch as relieve and quiet convulſive motions, and invigorate the languiſhing principle of life, are what he recommends.

Dr Wall mentions one patient, out of the 12 or 13 that he had ſeen, who applied to him early in the diſeaſe, and was relieved conſiderably by the uſe of antimonial medicines joined with the fetid gums: he was ſtill living at the time the Doctor wrote his paper, (November 1772), and going about with tolerable eaſe. Two were carried off by other diſorders; all the reſt died ſuddenly.

Dr Fothergill's directions are chiefly calculated with the view to prevent the diſorder from gaining ground, and to alleviate preſent diſtreſs. Accordingly he enjoins ſuch a kind of diet as may be moſt likely to prevent irritability: in particular, not to eat voraciouſly: to be particularly abſtemious in reſpect to every thing heating; ſpices, ſpirits, wines, and all fermented liquors: to guard moſt ſcrupulouſly againſt paſſion, or any vehement emotions; and to make uſe of all the uſual means of eſtabliſhing and preſerving general health: to mitigate exceſſes of irritability by anodynes; or pains, if they quicken the circulation: to diſperſe flatulencies when they diſtend the ſtomach, by moderate doſes of carminatives; amongſt which, perhaps, ſimple peppermint water may be reckoned one of the ſafeſt. But ſince obeſity is juſtly conſidered as a principal prediſpoſing cauſe, he inſiſts ſtrongly on the neceſſity of preventing an increaſe of fat, by a vegetable diet, and uſing every other practicable method of augmenting the thinner ſecretions.

Theſe were the only means which occurred to the Engliſh phyſicians of oppoſing this formidable diſeaſe: but Dr Smyth of Ireland has ſince diſcovered that it may be certainly cured by iſſues, of which Dr Macbride gives the following inſtance.

" *A. B.* a tall, well-made man; rather large than otherwiſe; of healthy parents, except that there had been a little gout in the family; temperate; being very attentive to the buſineſs of his trade (that of a watch-maker), led a life uncommonly ſedentary; had, from his boyhood upwards, been remarkably ſubject to alarming inflammations of his throat, which ſeized him, at leaſt, once in courſe of the year; in all other reſpects well.

" In 1767, (then 48 years of age), he was taken, without any evident cauſe, with a ſudden and very diſpiriting throbbing under the ſternum. It ſoon afterwards increaſed, and returned upon him every third or fourth week, accompanied with great anxiety, very laborious breathing, choaking, a ſenſation of fulneſs and diſtenſion in the head, a bloated and fluſhed countenance, turgid and watery eyes, and a very irregular and unequal pulſe. The paroxyſm invaded, almoſt conſtantly, while he was ſitting after dinner; now and then he was ſeized with it in the morning, when walking a little faſter than uſual; and was then obliged to ſtop, and reſt on any object at hand. Once or twice it came on in bed; but did not oblige him to ſit up, as it was then attended with no great difficulty in breathing. In the afternoon fits, his greateſt eaſe was from a ſupine poſture; in which he uſed to continue motionleſs for ſome hours, until, quite ſpent and worn out with anguiſh, he dropt into a ſlumber. In the intervals between theſe attacks, which at length grew ſo frequent as to return every fourth or fifth day, he was, to appearance, in perfect health.

" Thus matters continued for more than two years; and various antiſpaſmodics were ineffectually tried for his relief. In 1769, there ſupervened a very ſharp conſtrictory pain at the upper part of the ſternum, ſtretching equally on each ſide, attended with the former ſymptoms of anxiety, dyſpnœa, choaking, &c. and with an excruciating cramp, as he called it, that could be covered with a crown-piece, in each of his arms, between the elbow and the wriſt, exactly at the inſertion of the pronator teres; the reſt of the limb was quite free. The fits were ſometimes brought on, and always exaſperated, by any agitation of mind or body. He once attempted to ride o'horſeback during the paroxyſm; but the experiment was near proving fatal to him. The difference of ſeaſon or weather made no impreſſion upon him. Still, in the intervals, his health was perfectly good; except that his eyes, which before his illneſs were remarkably ſtrong and clear, were now grown extremely tender; and that his ſight was much impaired. He had no flatulency of ſtomach, and his bowels were regular.

" In this ſituation, February 22. 1770, he applied to me for aſſiſtance. I had ſeen, I believe, eight or ten of theſe frightful caſes before. Two of the patients dropt dead ſuddenly. They were men between 40 and 50 years of age, and of a make ſomewhat fleſhy. The fate of the others I was not informed of; or, at leaſt, cannot now recollect.

" Having found the total inefficacy of bliſters and the whole claſs of nervous medicines in the treatment of this anomalous ſpaſm, I thought it right to attempt the correcting or draining off of the irritating fluid in the caſe now before us. To this purpoſe, I ordered a mixture of *aq. calc. mag. c.* with a little of the *aq. junip. c.* and an alterative proportion of Huxham's antimonial wine: I put the patient on a plain, light, perſpirable diet; and reſtrained him from all viſcid, flatulent, and acrimonious articles. By purſuing this courſe, he was ſoon apparently mended; but after he had perſiſted regularly in it for at leaſt two months, he kept for ſome time at a ſtand. I then ordered a large iſſue to be opened in each of his thighs. Only one was made. However, as ſoon as it began to diſcharge, his amendment manifeſtly increaſed. The frequency and ſeverity of the fits abated conſiderably; and he continued improving gradually, until, at the end of 18 months, he was reſtored to perfect health; which he has enjoyed, without the leaſt interruption, till now, except when he has been tempted (perhaps once in a twelvemonth) to tranſgreſs rules, by making a large meal on ſalted meat, or indulging himſelf in ale or rum-punch, each of which never failed to diſorder him from the beginning of his illneſs: and, even on theſe occaſions, he has felt no more than the ſlighteſt motion of his former ſufferings; inſomuch that he would deſpiſe the attack, if it did not appear to be of the ſame ſtock with his old complaint. No other cauſe has had the leaſt ill effect on him.

" Though rum was conſtantly hurtful, yet punch made with a maceration of black currants in our vulgar corn-ſpirit, is a liquor that agrees remarkably well with him.

" He never took any medicine after the iſſue began to diſcharge; and I have directed that it ſhall be kept open as long as he lives. The inflammations of his throat have diſappeared for five years paſt; he has recovered the ſtrength and clearneſs of his ſight; and his health ſeems now to be entirely re-eſtabliſhed."

Doctor Macbride, in a letter to Dr Duncan, gives the following additional obſervations on this diſeaſe.

"Within theſe few weeks I have, at the deſire of Dr Smyth, viſited, three or four times, a very ingenious man who keeps an academy in this city, of about 34 years of age, who applied to the Doctor for his advice in January laſt.

"I ſhall give you his ſymptoms as I had them from his own mouth, which appear to me to mark his caſe to be an angina pectoris, and as deplorable as any that I have read of. It was ſtrongly diſtinguiſhed by the exquiſite conſtrictory pain of the ſternum, extending to each of his arms as far as the inſertion of the deltoid muſcle, extreme anxiety, laborious breathing, ſtrangling, and violent palpitation of the heart, with a moſt irregular pulſe. The paroxyſms were ſo frequent, that he ſcarcely ever eſcaped a day, for ſix or ſeven years, without one. They were uſually excited by any agitation of mind or body, though ſlight. He had clear intervals of health between the fits. The diſtemper ſeemed hereditary in him, as he ſays his father was affected in the ſame manner ſome years previous to his death. He has a ſtrong gouty taint, which never ſhewed itſelf in his limbs; and he has led a life of uncommon ſedentarineſs, from intenſe application to mathematical ſtudies, attention of mind, and paſſion, even from his boyiſh years. Theſe circumſtances may, perhaps, account for his having been taken with this diſeaſe at ſo early an age as 17.

"A large iſſue was immediately opened in each of his thighs. In a month afterwards he began to mend, and has gone on improving gradually. He can now run up ſtairs briſkly, as I ſaw him do no later than yeſterday, without hurt; can bear agitation of mind; and has no complaint, excepting a ſlight oppreſſion of the breaſt, under the ſternum, which he feels ſometimes in a morning, immediately after dreſſing himſelf, and which he thinks is brought on by the motion uſed in putting on his clothes; though for a complete week preceding the day on which I ſaw him laſt, he told me that he had been entirely free from all uneaſineſs, and was exulting that he had not had ſuch an interval of eaſe for theſe laſt ſeven years.

"Doctor Smyth alſo ſhewed me, in his *adverſaria*, the caſe of a gentleman who had been under his care in 1760, which he had forgotten when my book went to the preſs, and which he was reminded of the other day by a viſit from his patient. It was a genuine angina pectoris, brought on by a very ſedentary life, and great vexation of mind, clearly marked by the exquiſite pain under the ſternum, that extended acutely to the upper extremities, particularly along the left arm, together with the other ſymptoms of dyſpnoea, anxiety, palpitation of the heart, &c. recited in the caſe above. The diſorder went off in 1762, by large ſpontaneous diſcharges from the piles, but returned upon him ſeverely in 1765. Iſſues in his thighs were then recommended to him, but not made. But, whether it was by the perſuaſion of ſome friend, or of his own accord, he went into a courſe of James's powder, in ſmall alterative doſes, combined with a little caſtor and aſa fœtida. This he perſiſted in for about ſix weeks; in the meanwhile, he had large acrimonious gleetings from the ſcrotum, and a plentiful diſcharge of ichor from the anus. From this time he began to find his complaints grow leſs and leſs diſtreſſing, and he has now been totally free from them for ſix years paſt."

CCXVII. The PUERPERAL or CHILD-BED FEVER. 490

This ſpecies of fever, as its name imports, is peculiar to women in child-bed; and is uſually the moſt fatal of all the diſorders to which the ſex is liable. But, notwithſtanding the prevalence of it in all ages, its real nature has remained, to the preſent times, a ſubject of much diſpute and uncertainty. The critical period of its invaſion, when febrile commotions are apt to be excited by various accidents, and the equivocal ſymptoms which accompany it, have even afforded room for queſtioning whether it be a primary or a ſecondary diſeaſe. Some writers have conſidered it as proceeding entirely from an inflammation of the uterus; others have imagined it to be the conſequence of an obſtruction to the ſecretion of the milk; while the greater number has been inclined, for reaſons equally if not more plauſible, to impute it to a ſuppreſſion of the lochia. If we examine this fever attentively, however, according to its natural courſe, and independently of all the accidental concomitant ſymptoms with which it is not eſſentially connected, we may ſafely pronounce it to be a primary diſeaſe of a particular characteriſtic, and perhaps not the neceſſary conſequence of any of the cauſes above-mentioned.

This fever is moſt generally incident to women within 48 hours after delivery, though it may ſupervene on the fourth or fifth day, and ſometimes conſiderably later. It is preceded, like other fevers, by a rigor, which is commonly violent; and, when happening during the time of labour, may be confounded with the pains of parturiency. In its earlier ſtage it is attended with the ſigns of inflammation. A great pain is felt in the back, hips, and the region of the uterus; which, in the part laſt mentioned, is accompanied with the ſenſe of heat and throbbing. A ſudden change in the quality or quantity of the lochia now alſo takes place; the patient is frequently troubled with a teneſmus; and the urine, which is very high coloured, is diſcharged in ſmall quantity and with pain. At the firſt attack of the fever, the woman is generally ſeized with a vomiting of porraceous matter, as in the *cholera morbus*, to which diſeaſe it then bears a ſtrong reſemblance. But inſtead of this ſymptom, there is ſometimes only a nauſea, or loathing of the ſtomach, with a diſagreeable taſte in the mouth. The belly ſwells to a conſiderable bulk, and becomes ſuſceptible of painful ſenſations from the ſlighteſt impreſſion. The tongue is generally dry, though ſometimes moiſt, and covered with a thick browniſh fur. When the fever has continued a few days, the ſymptoms of inflammation uſually ſubſide, and the diſeaſe acquires a more putrid form. At this period, if not at the very beginning of the diſorder, a bilious or putrid diarrhœa, of a dangerous and obſtinate nature, ſupervenes, and accompanies it through all its future progreſs; each motion to ſtool being preceded by a temporary increaſe, and followed by an alleviation of pain. The patient uſually nauſeates all kind of food and drink, except what is cold and acidulated. A brown or blackiſh ſordes, the conſequence of putrid exhalations, adheres to the edges of the teeth; a troubleſome hickup is at length produced, which greatly exaſperates the pains of the abdomen; petechiæ or vibices alſo appear, with ſometimes a miliary eruption, but which produces no mitigation of the diſeaſe. Thro' the whole courſe of the fever, the patient is affected with great anxiety and dejection of ſpirits.

Such in general is the courſe of the puerperal fever; the ſymptoms of which, however, may be often varied, according to the conſtitution of the patient, the degree of the diſeaſe, and its earlier or later invaſion. When the woman is naturally weak, or her ſtrength has been greatly reduced by immoderate evacuations after delivery; when the diſeaſe is violent, and immediately follows that period; its progreſs and termination are proportionably rapid and fatal. In ſuch unfortunate circumſtances, many have been known to expire within 24 hours from the firſt attack of the diſeaſe; nay, there are ſome inſtances where the rigor has concluded the ſcene. The cataſtrophe, however, is moſt generally ſuſpended for ſome days; and the number of theſe is variable, though the 11th from the commencement of the fever, may juſtly be fixed as the period which is uſually deciſive. In whatever ſtage of the diſeaſe an unfavourable termination may happen, it would ſeem as if the commencement of the patient's recovery were not marked by any critical revolution of the fever, as depending on an alteration of the humours; but that the cure is gradually effected, either by a ſpontaneous vomiting, or a long-continued diſcharge by ſtool of that porraceous matter, the exiſtence of which in the ſtomach is uſually evinced at the firſt attack of the diſeaſe. The moſt unfavourable prognoſtic, therefore, ariſes from ſuch a weakneſs of the patient as renders her unable to ſupport ſo tedious an evacuation as that by which the fever is overcome. When the lochia return to their former ſtate, when the ſwelling and tenderneſs of the abdomen abate, and there is a moiſture on the ſkin, we have reaſon to hope for a happy termination of the diſeaſe.

Though the puerperal fever may generally be aſcertained from the deſcription which has been given, and chiefly by that remarkable tenderneſs of the abdomen, which particularly diſtinguiſhes it; yet, as ſome of its ſymptoms may be confounded with thoſe ariſing from other diſeaſes, and which require a different method of cure, it will be proper to mention here the circumſtances whereby it may be known with greater certainty.

The pains of the abdomen, attending the child-bed fever, may be diſtinguiſhed from thoſe called *after-pains*, by their uninterrupted continuance through the courſe of the diſeaſe, though ſometimes they ſuffer exacerbations; whereas, in the latter, they often totally intermit. They are alſo diſtinguiſhable by the abſence of fever with concomitant ſymptoms in the one, and their evident exiſtence in the other.

Many circumſtances evince a diſſimilarity between the puerperal and miliary fevers, notwithſtanding the ſymptoms of anxiety and oppreſſion are common to both; inſomuch that the nature of the approaching diſeaſe may be aſcertained at the very commencement of its attack. In the puerperal fever the rigor is more violent, of longer duration, and not interrupted, as in the other. The pulſe is fuller and ſtronger; the ſkin is more hot; and the tongue, whether moiſt or dry, tho' generally the latter, is not of a white, but browniſh appearance; and the urine is alſo higher coloured. Eruptions, which are critical in miliary fevers, procure no mitigation of the puerperal, and cordials generally increaſe it.

When the original attack of the puerperal fever happens to coincide with the febrile commotion which is excited in child-bed women by the milk, the nature of it may at firſt be miſapprehended; but the concomitant ſymptoms, and greater violence of the diſeaſe, muſt in a ſhort time diſſipate ſuch an error.

From all the moſt accurate accounts of this diſeaſe, and from the period at which it generally commences, there ſeems reaſon to conclude, that it owes its riſe more immediately to accidents after delivery. For it is allowed that it may follow a labour under the beſt and moſt favourable circumſtances, though endeavours to dilate the os internum are ſuppoſed frequently to produce it. The more immediate cauſes generally aſſigned by authors are a ſtoppage of perſpiration, the too free uſe of ſpices, and the neglect of procuring ſtools after delivery; ſudden frights, too haſty a ſeparation of the placenta, and binding the abdomen too tight. The putrid appearance, however, which this diſeaſe ſo ſoon aſſumes, affords ground to ſuſpect that the prediſpoſing cauſe of it is a vitiated ſtate of the humours; for it is generally obſerved to be moſt prevalent in an unhealthy ſeaſon, and among women of a weakly and ſcorbutic conſtitution.

Within theſe few years this fever has been treated of by ſeveral writers, moſt of whom have differed from each other in their ſentiments of the nature of the diſeaſe. The firſt in the order of publication is Dr Denman, who ſeems to be of opinion, that it may derive its origin either from a redundancy or too great acrimony of the bile, the ſecretion of which appears to be much interrupted in the time of geſtation. In Dr Manning's treatiſe on this fever, he mentions its being highly probable that ſuch a cauſe contributes greatly to produce the diſeaſe, eſpecially where the putrid tendency of the humours is increaſed by unwholeſome air and diet.

It has likewiſe been the fate of the puerperal fever, that no diſeaſe has more divided the ſentiments of phyſicians in regard to the method of cure. The apparent indications and contra-indications of bleeding, and other remedies, ariſing from the complication of inflammatory and putrid ſymptoms; the equivocal appearance of the vomiting and purging, as whether they are critical or ſymptomatical; and the different cauſes whence ſymptoms ſimilar to each other may ariſe in pregnant women; all theſe circumſtances concur to involve the ſubject in great obſcurity and indeciſion. If we carefully attend to the ſeveral characteriſtics of the diſeaſe, however, ſo as to be able to diſtinguiſh it from every other puerperal complaint, and obſerve at the ſame time the uſual manner of its declenſion, our judgment may be guided in the method of cure by the ſalutary efforts of nature. But, in order to obtain a clearer view of the genuine indications, it will be proper to conſider them under the ſeveral lights in which they have been generally agitated by authors.

One of the moſt eſſential points to be aſcertained in the cure of the child-bed fever, reſpects the propriety of bleeding. A free uſe of the lancet has been generally regarded as the moſt ſucceſsful expedient in practice; and there are ſome inſtances of critical hæmorrhages which would ſeem to confirm its utility. But Dr Denman thinks we may ſafely affirm from experience, that for one who will be benefited by large bleeding, a much greater number will be injured, and that even almoſt irretrievably. Nor can this ſeem ſurpriſing, when we conſider the ſituation of child-bed women. In moſt, the evacuations conſequent upon delivery are ſufficient to diminiſh any undue ſuperabundance of the fluids; and if, as frequently happens, the diſeaſe be produced by too haſty a ſeparation of the placenta, the conſequence of which is generally a very copious diſcharge of blood, can we ever ſuppoſe that nature will be aſſiſted in overcoming the febrile commotion, by the farther evacuation of the vital fluid, through the defect of which ſhe is now rendered unequal even to the ordinary ſupport of the animal œconomy? We may appeal to every practical phyſician, how much he has known the pulſe to ſink, and what a train of nervous ſymptoms he has obſerved to ſucceed an exceſs of the diſcharge abovementioned. Beſides, it is an axiom in phyſic, that a remedy which cures any diſorder, will always prove ſufficient to prevent it; and therefore, if bleeding were the proper cure in the child-bed fever, the diſeaſe ought to have been prevented by a large evacuation of blood, when that happened previous to its ſeizure. Experience, however, in this, as in all other diſeaſes, is the only unerring guide we can follow; and whoever regulates his practice by fact and obſervation, will be convinced that bleeding, eſpecially in a larger quantity, is, in general, very far from being attended with ſucceſs. Bleeding is ſeldom proper, except in women of plethoric conſtitutions, and in whom the ſigns of inflammation riſe high. Nor even in ſuch patients ought it to be repeated without great caution, and the exiſtence of ſtrong indications. Bleeding, when uſed in proper circumſtances, may unqueſtionably palliate the fever; but that it often ſhortens the duration of it, appears to be a matter of much doubt. On this account the practice becomes ſtill more ſuſpicious and exceptionable, when we conſider that by veneſection improperly uſed the perſon's ſtrength may be ſo far reduced as not to ſupport the tedious looſeneſs by which the diſeaſe is generally carried off. Though bleeding, however, ought in general to be uſed with great caution, there are certainly many caſes in which it is both neceſſary and advantageous.

The genuine nature and effects of the looſeneſs, in this diſeaſe, is another controverted point of the higheſt importance, and which merits the moſt attentive inquiry. Phyſicians, obſerving that women who die of the puerperal fever are generally moleſted with that evacuation, have been induced to conſider this ſymptom as of the moſt dangerous and fatal tendency; and what, therefore, we ſhould endeavour by every means to reſtrain. In this opinion, however, they would ſeem to have been governed by too partial an obſervation of facts. For experience certainly authoriſes the aſſertion, that more women appear to have recovered of the child-bed fever, through the intervention of a diarrhœa, than have been deſtroyed by that cauſe. If it alſo be conſidered, that purging is uſually almoſt the only ſenſible evacuation in the more advanced ſtate of the diſeaſe, and is that which accompanies it to its lateſt period, we ſhall have the ſtrongeſt reaſon to think that it is critical rather than ſymptomatical, and ought therefore to be moderately ſupported, inſtead of being unwarily reſtrained. Nay, the advantage which is found to attend vomiting as well as purging, in the earlier ſtage of the diſeaſe, would ſeem to evince that the matter diſcharged by theſe evacuations is what chiefly foments the diſeaſe. Emetics and purgatives, therefore, in the opinion of Dr Manning, are the only medicines on which any rational dependance is to be placed in this fever; at leaſt, they are certainly ſuch as are found the moſt ſucceſsful. It is an eſtabliſhed rule in practice, to preſcribe a vomit at the beginning of every fever attended with any nauſea or loathing of the ſtomach, and where there is not any reaſon to apprehend an inflammation of that organ. Nor does the ſtate of child-bed women afford the ſmalleſt ground for prohibiting our recourſe to the ſame expedient in anſwering a ſimilar indication.

It is ſo ſeldom a phyſician is called during the rigor preceding the puerperal fever, that he has few opportunities of trying the effects of remedies in that early ſtate of the diſeaſe. When ſuch occur, however, we ſhould endeavour as much as poſſible to abate and ſhorten that period, as the ſucceeding fever is generally found to bear a proportion to the violence and duration of it. For this purpoſe warm diluting drinks ſhould be plentifully uſed, with a ſmall quantity of volatile ſpirits or brandy. When Dr Manning apprehended ſuch an accident, he ſometimes ordered the nurſe to give immediately a diſh or two of warm ſack-whey; taking care that it was not too ſtrong, which is a caution that ought always to be remembered. For though a freer uſe of the more cordial and ſpirituous kinds of liquors might perhaps ſooner abate the rigor, there is danger to be feared from their influence on the approaching fever, eſpecially in women of a ſtrong and healthy conſtitution. In all caſes, warm applications to the extremities, ſuch as heated bricks, towels, or toaſted grains in a linen bag, may be uſed with perfect ſafety, and ſome advantage.

When the hot fit is advanced, the firſt thing Dr Manning orders is ſome emollient injection, as chicken-water, or water and milk, which ought to be frequently repeated through the courſe of the diſeaſe. Theſe prove beneficial, not only by promoting the diſcharge from the inteſtines, which ſeems in fact to be the ſolution of the diſeaſe; but alſo by acting as a kindly fomentation to the uterus and adjacent parts. In this intention they are particularly ſerviceable when the lochia are ſuppreſſed. Great care, however, is requiſite in adminiſtering them, on account of the tenderneſs, and inflammatory diſpoſition, which at that time render the parts in the pelvis extremely ſuſceptible of pain.

The next ſtep in the method of cure ought to be to promote the diſcharge of the morbid matter both by the ſtomach and inteſtines. This intention is beſt anſwered by the remedy preſcribed by Dr Denman, of which the following is the receipt.

℞. Tartar. emetic. gr. ii.
Ocul. cancror. præp. ℈i. Intimè miſceantur.

Of a powder thus prepared, Dr Denman gives from two to ſix grains, and repeats it as circumſtances require. If the firſt doſe does not procure any ſenſible operation, he repeats it in an increaſed quantity at the end of two hours, and proceeds in that manner; not expecting any benefit but from its ſenſible evacuation.

Should the diſeaſe be abated, but not removed, (which ſometimes happens), by the effect of the firſt doſe, the ſame medicine muſt be repeated, but in a leſs quantity, till all danger is over. But if any alarming ſymptoms remain, he does not heſitate one moment to repeat the powder, in the ſame quantity as firſt given; tho' this is ſeldom neceſſary, if the firſt doſe operates properly.

It is to be obſerved, ſays Dr Denman, that as the certainty of cure depends upon the proper repetition of the medicine, the method of giving it at ſtated hours does not appear eligible. If the firſt doſe produces any conſiderable effect by vomiting, procuring ſtools, or plentifully ſweating, a repetition of the medicine in a leſs quantity will ſeldom fail to anſwer our expectations; but great judgment is required in adapting the quantity firſt given to the ſtrength of the patient and other circumſtances. We are not to expect that a diſeaſe which from the firſt formation carries ſo evident marks of danger, ſhould inſtantly ceaſe, even though a great part of the cauſe be removed.

Frequent doſes of the ſaline draughts ought alſo to be given, which not only promote the evacuation by the inteſtines, but likewiſe increaſe the ſalutary diſcharges of urine and perſpiration. Theſe medicines are particularly ſerviceable in ſubduing the remains of the fever, after its violence has been broken by the more efficacious remedies abovementioned; but when they are uſed even in the decline of the diſeaſe, gentle laxatives of rhubarb and magneſia, as adviſed by Dr Denman, ought to be frequently interpoſed, ſince, as he juſtly obſerves, without ſtools we can do little ſervice.

Notwithſtanding the diſcharge by the inteſtines appears to have the moſt ſalutary effect in this diſeaſe, yet when the ſtomach has not been properly unloaded of offenſive matter, though a great nauſea and ſickneſs had indicated the expediency of ſuch an evacuation at the beginning of the fever, the continuance of the looſeneſs is ſometimes ſo long protracted as in the end to prove fatal. In this alarming ſtate of the diſeaſe, when the ſtools are very frequent and involuntary, and all appearances threaten danger, Dr Denman ſays, that a clyſter of chicken-water injected every one, two or three hours, or as often as poſſible without fatiguing the patient too much, with the following draught taken every ſix hours, has produced better effects than could be expected.

℞. Pulv. rad. ipecacuan. gr. i.
Confect. Damocrat. ℈i.
Aq. alexiter. ſimp. vel
Cinnamom. ſimp. ℥iſs. M. f. Hauſtus.

While theſe medicines are uſing, we ſhould endeavour to mitigate the pains of the belly by relaxing applications. During the courſe of the diſeaſe, the patient ought to drink freely of diluting liquors, and abſtain from every thing of a heating quality, unleſs great faintneſs ſhould indicate the uſe of a ſmall quantity of ſome cordial medicine.

Such is the practice recommended in this diſeaſe by Dr Denman. We ſhall now take a curſory view of the ſentiments of ſucceeding writers on this ſubject.

According to Dr Hulme, the proximate cauſe of the puerperal fever is an inflammation of the inteſtines and omentum; for the confirmation of which opinion he appeals to diſſections. He ſuppoſes the chief prediſponent cauſe of the diſeaſe to be the preſſure of the gravid uterus againſt the parts abovementioned. The omentum, ſays he, in the latter ſtage of pregnancy, muſt either be flat, which is its natural ſituation, or be rumpled or carried up by the gravid uterus in folds or doublings. When the latter is the caſe, which he obſerves is probably not ſeldom, the danger of a ſtrangulated circulation will be greater.

Mr White, who has alſo written on this diſeaſe, judiciouſly remarks, that were Dr Hulme's hypotheſis well founded, the diſorder ought rather to take place before delivery, and be immediately removed at that period: That it would likewiſe moſt generally happen to women at their firſt labour, when the abdominal muſcles are leſs yielding, and the pains more violent; the contrary of which is moſt frequently experienced to be the caſe.

It alſo deſerves to be remarked, that, upon Dr Hulme's ſuppoſition, we cannot account for the diſeaſe being more common and fatal in large towns and in hoſpitals, than in the country and private practice, while other inflammatory diſorders are more endemic among thoſe who live in the latter than the former ſituation. Even admitting the friction of the inteſtines and omentum againſt the uterus to be as violent as Dr Hulme ſuppoſes, is it not highly improbable, that any inflammation could be occaſioned by the preſſure of ſuch ſoft ſubſtances upon each other? Or, were this effect really produced, ought not the puerperal fever to be more common and fatal after the moſt laborious deliveries? But this obſervation is not ſupported by experience.

Dr Hulme, in favour of his own hypotheſis, alleges that it gives a ſatisfactory anſwer to the queſtion, "Why all lying-in women have been, and ever will be, ſubject to this diſeaſe?" In this propoſition, however, the Doctor ſuppoſes ſuch an univerſality of the diſeaſe as is not confirmed by obſervation. It is affirmed upon undoubted authority, that in many parts of Britain the puerperal fever is hardly known; whereas, were it really produced by the cauſes he aſſigns, it would be equally general and unavoidable.

But how peculiar ſoever this author's ſentiments are in reſpect of the proximate cauſe of the diſeaſe, they have not led him to any method of cure different from the eſtabliſhed practice. On this ſubject Dr Hulme divides his obſervations into two parts, comprehending under the former the more ſimple method of treatment, and under the latter the more complex. He ſets out with remarking, that the patient being generally coſtive at the beginning of the diſeaſe, an emollient opening clyſter will often give immediate relief; but if this ſhould not prove effectual, recourſe muſt be had to cathartics. Thoſe which he found anſwer his purpoſe beſt, were the *ſal catharthicus amarus*, the *oleum ricini*, emetic tartar, and antimonial wine. When the bowels have been ſufficiently cleared and the pain abates, he adviſes encouraging a gentle diaphoreſis by medicines which neither bind the body nor are heating, ſuch as ſmall doſes of ipecacuan, emetic tartar, and antimonial wine, combined with an opiate in a moderate doſe, and given once or twice in the courſe of 24 hours ; adminiſtering the ſaline draughts in the intermediate ſpaces. If, preceding or during this courſe, a ſickneſs of the ſtomach or vomiting attend, he adviſes aſſiſting the efforts of nature, by drinking plentifully of camomile tea, warm water, or any other diluting liquor. He concludes with recommending a cooling regimen, reſt of body, and tranquillity of mind ; prohibiting all kinds of bandage upon the abdomen, and enjoining particular attention to the ſtate of the bowels, which ought to be kept gently open for ſome time, even after the diſorder ſeems to be gone off, till the patient be quite out of danger.

So much for the ſimple treatment : we now proceed to the ſecond part, where he deſcribes the method of practice when the diſeaſe is in its more irregular and complicated ſtate.

When a diarrhœa accompanies the diſeaſe, he obſerves that it ought by no means to be checked, but ſupported, by ordering the patient to drink plentifully of mild aperient liquors. If the pain of the hypogaſtric region be attended with ſtitches in the ſides or over the pit of the ſtomach, and a pulſe that reſiſts the finger pretty ſtrongly, he remarks that bleeding would then be highly neceſſary : declaring, however, his opinion, that, in the puerperal fever, bleeding is to be conſidered only as a ſecondary means of relief, though the firſt in point of time ; that it ought to be adviſed with great caution ; and that the greateſt dependence is always to be placed upon evacuations by ſtool.

Mr White, abovementioned, imputes the purperal fever to a putreſcent diſpoſition of the humours, contracted during pregnancy, and fomented by the hot regimen commonly uſed by women in child-bed. In conformity to this opinion, the chief means which he recommends for preventing the diſeaſe is a cool regimen and free circulation of air, which he evinces to be of the greateſt importance. In reſpect of bleeding, he informs us, that, upon the ſtricteſt inquiry, he cannot find that thoſe who have bled the moſt copiouſly have had the greateſt ſucceſs, either in private or hoſpital practice. He even ſeems to queſtion the propriety of this evacuation in any caſe ; but approves of emetics, cathartics, and clyſters, for cleanſing the *primæ viæ*, and likewiſe of ſuch medicines and diet as will correct the putrid humours : adding, that an upright poſture and free ventilation are at all times uſeful, and abſolutely neceſſary, both for the prevention and cure of the diſeaſe.

The next writer that treats of the child-bed fever is Dr Leake, who made obſervations on this diſeaſe in the interval from April 1768 to the autumn of the year 1770 ; but chiefly from December 1769 to May 1770, during which period the child-bed fever prevailed much about London.

Dr Leake tells us that this fever generally commenced the evening of the ſecond, or morning of the third day after delivery, with a rigor, or ſhivering fit. Sometimes it invaded ſoon after delivery ; and at other times, though rarely, it has ſeized ſo late as the fifth or ſixth day. Now and then it ſeemed to be occaſioned by catching cold, or by errors in diet ; but oftener by anxiety of mind. Sometimes the thirſt was great ; tho' the tongue had, in general, a better appearance at the beginning than is common in other fevers. It was ſeldom ever black or very foul ; but, as the diſeaſe advanced, became white and dry, with an increaſe of thirſt ; and at laſt was of a browniſh colour towards the root, where it was ſlightly covered with an inſpiſſated mucus. The loſs of ſtrength was ſo great and ſudden, that few of the patients could turn in bed without aſſiſtance, even ſo early as the firſt or ſecond day after the attack. The lochia, from firſt to laſt, were not obſtructed, nor deficient in quantity ; neither did the quality of this diſcharge ſeem to be in the leaſt altered from its natural ſtate ; a preſumption, ſays the author, that the uterus was not at all affected. Of this he was convinced by making a conſiderable preſſure above the pubes with the hand, which did not occaſion pain ; but when the ſame degree of preſſure was applied higher, between the ſtomach and umbilical region, it became almoſt intolerable. A perfect criſis ſeldom ever happened in this fever, which he imputes to the great oppreſſion of the vital powers, whereby they were rendered unable to produce ſuch an event. When the diſeaſe proved mortal, the patient generally died on the 10th or 11th day from the firſt attack. In thoſe who died of the fever, the omentum was found ſuppurated ; an inflammation of which part, or of the inteſtines, Dr Leake concludes to be the proximate cauſe of the diſeaſe.

In conſequence of this idea of the cauſe of the diſeaſe, Dr Leake affirms that veneſection is the only remedy which can give the patient a chance for life. But, tho' it is the principal reſource to be depended upon at the beginning of the fever, he obſerves that it will ſeldom prove of ſervice after the ſecond or third day ; and, if directed yet later, will only weaken and exhauſt the patient ; when, matter having begun to form in the omentum, the progreſs of the diſeaſe can no longer be prevented by that evacuation. At this period the blood begins to be tainted by the abſorption of the purulent fluid ; and the fever, from being inflammatory, is changed into a putrid nature.

After bleeding in ſuch a quantity as the ſymptoms require, he adviſes that the corrupted bile be evacuated and corrected as ſoon as poſſible ; that the diarrhœa, when exceſſive, be reſtrained by emollient anodyne clyſters and gentle ſudorifics, or even by opiates and mild aſtringents, when the patient's ſtrength begins to ſink under the diſcharge ; and, laſtly, that where the ſigns of the putrefaction or intermiſſion take place, antiſeptics and the Peruvian bark may be adminiſtered.

The great uniformity of the ſymptoms in all Dr Leake's patients might authorize an opinion, that the fever which he deſcribes was in a great meaſure a diſeaſe *ſui generis*, and depended much upon the conſtitution of the air preceding and during the period in which the fever prevailed.

Dr Kirkland has alſo made judicious obſervations on this ſubject. He rejects the opinion that the puerperal fever is a diſeaſe *ſui generis*, and ariſes always from the ſame cauſe. The particular ſituation of child-bed women, he acknowledges, occaſions a ſimilarity in the appearance of all the febrile ſymptoms: but he affirms that the ſame kind of fever may be produced by various cauſes; for inſtance, by an inflammation of the uterus or abdomen, by putrid blood or other matter, and putrid miaſms. The ſymptoms, he obſerves, will vary according to the time of ſeizure. If the fever happens in three or four days after delivery, all the ſymptoms uſual to the ſituation of the patient will make their appearance; but if it does not invade till the milk has been ſecreted, and the lochial diſcharge is nearly finiſhed, the ſymptoms, if the breaſts are properly drawn, will, for the moſt part, be thoſe only which are common to that kind of diſorder by which the fever has been produced.

With reſpect to the cure of puerperal fevers, Dr Kirkland adviſes the antiphlogiſtic method when they ariſe from inflammation; but when this method fails of ſucceſs, and a diarrhœa ſupervenes, the diſeaſe has changed its nature, having become more or leſs putrid, and requires a very different treatment.

His obſervations relative to the management of the diarrhœa are extremely judicious. No one, ſays he, would purge and bleed to cure the colliquative fever ariſing from the abſorption of matter in large wounds; and yet the only difference is, that in the puerperal fever the matter abſorbed from the uterus, &c. acts with more violence, becauſe the blood is commonly thinner and the habit in a more irritable ſtate. We ſee, continues he, that abſorbed matter purges as effectually as if any purging medicine had been given by the mouth; and may we not therefore do harm by additional purging, when there has been a large evacuation, eſpecially as purges in this caſe are incapable of entirely removing the *fomes morbi*?

He conſiders the Peruvian bark as the principal remedy, as ſoon as the pulſe ſinks, the heat is leſſened, and the ſtomach will bear it. If the bark increaſes the diarrhœa beyond moderation, he joins with it ſmall doſes of laudanum; but if the diarrhœa were entirely to ſtop without the fever going off, in place of laudanum he adviſes a proper quantity of rhubarb. Should the diarrhœa, notwithſtanding the uſe of the medicines propoſed, become ſo violent as to endanger the patient, he joins Mr White in recommending the columbo root, which is a warm cordial, and removes the irritability of the ſtomach and inteſtines more powerfully than any other bitter he knows.

Of this diſeaſe alſo, as it appears in Derbyſhire and ſome of the adjacent provinces, an account has been publiſhed by Dr Butter. Concerning the cauſes and nature of the diſeaſe, he obſerves, that pregnancy ſeems to add much to the natural ſenſibility of the female conſtitution; becauſe at this period women are often ſubject to a train of nervous ſymptoms, which never moleſt them at other times. During geſtation, likewiſe, the appetite is for the moſt part keen, while the digeſtion appears to be impaired; and this weakneſs is increaſed not only by improper food, of which the woman is frequently deſirous, but alſo by the inactivity attending her ſituation. To theſe circumſtances, it is added, that the inteſtinal paſſage being interrupted by the uterine preſſure, coſtiveneſs generally prevails. From the ſeveral obſervations here enumerated, Dr Butter concludes, that the proximate cauſe of the puerperal fever is a ſpaſmodic affection of the firſt paſſages, with a morbid accumulation in their cavity; and upon this ſuppoſition he endeavours to account for the various ſymptoms of the diſeaſe.

In treating of the method of cure, the author lays down two indications; the former of which is to promote two, three, or four ſtools daily, in a manner ſuited to the ſtrength of the patient, till ſuch time as they reſume a natural appearance. The ſecond indication is to relieve all uneaſy ſymptoms, ſuch as heat, thirſt, head-ach, &c.

With reſpect to the opinion entertained by Dr Butter of the cauſe of the puerperal fever, it nearly coincides with that of Mr White. But however plauſible it may appear, we are not entirely ſatisfied that a diſeaſe attended with ſo peculiar ſymptoms as the puerperal fever can depend principally upon an irritability, which is not reſtricted either to the pregnant or puerperal ſtate.

It deſerves to be remarked, that though the ſeveral writers who treat of this ſubject have conducted their method of cure conformably to their particular idea of the cauſe of the diſeaſe, reſpecting which their ſentiments are very different, they ſeem to have been equally ſucceſsful in the treatment of their patients. Indeed the ſeveral writers differ leſs from each other in their method of cure, than might be expected where ſo great an oppoſition of theoretical ſentiments prevails. For after endeavouring to eſtabliſh indications correſpondent to their particular ſyſtems, thoſe who contend for the expediency of promoting the inteſtinal diſcharge, diſſuade not from a recourſe to phlebotomy when the diſeaſe is attended with inflammatory ſymptoms; while, on the other hand, the moſt ſtrenuous advocates for bleeding admit the utility of the former evacuation. It appears, therefore, that a due regulation of the alvine diſcharge is neceſſary through the whole courſe of the fever, but veneſection only ſometimes.

CCXVIII. CEPHALALGIA, the HEAD-ACH. 491

THE headach is ſymptomatic of very many diſtempers, but is rarely an original diſeaſe itſelf. Dr Home acquaints us that his report-books only furniſh four inſtances of it; and of theſe four, three were women. The diſeaſe proved fatal to the man; and after death, a conſiderable effuſion of blood was found on the brain, together with ſome hydatids, and water in the ventricles.

Headachs appear frequently to be occaſioned by effuſions of blood and ſerum; as well as by ulcers, and abſceſſes of the brain, dura and pia mater. Accretions and oſſifications of different parts of the dura mater, falx, and brain, are alſo frequently diſcovered. An oſſification of the falx, however, does not always produce headach: for Dr Home mentions a patient who had the falx oſſified without headach; but he had been obſerved to be very furious when drunk. Congeſtions of blood in the veſſels of the brain are alſo diſcovered from diſſections to be a frequent cauſe of the headach; and nervous irritation alone will frequently produce it, as we ſee in the *clavus hyſtericus*.

In the cure of this diſeaſe we have little or no power over oſſifications, effuſions, or ulcerations; and hence the headach is frequently incurable. In congeſtions, and nervous affections, medicines may indeed be of ſome ſervice. Congeſtion may be relieved by an evacuation of blood, either general or topical; as veneſection, cupping, or leeches: by errhines; which, however, Dr Home thinks are little to be depended upon: by topical evacuations near the head by bliſters, iſſues, or ſetons; by purgatives; or by determining the fluids to other parts, by rubefacients applied to the temples, pediluvia, &c.

Nervous irritation may be diminiſhed, 1. By a great quantity of cold water drunk every morning. This is recommended by Hoffman; and will waſh off all acrid particles from the ſtomach, while the cold ſtrengthens and diminiſhes the ſenſibility of the part. This remedy was tried for a conſiderable time in one of Dr Home's patients, without any effect. 2. Nervous and tonic medicines; as the bark, valerian, &c. Theſe were tried in two of Dr Home's patients, but alſo without ſucceſs. In a third the valerian ſucceeded. 3. By cold water applied to the head, immerſion, or the ſhower-bath. 4. Cacuphæ of cephalics; as lavender, roſemary, &c. In ſlight caſes, the ſmell of eau de luce, or any ſtrong volatile alkali, will generally prove a cure.

492 CCXIX. *A Dangerous* AFFECTION *of the* OESOPHAGUS.

THIS diſtemper has only been treated of by Dr Munckley, who reckons it one of the moſt deplorable diſeaſes of the human body. Its beginning is in general ſo ſlight as to be ſcarce worth notice, the patients perceiving only a ſmall impediment to the ſwallowing of ſolid food: they uſually continue in this ſtate for many months; during which, all liquid foods, and even ſolids themſelves, when cut ſmall and ſwallowed leiſurely, are got down without much difficulty: by degrees the evil increaſes, and the paſſage through the œſophagus becomes ſo narrow, that not the ſmalleſt ſolid whatever can paſs through it; but, after having been detained for ſome time at the part where the obſtacle is formed, is returned again with a hollow noiſe of a very peculiar kind, and with the appearance of convulſion.

The ſeat of this malady is ſometimes near the top of the œſophagus, and at other times farther down, nearer the ſuperior orifice of the ſtomach. In this laſt caſe, the part of the alimentary tube which is above the obſtruction, is frequently ſo dilated by the food which is detained in it as to be capable of containing a large quantity; and the kind of vomiting, by which it is again returned through the mouth, comes on ſooner or later after the attempt to ſwallow, in proportion to the nearneſs or remoteneſs of the part affected. In the laſt ſtage of this diſeaſe, not even liquids themſelves can be ſwallowed ſo as to paſs into the ſtomach, and the patient dies literally ſtarved to death.

On the diſſection of ſuch as have died in this manner, the œſophagus is found to be conſiderably thickened; and in ſome ſo contracted within at the diſeaſed part, as ſcarcely to admit the paſſing of a common probe; in others, to adhere together in ſuch a manner as entirely to cloſe up the paſſage, and not to be ſeparated without great difficulty.

He comes next to ſhew what he has found to be the moſt efficacious method of treating this diſeaſe, which, though not uncommon, yet in general has been conſidered as incurable.

He claims not the merit of having diſcovered the method of cure, but hopes that ſome ſervice may ariſe from publiſhing what his experience has confirmed to him; having firſt received the hint from another eminent phyſician.

The only medicine, then, from the uſe of which he has ever found any ſervice, is mercury; and in caſes which are recent, and where the ſymptoms have not riſen to any great height, ſmall doſes of mercury given every night, and prevented, by purgative medicines, from affecting the mouth, have accompliſhed the cure.

But where the complaint has been of long ſtanding, and the ſymptom has come on of the food's being returned through the mouth, a more powerful method of treatment becomes neceſſary. In this caſe he has never found any thing of the leaſt avail in removing any of the ſymptoms, but mercury, uſed in a ſuch a manner as to raiſe a gentle, but conſtant ſpitting: and this method he has purſued with the happieſt ſucceſs. If this method be commenced before the complaint has gained too much ground upon the conſtitution, the caſe is not to be deſpaired of; and of thoſe who have come under his care in this ſtate, by much the greater part have received conſiderable benefit from it, and many been entirely cured.

The complaint itſelf, he obſerves, is not very uncommon; but there is no inſtance, to his knowledge, recorded, of ſucceſs from any other manner of treating it, than that he has recommended.

CCXX. WORMS. 493

THOSE infeſting the human body are chiefly of three kinds: the *aſcarides*, or round and ſhort white worm; the *teres*, or round and long worm; and the *tænia*, or tape-worm.

The *aſcarides* have uſually their ſeat in the rectum. —The round worms are about a ſpan long, round and ſmooth: they are ſeated for the moſt part in the upper ſmall inteſtines; but ſometimes they are lodged alſo in the ſtomach, and in any part of the inteſtines, even to the rectum.—The tape-worms are from two to forty feet long, according to the teſtimony of Platerus; they generally poſſeſs the whole tract of the inteſtines, but eſpecially the ileum: they very much reſemble a tape in their appearance, whence the name of *tape-worm*.

In the Medical Tranſactions, Vol. I. Dr Heberden gives a very accurate account of the ſymptoms produced by the *aſcarides*, from an eminent phyſician who was troubled with them all his life. They brought on an uneaſineſs in the rectum, and an almoſt intolerable itching in the anus; which ſenſations moſt uſually came on in the evening, and prevented ſleep for ſeveral hours. They were attended with heat, ſometimes ſo conſiderable as to produce a ſwelling in the rectum both internally and externally; and if theſe ſymptoms were not ſoon relieved, a teneſmus was brought on, with a mucous dejection. Sometimes there was a griping pain in the lower part of the abdomen, a little above the *os pubis*. If this pain was very ſevere, a bloody mucus followed, in which there were often found aſcarides alive. They were alſo ſometimes ſuſpected of occaſioning diſturbed ſleep, and ſome degree of headach.

On this caſe Dr Heberden obſerves, that the general health of the patient did not ſeem to have ſuffered from the long continuance of the diſeaſe, nor the immediate inconveniencies of the diſorder itſelf to have increaſed. "It is, (ſays he), perhaps univerſally true, that this kind of worms, though as difficult to be cured as any, yet is the leaſt dangerous of all. They have been known to accompany a perſon through the whole of a long life, without any reaſon to ſuſpect that they had haſtened its end. As in this caſe there was no remarkable ſickneſs, indigeſtion, giddineſs, pain of the ſtomach, nor itching of the noſe, poſſibly theſe ſymptoms where they have happened to be joined with the aſcarides did not properly belong to them, but aroſe from ſome other cauſes. There is indeed no one ſign of theſe worms, but what in ſome patients will be wanting."

The abovementioned patient uſed purging and irritating clyſters with very little ſucceſs. One drachm and an half of tobacco was infuſed in ſix ounces of boiling water; and the ſtrained liquor being given as a clyſter, occaſioned a violent pain in the lower part of the abdomen, with faintneſs and a cold ſweat: this injection, though retained only one minute, acted as a ſmart purge, but did little or no good. Lime-water was alſo uſed as a clyſter; which brought on a coſtiveneſs, but had no good effect. Six grains of ſalt of ſteel were diſſolved in ſix ounces of water, and injected. This clyſter in a few minutes occaſioned an aching in the rectum, griped a little without purging, and excited a teneſmus. Some few aſcarides were brought off with it; but all of them were alive. The uneaſy ſenſation in the rectum did not abate till ſome warm milk was thrown up. Whenever the teneſmus or mucous ſtools were thought worth the taking notice of, warm milk and oil generally gave immediate relief. If purging was neceſſary, the lenient purges, ſuch as manna with oil, were, in this particular caſe, made uſe of: rhubarb was found too ſtimulating.—But, in general, the moſt uſeful purge, and which therefore was moſt uſually taken, was cinnabar and rhubarb, of each half a drachm: this powder ſeldom failed to bring away a mucus as tranſparent as the white of an egg, and in this many aſcarides were moving about. The cinnabar frequently adhered to this mucus, which did not come off in large quantities when a purge was taken without cinnabar. Calomel did no more than any other purge which operates briſkly would have done; that is, it brought away aſcarides, with a great deal of mucus. Oil given as a clyſter ſometimes brought off theſe animalcules: the oil ſwam on the ſurface of the mucus, and the aſcarides were alive and moving in the mucus itſelf, which probably hindered the oil from coming in contact with them and killing them.

The Doctor alſo obſerves, that mucus or ſlime is the proper neſt of the aſcarides, in which they live, and is perhaps the food by which they are nouriſhed; and it is this mucus which preſerves them unhurt, though ſurrounded with many other liquors the immediate touch of which would be fatal. It is hard to ſatiſfy ourſelves by what inſtinct they find it out in the human body, and by what means they get at it; but it is obſervable in many other parts of nature, as well as here, that where there is a fit ſoil for the hatching and growth of animals and vegetables, nature has taken ſufficient care that their ſeeds ſhould find the way thither. Worms are ſaid to have been found in the inteſtines of infants born dead. Purges, by leſſening this ſlime, never fail to relieve the patient: and it is not unlikely, that the worms which are not forced away by this quickened motion of the inteſtines, may, for want of a proper quantity of it, languiſh, and at laſt die; for if the aſcardies are taken out of their mucus, and expoſed to the open air, they become motionleſs, and apparently die in a very ſhort time. Dr Heberden ſuppoſes that the kind of purge made uſe of is of little conſequence in the cure of all other worms as well as aſcarides; the inſects being always defended by the mucus from the immediate action of medicines; and that therefore thoſe purges are the beſt which act briſkly, and of which a repetition can be moſt eaſily born. Purging waters are of this ſort, and jalap eſpecially for children; two or more grains of which, mixed with ſugar, are moſt eaſily taken, and may be repeated daily.

From the caſe above-mentioned, and from Dr Heberden's obſervations, we may eaſily ſee why it is ſo difficult to deſtroy theſe inſects; and why anthelmintics, greatly celebrated for ſome cures, are yet ſo far from being ſpecifics in the diſeaſe. As the worms which reſide in the cavities of the human body are never expoſed to the air, by which all living creatures are invigorated it is evident, that in themſelves they muſt be the moſt tender and eaſily deſtructible creatures imaginable, and much leſs will be requiſite to kill them than any of our common inſects. The moſt pernicious ſubſtances to any of the common inſects are oil, cauſtic fixed alkali, lime, and lime-water. The oil operates upon them by ſhutting up the pores of their bodies; the lime-water, lime, and cauſtic alkali, by diſſolving their very ſubſtance. In the caſe of inteſtinal worms, however, the oil can have very little effect upon them, as they are defended from it by the moiſture and mucus of the inteſtines; the like happens with lime-water: and therefore it is neceſſary that the medicine ſhould be of ſuch a nature as to deſtroy both mucus and inſects together; for which purpoſe the cauſtic fixed alkali is at once ſafe and efficacious, nor is it probable that any caſe of worms whatever could reſiſt the proper uſe of this medicine. A very large doſe of any ſalt indeed will alſo deſtroy the mucus, and deſtroy the worms; but it is apt to inflame and excoriate the ſtomach and inteſtines, and thus to produce worſe diſtempers than that which it was intended to cure. Dr Heberden gives the following remarkable caſe of a patient cured of worms by enormous doſes of common ſalt, after trying many other remedies in vain. In February 1757, the patient was ſeized with uncommon pains in his ſtomach, attended with nauſea, vomiting, conſtipation of his bowels, and an almoſt total loſs of ſleep and appetite: He ſoon became greatly emaciated, and could neither ſtand nor walk upright; his belly grew ſmall and hard, and cloſely retracted, inſomuch that the ſternum covered the navel, and the latter could ſcarce be diſcovered or felt by the finger: his urine was always milky, and ſoon depoſited a thick white ſediment; his excrements were very hard and lumpy, reſembling thoſe of ſheep, only of a brown colour; nor had he ever a ſtool without ſome medicine or other to procure it. In this ſituation he continued four years; during which time he had been in an infirmary, attended by eminent phyſicians, but was diſmiſſed as incurable. At laſt he was adviſed by a neighbour to drink ſalt and water, as he ſaid he knew one cured by it who had for many years been afflicted with the ſame kind of pains in the belly and ſtomach. As his diſtemper was now almoſt inſupportable, he willingly tried the experiment. Two pounds of common ſalt were diſſolved in as little water as poſſible, all which he drank in leſs than an hour. Soon afterwards he found himſelf greatly oppreſſed at his ſtomach, grew extremely ſick, and vomited violently; on the fourth ſtraining he brought up about half a pint of ſmall worms, part aſcarides, and the reſt reſembling thoſe worms which are called the *botts*, and frequently met with in the ſtomach of horſes, but much ſmaller, and about the ſize of a grain of wheat. The ſalt ſoon began to operate downwards, and he had five or ſix very copious fetid ſtools tinged with blood; and in them diſcharged near an equal quantity of the ſame kind of worms he had vomited. Being greatly fatigued with the violence of the operations, he fell into a calm ſleep, which laſted two hours, during which he ſweated profuſely, and awoke much refreſhed. Inſtead of his uſual pains, he now only complained of a rawneſs and ſoreneſs of his gullet, ſtomach, and bowels, with an almoſt unquenchable thirſt; to allay which, he drank large quantities of cold water, whey, butter-milk, or whatever he could get. The urine he now paſſed was ſmall in quantity, and rendered with very great difficulty, being highly ſaturated with the ſalt, from whence aroſe a moſt troubleſome dyſuria and ſtrangury. However, theſe ſymptoms gradually abated by a free uſe of the liquors above-mentioned; and on the third morning he was ſo well recovered, that he took two pounds more of ſalt, diſſolved in the like quantity of water. The effects were nearly ſimilar to the former; only that moſt of the worms were now burſt, and came away with a conſiderable quantity of ſlime and mucus. The drought, ſtrangury, &c. returned with their former violence; but ſoon yielded to the old treatment. He ſweated very copiouſly for three days, ſlept eaſily, and by that time could extend his body freely: on the fifth day he left his bed, and, though very weak, could walk upright; his ſtrength and appetite ſoon returned, and he became robuſt and well.

The anthelmintic medicines which have been recommended by one perſon or other, are in a manner innumerable; but the principal are,

1. *Quickſilver*. This is very efficacious in all kinds of worms, either taken in the form of calomel, corroſive ſublimate, or even the crude metal boiled in water and the water drunk.. There can be no poſſible objection to it, but only that it is not endowed with any attenuating quality whereby the mucus in which theſe inſects reſides can be diſſolved. It therefore fails in many caſes, though it will moſt certainly deſtroy worms where it can get at them.

2. *Powder of tin*. This was for ſome time celebrated as a ſpecific, and indeed we may reaſonably expect good effects from it; as by its weight and grittineſs it rubs off the mucus and worms it contains from the coats of the inteſtinal canal, in which caſe they are eaſily evacuated by purgatives. In order to produce any conſiderable effects, it muſt be given in a large doſe.

3. *Cabbage-tree bark*. This remedy is uſed by the inhabitants of Jamaica. The firſt account of it which appeared in this country was publiſhed in the Phyſical and Literary Eſſays, vol. ii. by Mr Duguid ſurgeon in that iſland. He acquaints us that the inhabitants of Jamaica, young and old, white and black, are much infeſted with worms, eſpecially the long round ſort; the reaſon of which, he thinks, is the quantity of ſweet viſcid vegetables which they eat. On diſſecting a child of ſeven months old, who died of vomiting and convulſions, twelve large worms were found; one of them filled the *appendix vermiformis*, and three of them were entwiſted in ſuch a manner as to block up the *valvula Tulpii*, ſo that nothing could paſs from the ſmall to the great guts.—The bark of the cabbage-tree, however, he tell us is a ſafe and effectual remedy, and the moſt powerful vermifuge yet known; and that it frequently brings away as many worms by ſtool as would fill a large hat. He owns that it has ſometimes violent effects; but this he aſcribes to the negroes who make the decoction, (in which form the bark is uſed), and not to the remedy itſelf.

Mr Anderſon, ſurgeon in Edinburgh, hath alſo given an account of this bark and its operation, in a letter to Dr Duncan, Med. Com. volume iv. p. 84. From this account it appears, that there are two different kinds of bark; the one much paler than the other: the pale kind operates much more violent than the other. It often occaſions looſe ſtools, great nauſea, and ſuch like ſymptoms, attended with great uneaſineſs in the belly: in one or two inſtances it was ſuſpected of inducing ſyncope. The darker coloured kind reſembles the caſſia lignea, though it is of a much coarſer texture. This kind, Mr Anderſon thinks, may be exhibited in any caſe where an anthelmintic is neceſſary; the dangerous ſymptoms might have followed either from the uſe of the firſt kind, or from an over-doſe. The uſual method of preparing the medicine is by boiling two ounces and a half of the bark in two quarts of water to a pint and a half. Of this a tea-ſpoonful may be given at firſt in the morning, gradually increaſing the quantity till we come to four or five table-ſpoonfuls in a day. When exhibited in this manner, Mr Anderſon informs us, that he never ſaw it produce any violent ſymptoms, and has experienced the beſt effects from it as an anthelmintic. After the uſe of this decoction for eight or nine mornings ſucceſſively, a doſe of jalap with calomel muſt be given, which ſeldom fails to bring away the worms, ſome dead, ſome alive. If at any time the decoction produced more than one or two looſe ſtools, a few drops of liquid laudanum may be given; and, in general, Mr Anderſon gave fifteen or twenty drops of the ſpirit of lavender with each doſe.

In a letter from Dr Ruſh, profeſſor of chemiſtry at Philadelphia, to Dr Duncan of Edinburgh, the following account is given of another preparation of this medicine. “It has long (ſays he) been a complaint among phyſicians, that we have no *vermifuge* medicine which can be depended up. Even calomel fails in many caſes where there are the moſt pathognomonic ſigns of worms in the bowels. But this complaint, it is hoped, is now at an end. The phyſicians of Jamaica have lately found, that the bark of the ſummits of the cabbage-tree, made into a ſyrup with brown ſugar, is an infallible antidote to them. I have uſed above 30 pounds of it, and have never found it fail in one inſtance. The ſyrup is pleaſant; it ſometimes pukes, and always purges, the firſt or ſecond time it is given."

Notwithſtanding theſe encomiums, howevers, the cabbage-tree bark hath not come into general uſe; ſo that we can only look upon it as a draſtic purgative, the effects of which muſt neceſſarily be as precarious as thoſe of others.

4. *Couhage*, or *cow-itch*. This is the *Dolichos urens* or *pruriens* of Linnæus; and the principles on which it acts have been already explained under the article DOLICHOS. It is ſomewhat ſimilar to the powder of tin, but bids fair for being more efficacious. The only objection to its uſe is, that by the hairs of it entangling themſelves with one another, calculi might be formed in the inteſtines, or obſtructions equally bad; or if the ſharp points and hooks with which it abounds were to adhere to the nervous coats of the inteſtines themſelves, they might occaſion a fatal irritation, which could not be removed by any means whatever.

5. *Indian pink*. This is alſo an American plant, and was firſt recommended in the Edinburgh Phyſical and Literary Eſſays by Dr Garden of Charleſtown in South Carolina. He is of opinion that a vomit ought always to precede the uſe of it; and informs us, that half a drachm of it purges as briſkly as the ſame quantity of rhubarb. At other times he has known it produce no effect on the belly though given in very large quantity: In ſuch caſes it becomes neceſſary to add a grain or two of ſweet mercury, or ſome grains of rhubarb; but then it is leſs efficacious than when it proves purgative without addition. This uſe of it, however, in ſmall doſes, is by no means ſafe; as it frequently produces giddineſs, dimneſs of ſight, convulſions, &c. The addition of a purgative, indeed, prevents theſe effects; but at the ſame time, as already obſerved, it diminiſhes the virtue of the medicine. The doctor therefore recommends large doſes, as from them he never knew any other effect than the medicine's proving emetic or violently cathartic. The doſe is from 12 to 60 or 70 grains of the root in ſubſtance, or two, three, or four drachms of the infuſion, twice a-day.

This medicine hath alſo had its day, and is now very far from being conſidered as a ſpecific. From what hath been already obſerved, it muſt pretty clearly appear, that powder of tin, cow-itch, or fixed alkaline ſalts, bid faireſt for deſtroying worms in all the variety of caſes in which they can occur. Alkalies indeed have been but little tried. We have known one caſe in which all the complaints have been removed by a ſingle doſe: we have alſo an inſtance of their efficacy, in an extraordinary caſe of a worm bred in the liver, mentioned in the 2d volume of the Medical Obſervations. The patient had a violent pain in the ſide, and ſometimes in the ſhoulder, as the worm ſhifted its place; but, on the application of a lixivial poultice, the pain went out of the ſide entirely, and kept in the ſhoulder for ſome weeks; and had a ſimilar poultice been applied there, it is probable the animal would have died.

The long round worms ſeem to be the moſt dangerous which infeſt the human body, as they often pierce through the ſtomach and inteſtines, and thus bring on a miſerable death. The common ſymptoms of them are nauſea, vomiting, looſeneſs, fainting, ſlender intermitting pulſe, itching of the noſe, and epileptic fits. By the conſumption of the chyle they produce hunger, paleneſs, weakneſs, coſtiveneſs, tumour of the abdomen, eructations, and rumbling of the inteſtines; but it is from the perforation of the inteſtines that the diſeaſe proves ſo frequently fatal. A child may be known to have worms, from his cold temperament, paleneſs of the countenance, livid eye-lids, hollow eyes, itching of the noſe, voracity, ſtartings, and grinding of the teeth in ſleep; and more eſpecially by a very fœtid breath. Very frequently, however, they are voided by the mouth and anus, in which caſe there is no room for doubt. In the Medical Commentaries, Vol. II. we have an account of the inteſtines being perforated by a worm, and yet the patient recovered. The patient was a woman troubled with an inflammation in the lower part of the abdomen. The pain was ſo violent, that for ſix days ſhe ſlept none at all; the tumour then broke, diſcharged upwards of a pound of thin watery ſanies, immediately after which the excrements followed. The next day ſhe was extremely low; her pulſe could ſcarcely be felt; the extremities were cold; and there was a conſiderable diſcharge from the wound, which had already begun to mortify. She got a decoction of the bark with wine, which alleviated the ſymptoms; but in removing the mortified parts a worm was found among them nine inches long, and as thick as an eagle's quill. By proper applications, the diſcharge of excrements ceaſed, and ſhe recovered perfect health. She was ſenſible of no accident giving riſe to the inflammation; ſo that in all probability it aroſe entirely from the worm itſelf.

The *tænia*, or *tape-worm*, as it is called, is one of thoſe moſt difficult to be cured. It is of two kinds, *tænia ſolium* and *tænia lata*; for a deſcription of which, ſee the article TÆNIA. The reaſon of its being ſo difficult to cure, is, that though portions of it are apt to break off and be diſcharged, it is endowed with a power of reproduction, ſo that the patient is little or nothing better. The ſymptoms occaſioned by it are not different from thoſe above deſcribed. A ſpecific againſt the *tænia lata* hath been lately ſo much celebrated in France, that the king thought proper to purchaſe it from the proprietor (Madam Nouffer), and the account of it hath been tranſlated into Engliſh by Dr Simmons. The patients are required to obſerve no particular regimen till the day before they take the ſpecific. That day they are to take nothing after dinner till about 7 o'clock; after which, they are to take the following ſoup: "Take a pint and an half of water, two or three ounces of good freſh-butter, and two ounces of bread cut into thin ſlices: add to this, ſalt enough to ſeaſon it, and then boil it to the conſiſtence of panada." About a quarter of an hour after this, they take a biſcuit and a gleſs of white-wine, either pure or mixed with water; or even water alone, if they have not been accuſtomed to wine. If the patient has not been to ſtool that day, (which, however, is not uſual with patients in this way), the following clyſter is to be injected. "Take a ſmall quantity of the leaves of mallows, and boil them in a ſufficient quantity of water, mixing with it a little ſalt, and when ſtrained off add two ounces of oil olive." Next morning, about eight or nine hours after the ſupper abovementioned, the ſpecific is to be taken. This is no other than two or three drachms of the root of male fern gathered in autumn, and reduced to fine powder. It is to be taken in any diſtilled water, or in common water. This medicine is apt to occaſion a nauſea: to avoid which, Madam Nouffer allows her patients to chew any thing that is agreeable, but forbids any thing to be ſwallowed; or they may ſmell to vinegar, to check the ſickneſs: but if, notwithſtanding this, the ſpecific is thrown up, a freſh doſe muſt be ſwallowed as ſoon as the ſickneſs is gone off, and then they muſt try to ſleep. About two hours after this the following bolus is to be taken. "Take of the panacea of mercury 14 times ſublimed, and ſelect reſin of ſcammony, each ten grains; of freſh and good gamboge, ſix or ſeven grains: reduce each of theſe ſubſtances ſeparately into powder, and then mix them with ſome conſerve into a bolus." This compoſition is to be ſwallowed at two different times, waſhing it down with one or two diſhes of weak green-tea, after which the patient muſt walk about his chamber. When the bolus begins to operate, he is to take a diſh of the ſame tea occaſionally, until the worm is expelled; then, and not before, Madame Nouffer gives him broth or ſoup, and he is directed to dine as is uſual after taking phyſic. After dinner he may either lie down or walk out, taking care to conduct himſelf diſcreetly, to eat but little ſupper, and to avoid every thing that is not of eaſy digeſtion.

The cure then is complete; but it is not always effected with the ſame quickneſs in every ſubject. He who has not kept down the whole bolus, or who is not ſufficiently purged by it, ought to take, four hours after it, from two to eight drachms of Epſom ſalt diſſolved in boiling water. The doſe of this ſalt may be varied according to the temperament and other circumſtances of the patient.

If the worm ſhould not come away in a bundle, but in the form of a thread (which particularly happens when the worm is involved in much tenacious mucus), the patient muſt continue to ſit upon the cloſe-ſtool without attempting to draw it away, drinking at the ſame time warm weak tea: ſometimes this alone is not ſufficient, and the patient is obliged to take another doſe of purging ſalt, but without varying his poſition till the worm is wholly expelled.

It is unuſual for patients who have kept down both the ſpecific and purging doſe, not to diſcharge the worm before dinner-time. This, however, ſometimes happens when the dead worm remains in large bundles in the inteſtines, ſo that the fæces becoming more limpid towards the end of the purging, paſs by it without drawing it with them. The patient may in this caſe eat his dinner; and it has been obſerved, that the food, joined to the uſe of a clyſter, has brought about the expulſion of the worm.

Sometimes the worm is brought away by the action of the ſpecifice alon, before the patient has taken the purging bolus: when this happens, Madame Nouffer gives only two thirds of it, or ſubſtitutes the ſalt in its ſtead.

Patients muſt not be alarmed by any ſenſation of heat or uneaſineſs they may feel during the action of the remedy, either before or after a copious evacuation, or juſt as they are about to void the worm. Theſe ſenſations are tranſitory, and go off of their own accord, or by the aſſiſtance of the vapour of vinegar drawn in at the noſe.

They who have vomited both the ſpecific and bolus, or who have kept down only a part of them, ſometimes do not void the worm that day. Madame Nouffer therefore directs them to take again that night the ſoup, the wine and biſcuit, and if circumſtances require it the clyſter. If the worm does not come away during the night, ſhe gives them early the next morning another doſe of the ſpecific, and, two hours afterwards, ſix drachms or an ounce of purging ſalt, repeating the whole proceſs of the preceding day; excepting the bolus, which ſhe ſuppreſſes.

She obſerves, that very hot weather diminiſhes in ſome degree the action of her remedy; ſhe therefore prefers the month of September for adminiſtering it: but as ſhe has not been always able to chooſe the ſeaſon, and has been ſometimes obliged to undertake the care of patients in the hotteſt days of ſummer, ſhe then gave her ſpecific very early in the morning; and with this precaution ſhe ſaw no difference in its effects.

On the day appointed for the trial of this medicine, it was exhibited to five different perſons; but only one of them was certainly known to have the *tænia lata* by having diſcharged parts of it before. That perſon was cured; the ſecond voided a portion of the *tænia ſolium;* the third ſome *aſcarides*, with a part of the *tænia ſolium;* the fourth and fifth voided no worms; but the laſt conſidered much of the viſcid ſlime he voided to be worms in a diſſolved ſtate.

This trial was thought ſufficient to aſcertain the efficacy of the medicine, and further trials were made by thoſe to whom the ſecret was communicated. The firſt voided two tænia, after much vomiting and 18 or 20 ſtools; the ſecond had no vomiting, but was as violently purged, and diſcharged two worms; the third had 20 copious ſtools during the night, and diſcharged the worm in the morning; and the fifth was effected in much the ſame manner. Some others who were not relieved, were ſuppoſed not to have a tænia.

This ſpecific, however, is not to be conſidered as a new diſcovery; the efficacy of fern in caſes of tenia having been known long ago. Theophraſtus preſcribes its root, in doſes of four drams, given in water ſweetened with honey, as uſeful in expelling flat worms. Dioſcorides orders it in the ſame doſe, and adds, that its effects are more certain when it is mixed with four oboli (40 grains) of ſcammony or black hellebore; he particularly requires that garlic ſhould be taken before-hand. Pliny, Galen, Oribaſius, and Aëtius, aſcribe this ſame virtue to fern; and are followed in this by Avicenna, and the other Arabian phyſicians. Dorſtennius, ſtenius, Valerius Cordus, Dodonæus, Mathiolus, Dalechampius, who commented on Dioſcorides, or copied him in many things, all mention the fern-root as a ſpecific aganſt the tænia. Sennertus, and Burnet after him, recommended in ſimilar caſes an infuſion of this plant, or a dram of its powder for young perſons, and three drams for adults. Simon Paulus, quoted by Ray and Geoffroy, conſiders it as the moſt efficacious of all poiſons againſt the flat worm, and as being the baſis of all the ſecret remedies extolled by empirics in that diſeaſe. Andry (*génér. des Vers, p.* 246, 249) prefers diſtilled fern-water to the root in powder, or he employs it only in the form of an opiate, or mixed with other ſubſtances.

Theſe are not the only authors who have mentioned the tenia; many others have deſcribed this worm, the ſymptoms it excites, and the treatment proper to expel it. Almoſt all of them mention the fern-root, but at the ſame time they point out other remedies as poſſeſſing equal efficacy. Amongſt theſe we find the bark of the root of the mulberry-tree, the juice of the *auricula muris*, the roots of *chamæleon niger*, ginger, zedoary; decoctions of mugwort, ſouthernwood, wormwood, penny-royal, origanum, hyſſop, and in general of all bitter and aromatic plants, &c. Some of them direct the ſpecific to be ſimply mixed and taken in wine or honey and water; others join to it the uſe of ſome purgative remedy, which they ſay adds to its efficacy. Oribaſius, Sylvius, &c. diſtinguiſh the ſpecific that kills the worm, from the purgative that evacuates it, and direct them to be given at different times. Sennertus gives a very ſatisfactory reaſon for adopting this method. If we give, ſays he, the purgative medicine and the ſpecific at the ſame time, the latter will be haſtily carried off before it can have exerted its powers on the worm: whereas, if we give the ſpecific firſt, and thus weaken the worm, it will collect itſelf into a bundle, and, being brought away by means of the purge, the patient will be cured. The cure will be more ſpeedy if the *primæ viæ* have been previouſly lubricated. Theſe precautions are all of them eſſential to the ſucceſs of the remedy, nor are they neglected by Madame Nouffer in her method of treatment. The panada and injection ſhe preſcribes the night before, to lubricate the inteſtines, and prepare the *primæ viæ*. The fern-root taken in the morning, kills and detaches the worm: of this the patients are ſenſible by the ceſſation of the pain in the ſtomach, and by the weight that is felt in the lower belly. The purgative bolus adminiſtered two hours after this, procures a complete evacuation; it is compoſed of ſubſtances that are at once purgative and vermifuge, and which, even when adminiſtered alone, by different phyſicians, ſometimes ſucceeded in expelling the worm. If this purgative appear to be too ſtrong, the reader is deſired to recollect, that it produced no ill effects in either of the caſes that came under the obſervation of the phyſicians appointed to make the trials; and that in one of thoſe caſes, by diminiſhing the doſe, they evidently retarded the evacuations. Regard however, they obſerve, is to be had both to the age and the temperament of the patient, and the treatment ſhould always be directed by a prudent and experienced phyſician, who may know how to vary the proportions of the doſe as circumſtances may require. If the purgative is not of ſufficient ſtrength, the worm, after being detached by the ſpecific, remains too long a time in the inteſtines, and becoming ſoon corrupted is brought away only in detached portions: on the other hand, if the purgative is too ſtrong, it occaſions too much irritation, and evacuations that cannot fail to be inconvenient.

Madame Nouffer's long experience has taught her to diſtinguiſh all theſe circumſtances with ſingular adroitneſs.

This method of cure is, as we have ſeen, copied in a great meaſure from the ancients: it may be poſſible to produce the ſame effects by varying the remedies; but the manner of applying them is by no means indifferent: we ſhall be always more certain of ſucceſs, if the inteſtines are previouſly evacuated, and if the ſpecific is given ſome time before the purgative bolus. It is to this method that Madame Nouffer's conſtant ſucceſs is attributed.

Her remedy has likewiſe ſome power over the *tænia ſolium*; but as the rings of this worm ſeparate from each other more eaſily than thoſe of the *tænia lata*, it is almoſt impoſſible for it to be expelled entire. It will be neceſſary therefore to repeat the treatment ſeveral times, till the patient ceaſes to void any portions of worms. It muſt likewiſe be repeated, if, after the expulſion of one *tænia ſolium*, another ſhould be generated in the inteſtinal canal. This laſt caſe is ſo rare, that it has been ſuppoſed that no perſon can have more than one of theſe worms; and for this reaſon it has been named *ſolitary worm*, which being once removed, could never be renewed or replaced by a ſecond: but experience has proved, that this notion is an ill founded prejudice, and we know that ſometimes theſe worms ſucceed each other, and that ſometimes many of them exiſt together. Two living tæniæ have frequently been expelled from the ſame patient. M. de Haen (*Rat. Med.* tom. viii. p. 157.) relates an inſtance of a woman who voided 18 tæniæ at once. In theſe caſes the ſymptoms are uſually more alarming; and the appetite becomes exceſſive, becauſe theſe worms derive all their nouriſhment from the chyle. If too auſtere and ill-judged a regimen deprives them of this, they may be expected to attack even the membranes of the inteſtines themſelves. This evil is to be avoided by eating frequently.

Such are the precautions indicated in this diſeaſe. The ordinary vermifuge remedies commonly procured only a palliative cure, perhaps becauſe they were too often improperly adminiſtered. But the efficacy of the preſent remedy, in the opinion of the French phyſicians, ſeem to be ſufficiently confirmed by experience. To the above account, however, it ſeems proper to ſubjoin the following obſervations by Dr Simmons.

“A Swiſs phyſician, of the name of *Herrenſchwand*, more than 20 years ago, acquired no little celebrity by diſtributing a compoſition of which he ſtyled himſelf the *inventor*, and which was probably of the ſame nature as Madame Nouffer's. Several very eminent men, as Tronchin, Hovius, Bonnet, Cramer, and others, have written concerning the effects of this remedy. It ſeems that Dr Herrenſchwand uſed to give a powder by way of preparation, the night before he adminiſtered his ſpecific. Nothing could be ſaid with certainty concerning the compoſition either of one or the other. The treatment was ſaid ſometimes to produce moſt violent effects, and to leave the patients in a valetudinary ſtate. Dr De Haen was diſſuaded by his friends from uſing it, becauſe it diſordered the patients too much. It will be readily conceived, now that we are acquainted with Madame Nouffer's method, that theſe effects were occaſioned wholly by the purgative bolus. It is not ſtrange, that reſin of ſcammony or jalap, combined with *mercurius dulcis* and gamboge, all of them in ſtrong doſes, ſhould in many ſubjects occaſion the greateſt diſorders. It ſeems likely, however, that much of the ſucceſs of the remedy depends on the uſe of a draſtic purge. Some of the ancients who were acquainted with the virtues of the fern-root, obſerved that its efficacy was increaſed by ſcammony. Reſinous purges, eſpecially when combined with mercury, have often been given with ſucceſs in caſes of *tænia*. Dr De Haen ſaw a worm of this ſort five ells long expelled by the reſin of jalap alone. Dr Gaubius knew a woman who had taken a variety of antihelmintic remedies without any effect, though ſhe had voided a portion of *tænia* an ell and a half long, previous to the uſe of theſe medicines: but at length, after taking a purge of ſingular ſtrength, ſhe voided the worm entire. Many other inſtances of the ſame kind are to be met with in authors. Other remedies have occaſionally been given with ſucceſs. In Sweden, it has been a practice to drink ſeveral gallons of cold water, and then to take ſome draſtic purge. Boerhaave ſays, that he himſelf ſaw a *tænia* meaſuring 300 ells expelled from a Ruſſian by means of the *vitriolum martis*. All theſe methods, however, have been too often ineffectual."

On the ſubject of worms, ſee further below, under the *Diſeaſes of Children*.

Of POISONS. 494

THESE have all been treated of already, except the bites and ſtings of ſerpents, ſcorpions, &c. According to Dr Mead, the ſymptoms which follow the bite of a viper are, an acute pain in the place wounded, with a ſwelling, at firſt red, but afterwards livid, which by degrees ſpreads farther to the neighbouring parts; with great faintneſs, and a quick, low, and ſometimes interrupted pulſe; great ſickneſs at ſtomach, with bilious convulſive vomitings, cold ſweats, and ſometimes pains about the navel. Frequently a ſanious liquor runs from the ſmall wound, and little puſtules are raiſed about it: the colour of the whole ſkin, in leſs than an hour, is changed yellow, as if the patient had the jaundice. Theſe ſymptoms are very frequently followed by death, eſpecially if the climate is hot, and the animal of a large ſize. This is not, however, the caſe with all kinds of ſerpents. Some, we are aſſured, kill by a fatal ſleep; others are ſaid to produce an univerſal hæmorrhage and diſſolution of the blood; and others an unquenchable thirſt. But of all the ſpecies of ſerpents hitherto known, there is none whoſe bite is more expeditiouſly fatal than that of the rattle-ſnake. Dr Mead tells us, that the bite of a large ſerpent of this kind killed a dog in a quarter of a minute; and to the human ſpecies they are almoſt equally fatal. Of this ſerpent it is ſaid, that the bite makes the perſon's ſkin become ſpotted all over like the ſkin of the ſerpent; and that it has ſuch a motion as if there were innumerable living ſerpents below it. But this is probably nothing more than a diſſolution of the blood, by which the ſkin becomes ſpotted as in petechial fevers, at the ſame time that the muſcles may be convulſed as in the diſtemper called *hieranoſos*, which was formerly thought to be the effect of evil ſpirits.

It hath juſtly appeared ſurpriſing to philoſophers, how ſuch an inconſiderable quantity of matter as the poiſon emitted by a viper at the time of biting ſhould produce ſuch violent effects. But all inquiries into this matter muſt neceſſarily be uncertain; neither can they contribute any thing towards the cure. It is certain that the poiſon produces a gangrenous diſpoſition of the part itſelf, and likewiſe ſeemingly of the reſt of the body; and that the original quantity of poiſon continues ſome time before it exerts all its power on the patient, as it is known that removing part of the poiſonous matter by ſuction will alleviate the ſymptoms. The indications of cure then are three. 1. To remove the poiſonous matter from the body: Or, 2. If this cannot be done, to change its deſtructive nature by ſome powerful and penetrating application to the wound: And, 3. To counteract the effects of that portion already received into the ſyſtem.

The poiſonous matter can only be removed from the body by ſucking the wound either by the mouth, or by means of a cupping-glaſs; but the former is probably the more efficacious, as the ſaliva will in ſome meaſure dilute and perhaps obtund the poiſon. Mead directs the perſon who ſucks the wound to hold warm oil in his mouth, to prevent inflammation of the lips and tongue: but as bites of this kind are moſt likely to happen in the fields, and at a diſtance from houſes, the want of oil ought by no means to retard the operation, as the delay of a few minutes might prove of the moſt fatal conſequence; and it appears from Dr Mead's experiments, that the taking the poiſon of a viper into the mouth undiluted, is attended with no worſe conſequences than that of raiſing a ſlight inflammation. A quick exciſion of the part might alſo be of very great ſervice.

The only way of anſwering the ſecond indication is, by deſtroying the poiſoned part by a red-hot iron, or the application of alkaline ſalts, which have the power of immediately altering the texture of all animal-ſubſtances to which they are applied, provided they are not covered by the ſkin; and as long as the poiſon is not totally abſorbed into the ſyſtem, theſe muſt certainly be of uſe.

To anſwer the third indication, Dr Mead recommends a vomit of ipecacuanha, encouraged in the working with oil and warm water. The good effects of this, he ſays, are owing to the ſhake which it gives to the nerves, whereby the irregular ſpaſms into which their whole ſyſtem might be drawn are prevented. After this the patient muſt go to bed, and a ſweat muſt be procured by cordial medicines; by which the remaining effects of the poiſon will be carried off.

It hath been confidently aſſerted by many, that the American Indians are poſſeſſed of ſome ſpecific remedy by which they can eaſily cure the bite of a rattle-ſnake. But Mr Cateſby, who muſt have had many opportunities of knowing this, poſitively denies that they have any ſuch medicine. They make applications indeed, and ſometimes the patient recovers; but theſe recoveries he aſcribes to the ſtrength of nature overcoming the poiſon, more than to the remedies made uſe of. He ſays, they are very acute in their prognoſtics whether a perſon that is bit will die or not; and when they happen to receive a bite in certain parts of the body, when the teeth of the animal enter a large vein, for inſtance, they quietly reſign themſelves to their fate, without attempting any thing for their own relief. Indeed, ſo violent and quick is the operation of this poiſon, that unleſs the antidote is inſtantly applied, the perſon will die before he can get to a houſe. It would ſeem therefore eligible for thoſe who are in danger of ſuch bites, to carry along with them ſome ſtrong alkaline ley, or dry alkaline ſalt, or both, which could be inſtantly clapt on the wound, and by its diſſolving power would deſtroy both the poiſon and the infected parts. Strong cordials alſo, ſuch as ardent ſpirits, volatile alkali, &c. might poſſibly excite the languid powers of nature, and enable her to expel the enemy, which would otherwiſe prove too powerful. This ſeems to be ſomewhat confirmed from the account we have in the Philoſophical Tranſactions of a gentleman bit by a rattle-ſnake, who was more relieved by a poultice of vinegar and vine-aſhes put to his wound than any thing elſe. The vine-aſhes being of an alkaline nature, muſt have ſaturated the vinegar, ſo that no part of the cure could be attributed to them: on the other hand, the aſhes themſelves could not have been ſaturated by the ſmall quantity of acid neceſſary to form them into a poultice; of conſequence they muſt have operated by their alkaline quality.—Soap-ley therefore, or very ſtrong ſalt of tartar, may reaſonably be thought to be the beſt external application, not only for the bites of vipers, but of every venomous creature; and in fact we find *dry ſalt* univerſally recommended both in the bites of ſerpents and of mad dogs. Dr Mead recommends the fat of vipers preſently rubbed into the wound; but owns that it is not ſafe to truſt to this remedy alone.

495 MELÆNE.

THIS is a diſtemper not very common, but which has been obſerved by the ancient phyſicians, and is deſcribed by Hippocrates under the name of *morbus niger*. It ſhews itſelf by a vomiting and purging of black tar-like matter; which Hippocrates, Boerhaave, and Van Swieten, ſuppoſed to be occaſioned by atra bilis. But Dr Home, in his Clinical Experiments, ſhews that it is owing to an effuſion of blood from the meſeraic veſſels, which by its ſtagnation and corruption aſſumes that ſtrange appearance. The diſeaſe, he ſays, frequently follows hæmorrhagy; and thoſe of a ſcorbutic habit are moſt ſubject to it. It is an acute diſeaſe, and terminates ſoon; yet is not attended with any great degree of fever. In one of Dr Home's patient's the criſis happened on the eighth day by diarrhœa; in another, on the 14th, by ſweat and urine; and a third had no evident critical evacuation.

As to the cure, Dr Home obſerves, that bleeding is always neceſſary where the pulſe can bear it; nor are we to be deterred from it by a little weakneſs of the pulſe, more than in the enteritis. Emetics are hurtful, but purgatives are uſeful. But the moſt powerful medicine for checking this hæmorrhage is the vitrolic acid: and, that this might be given in greater quantity, he mixed it with mucilage of gum arabic; by which means he was enabled to give double the quantity he could otherwiſe have done. The cold bath was tried in one inſtance, but he could not determine whether it was of any ſervice or not. The cure was completed by exerciſe and the bark.

Of the DISEASES *of* CHILDREN. 497

Dr Buchan obſerves, that from the annual regiſters of the dead it appears, that about one half of the children born in Great Britain die under twelve years of age; and this very great mortality he attributes in a great meaſure to wrong management. The particulars of this wrong management enumerated by him are,

1. Mothers not ſuckiling their own children. This, he owns, it is ſometimes impoſſible for them to do; but where it can be done, he affirms that it ought never be omitted. This he ſays would prevent the unnatural cuſtom of mothers leaving their own children to ſuckle thoſe of others; on which he paſſes a moſt ſevere cenſure, and indeed ſcarce any cenſure can be ſevere enough upon upon ſuch inhumanity. Dr Buchan informs us, "He is ſure he ſpeaks within bounds, when he ſays not one in a hundred of theſe children live who are thus abandoned by their mothers." For this reaſon he adds, that no mother ſhould be allowed to ſuckle another's child till her own is fit to be weaned. A regulation of this kind would ſave many lives among the poorer ſort, and would do no harm to the rich; as moſt women who make good nurſes are able to ſuckle two children in ſucceſſion upon the ſame milk.

2. Another ſource of the diſeaſes of children is the unhealthineſs of parents; and our author inſiſts that no perſon who labours under an incurable malady ought to marry.

3. The manner of clothing children tends to produce diſeaſes. All that is neceſſary here, he ſays, is to wrap the child in a ſoft looſe covering; and the ſoftneſs of every part of the infant's body ſufficiently ſhews the injury which muſt neceſſarily enſue by purſuing a contrary method.

4. A new-born infant, inſtead of being treated with ſyrups, oils, &c. ought to be allowed to ſuck the mother's milk as ſoon as it comes into the breaſt†. He condemns the practice of giving wines and ſpirituous liquors along with the food ſoon after birth; and ſays, that, if the mother or nurſe has a ſufficient quantity of milk, the child will need little or no other food before the third or fourth month. But to this it may reaſonably be objected, not only that the nurſing would thus be very ſevere on the mother; but if the child is left thus long without food, it will not eaſily reliſh it for ſome time, and its ſtomach is apt to be eaſily hurt by a ſlight change of diet after it has been long accuſtomed to one thing. Neither can it be ſhewn, that the ſtrongeſt and moſt healthy infants are thoſe which get no other food but the mother's milk during the firſt months of their life. In fact, children are evidently of a weak and lax habit of body, ſo

† See the article *Lactation*.

that many of their diſeaſes muſt ariſe from that cauſe; all directions which indiſcriminately adviſe an antiphlogiſtic regimen for infants as ſoon as they come into the world, muſt of neceſſity be wrong. Many inſtances in fact might be brought to ſhew, that by this prepoſterous method of ſtarving infants, and at the ſame time treating them with vomits and purges, they are often hurried out of the world. Animal-food indeed is exceſſively agreeable to children, and they ought to be indulged with it in moderation; and this will prove a much better remedy for thoſe acidities with which children are often troubled, than magneſia alba, crab's eyes, or other abſorbents, which have the moſt pernicious effects on the ſtomachs of theſe tender creatures, and pall the appetite to a ſurpriſing degree. The natural appetites of children are indeed the beſt rule by which we can judge of what is proper or improper for them. They muſt no doubt be regulated as to the quantity; but we may be aſſured that what a child is very fond of will not hurt it if taken in moderation. When children are ſick, they refuſe every thing but the breaſt; and, if their diſtemper be very ſevere, they will refuſe it alſo; and in this caſe they ought not to be preſſed to take food of any kind: but when the ſickneſs goes off, their appetite alſo returns, and they will require the uſual quantity of food.

According to Dr Armſtrong, *inward fits*, as they are called, are in general the firſt complaint that appears in children; and as far as he has obſerved, moſt, if not all infants, during the firſt months, are more or leſs liable to them. The ſymptoms are theſe. The child appears as if it was aſleep, only the eyelids are not quite cloſed; and if you obſerve them narrowly, you will ſee the eyes frequently twinkle, with the white of them turned up. There is a kind of tremulous motion in the muſcles of the face and lips, which produces ſomething like a ſimper or a ſmile, and ſometimes almoſt the appearance of a laugh. As the diſorder increaſes, the infant's breath ſeems now and then to ſtop for a little; the noſe becomes pinched; there is a pale circle about the eyes and mouth, which ſometimes changes to livid, and comes and goes by turns; the child ſtarts, eſpecially if you go to ſtir it though ever ſo gently, or if you make any noiſe near it. Thus diſturbed, it ſighs, or breaks wind, which gives relief for a little, but preſently it relapſes into the dozing. Sometimes it ſtruggles hard before it can break wind, and ſeems as if falling into convulſions; but a violent burſt of wind from the ſtomach, or vomiting, or a loud fit of crying, ſets all to rights again. As the child increaſes in ſtrength, theſe fits are the more apt to go off ſpontaneouſly and by degrees; but in caſe they do not, and if there is nothing done to remove them, they either degenerate into an almoſt conſtant drowſineſs, (which is ſucceeded by a fever and the thruſh), or elſe they terminate in vomitings, ſour, curdled, or green ſtools, the watery-gripes, and convulſions. The thruſh indeed very often terminates in theſe laſt ſymptoms. Wherefore, as theſe complaints naturally run into one another, or ſucceed each other, they may be conſidered, in a manner, as only different ſtages of the ſame diſeaſe, and which derive their origin from the ſame cauſe. Thus, the inward fits may be looked upon as the firſt ſtage of the diſorder; the fever, and thruſh (when it happens), as the ſecond; the vomitings, ſour, curdled, green or watery ſtools, as the third; and convulſions, as the laſt.

As to the cauſe of theſe complaints, he obſerves, that in infants the glandular ſecretions, which are all more or leſs glutinous, are much more copious than in adults. During the time of ſucking, the glands of the mouth and fauces being ſqueezed by the contraction of the muſcles, ſpue out their contents plentifully, which afterwards mixing with the mucus of the gullet and ſtomach, render the milk of a ſlimy conſiſtence, by which means it is not ſo readily abſorbed into the lacteals; and as in moſt infants there is too great an acidity in the ſtomach, the milk is thereby curdled, which adds to the load; hence ſickneſs and ſpaſms, which, being communicated by ſympathy to the nerves of the gullet and fauces, produce the convulſive motions above deſcribed, which go commonly by the name of *inward fits*. The air, likewiſe, which is drawn in during ſuction, mixing with the milk, &c. in the ſtomach, perhaps contributes towards increaſing the ſpaſms abovementioned. He is the more induced to attribute theſe fits to the cauſes now aſſigned, that they always appear immediately after ſucking or feeding; eſpecially if the child has been long at the breaſt, or fed heartily, and has been laid down to ſleep without having firſt broken wind, which ought never to be done. Another reaſon is, that nothing relieves them ſo ſoon as belching or vomiting; and the milk or food they throw up is generally either curdled, or mixed with a large quantity of heavy phlegm. In caſe they are not relieved by belching or vomiting, the fits ſometimes continue a good while, and gradually abate, according as the contents of the ſtomach are puſhed into the inteſtines; and as ſoon as the former is pretty well emptied, the child is waked by hunger, cries, and wants the breaſt; he ſucks, and the ſame proceſs is repeated. Thus, ſome children for the firſt weeks are kept almoſt always in a doſe, or ſeemingly ſo; eſpecially if the nurſes, either through lazineſs or want of ſkill, do not take care to rouſe them when they perceive that it is not a right ſleep, and keep them awake at proper intervals. This dozing is reckoned a bad ſign amongſt experienced nurſes; who look upon it as a forerunner of the thruſh, as indeed it often is; and therefore, when it happens, we ought to be upon our guard to uſe the neceſſary precautions for preventing that diſorder.

For theſe diſorders, the only remedy recommended by Dr Armſtrong is antimonial wine, given in a few drops, according to the age of the infant. By this means the ſuperabundant mucus will no doubt be evacuated; but at the ſame time we muſt remember, that this evacuation can only *palliate*, and not cure the diſeaſe. This can only be effected by tonics; and a decoction of the Peruvian bark, made into a ſyrup, will readily be taken by infants, and may be ſafely exhibited from the very day they come into the world, or as ſoon as their bowels are emptied of the meconium by the mother's milk or any other means.

Dr Clarke obſerves, that *fractures* of the *limbs*, and *compreſſions* of the *brain*, often happen in difficult labours; and that the latter are often followed by convulſions ſoon after delivery. In theſe caſes, he ſays, it will be adviſeable to let the navel-ſtring bleed two or three ſpoonfuls before it is tied. Thus the oppreſſion of the brain will be relieved, and the diſagreeable conſequences juſt mentioned will be prevented. But if this has been neglected, and fits have actually come on, we muſt endeavour to make a revulſion by all the means in our power; as by opening the jugular vein, procuring an immediate diſcharge of the urine and meconium, and applying ſmall bliſters to the back, legs, or behind the ears. The ſemicupium, too, would ſeem to be uſeful in this caſe, by deriving the oppreſſive load of fluids from the head and upper parts.

It ſometimes happens after a tedious labour, that the child is ſo faint and weak as to diſcover little or no ſigns of life. In ſuch a caſe, after the uſual cleanſing, the body ſhould be immediately wrapped in warm flannel, and briſkly toſſed about in the nurſe's arms, in order, if poſſible, to excite the languid circulation. If this fails, the breaſt and temples may be rubbed with brandy or other ſpirits; or the child may be provoked to cry, by whipping, or other ſtimulating methods, as the application of onion, or ſalt and ſpirit of hartſhorn, to the mouth and noſtrils. But after all theſe expedients have been tried in vain, and the recovery of the child abſolutely deſpaired of, it has ſometimes been happily revived by introducing a ſhort catheter, or blow-pipe, into the mouth, and gently blowing into the lungs at different intervals. Such children, however, are apt to remain weak for a conſiderable time, ſo that it is often no eaſy matter to rear them; and therefore particular care and tenderneſs will be required in their management, that nothing may be omitted which can contribute either to their preſervation, or the improvement of their ſtrength and vigour.

All the diſorders which ariſe from a *retention* of the *meconium*, ſuch as the *red gum*, may eaſily be removed by the uſe of gentle laxatives; but the great ſource of mortality among children is the *breeding* of their *teeth*. The uſual ſymptoms produced by this are fretting; reſtleſſneſs; frequent and ſudden ſtartings, eſpecially in ſleep; coſtiveneſs; and ſometimes a violent diarrhœa, fever, or convulſions. In general, thoſe children breed their teeth with the greateſt eaſe, who have a moderate laxity of the bowels, or a plentiful flow of ſaliva during that time.

In mild caſes, we need only, when neceſſary, endeavour to promote the means by which nature is obſerved to carry on the buſineſs of dentition in the eaſieſt manner. For this purpoſe, if a coſtiveneſs is threatened, it muſt be prevented, and the body kept always gently open; and the gums ſhould be relaxed by rubbing them frequently with ſweet oils, or other ſoftening remedies of that kind, which will greatly diminiſh the tenſion and pain. At the ſame time, as children about this period are generally diſpoſed to chew whatever they get into their hands, they ought never to be without ſomething that will yield a little to the preſſure of their gums, as a cruſt of bread, a wax-candle, a bit of liquorice-root, or ſuch like; for the repeated muſcular action, occaſioned by the conſtant biting and gnawing at ſuch a ſubſtance, will increaſe the diſcharge of the ſalivary glands, while the gums will be ſo forcibly preſſed againſt the advancing teeth, as to make them break out much ſooner, and with leſs uneaſineſs, than would otherwiſe happen. Some likewiſe recommend a ſlice of the rind of freſh bacon, as a proper maſticatory for the child, in order to bring moiſture into its mouth, and facilitate the eruption of the teeth by exerciſing the gums. If theſe means, however, prove ineffectual, and bad ſymptoms begin to appear, the patient will often be relieved immediately, by cutting the inflamed gum down to the tooth, where a ſmall white point ſhews the latter to be coming forward. When the pulſe is quick, the ſkin hot and dry, and the child of a ſufficient age and ſtrength, emptying the veſſels by bleeding, eſpecially at the jugular, will frequently be neceſſary here, as well as in all other inflammatory caſes; and the belly ſhould be opened from time to time, by emollient oily or mucilaginous glyſters. But, on the contrary, if the child is low, ſunk, and much weakened, repeated doſes of the ſpirit of hartſhorn, *tinctura fuliginis*, and the like reviving medicines, ought to be preſcribed. Bliſters applied to the back, or behind the ears, will often be proper in both caſes. A prudent adminiſtration of opiates, when their uſe is not forbid by coſtiveneſs or otherwiſe, is ſometimes of great ſervice in difficult teething, as, by mitigating pain, they have a tendency to prevent its bad effects, as a fever, convulſions, or other violent ſymptoms; and often they are abſolutely neceſſary, along with the teſtaceous powders, for checking an immoderate diarrhœa.

When cathartics are neceſſary, but the child ſeems too tender and weak to bear their immediate operation, they ſhould be given to the nurſe; in which caſe they will communicate ſo much of their virtues to the milk as will be ſufficient to purge the infant.

As moſt young children, if in health, naturally ſleep much, and pretty ſoundly, we may always be apt to ſuſpect that ſomething is amiſs when they begin to be ſubject to *watching* and *frights*; ſymptoms which ſeldom or never occur but either in conſequence of ſome preſent diſorder not yet taken notice of, or as the certain forerunners of an approaching indiſpoſition. We ſhould immediately, therefore, endeavour to find out their cauſe, that we may uſe every poſſible means to remove or prevent it; otherwiſe the want of natural reſt, which is ſo very prejudicial to perſons of all ages, will ſoon reduce the infant to a low and emaciated ſtate, which may be followed by an hectic fever, diarrhœa, and all the other conſequences of weakneſs and debility. Theſe ſymptoms, being always the effects of irritation and pain, may proceed, in very young infants, from crudities or other affections of the *primæ viæ* producing flatulencies or gripes; about the ſixth or ſeventh month, they may be owing to that uneaſineſs which commonly accompanies the breeding of the teeth; and after a child is weaned, and begins to uſe a different kind of food, worms become frequently an additional cauſe of watchings and diſturbed ſleep. Hence, to give the neceſſary relief on theſe occaſions, the original complaint muſt firſt be aſcertained from the child's age and other concomitant circumſtances, and afterwards treated according to the nature of the caſe. Women and nurſes are too apt to have recourſe to opiates in the watchings of children, eſpecially when their own reſt happens to be much diſturbed by their continual noiſe and clamour. But this practice is often prejudicial, and never ought to have place when the belly is in the leaſt obſtructed.

There is no complaint more frequent among children than that of *worms*, the general ſymptoms of which have been already enumerated; but it muſt be obſerved, that all the ſymptoms commonly attributed to worms alone, may be produced by a foulneſs of the bowels. Hence practitioners ought never to reſt ſatisfied with adminiſtering to their patients ſuch medicines as are poſſeſſed only of an anthelmintic quality, but to join them with thoſe which are particularly adapted for cleanſing the *primæ viæ;* as it is uncertain whether a foulneſs of the bowels may not be the cauſe of all the complaints. This practice is ſtill the more adviſeable, on account of viſcid humours in the inteſtines affording lodgment to the ova of worms; which, without the convenience of ſuch a receptacle, would be more ſpeedily diſcharged from the body.

The difficulty of curing what is called a *worm fever*, ariſes, according to Dr Muſgrave, from its being frequently attributed to worms, when the cauſe of the diſorder is of a quite different nature. He does not mean to deny that worms do ſometimes abound in the human body, nor that the irritation cauſed by them does ſometimes produce a fever; but he apprehends theſe caſes to be much more uncommon than is generally imagined, and that great miſchief is done by treating ſome of the diſorders of children as worm caſes, which really are not ſo. Dr Hunter, it is obſerved, is of the ſame opinion on this point; and he has, we are told, diſſected great numbers of children who have been ſuppoſed to die of worm-fevers, and whoſe complaints were of courſe treated as proceeding from worms, in whom, however, there appeared, upon diſſection, to be not only no worms, but evident proofs of the diſorders having been of very different natures.

The *ſpurious worm-fever*, as Dr Muſgrave terms it, has, in all the inſtances he has ſeen of it, ariſen evidently from the children having been indulged with too great quantities of fruit; though a poor cold diet may, he thinks, occaſionally give birth to it. Every ſort of fruit eaten in exceſs will probably produce it; but an immoderate uſe of cherries ſeems to be the moſt common cauſe of it. The approach of this diſorder has a different appearance, according as it ariſes from a habit of eating fruit in rather too large quantities, or from an exceſſive quantity eaten at one time. In the former caſe, the patient gradually grows weak and languid; his colour becomes pale and livid; his belly ſwells and grows hard; his appetite and digeſtion are deſtroyed; his nights grow reſtleſs, or at leaſt his ſleep is much diſturbed with ſtartings, and then the fever ſoon follows; in the progreſs of which, the patient grows comatoſe, and at times convulſed; in which ſtate, when the event is fatal, he dies. The pulſe at the wriſt, though quick, is never ſtrong or hard; the carotids, however, beat with great violence, and elevate the ſkin ſo as to be diſtinctly ſeen at a diſtance. The heat is at times conſiderable, eſpecially in the trunk; though at other times, when the brain is much oppreſſed, it is little more than natural. It is ſometimes accompanied by a violent pain of the epigaſtric region, though more commonly the pain is ſlight, and terminates in a coma; ſome degree of pain, however, ſeems to be inſeparable from it, ſo as clearly to diſtinguiſh this diſorder from other comatoſe affections.

When a large quantity of fruit has been eaten at once, the attack of the diſorder is inſtantaneous, and its progreſs rapid; the patient often paſſing, in the ſpace of a few hours, from apparently perfect health, to a ſtupid, comatoſe, and almoſt dying ſtate. The ſymptoms of the fever, when formed, are in both caſes nearly the ſame; except that, in this latter ſort, a little purulent matter is ſometimes diſcharged, both by vomit and ſtool, from the very firſt day. The ſtools, in both caſes, exhibit ſometimes a kind of curd reſembling curdled milk, at other times a floating ſubſtance is obſerved in them; and ſometimes a number of little threads and pellicles, and now and then a ſingle worm.

Strong purgatives, or purges frequently repeated, in this diſorder, are greatly condemned by our author, as they in general not only aggravate the ſymptoms already preſent, but are ſometimes the origin of convulſions. Bloodletting is not to be thought of in any ſtage of the diſorder.

Although frequent purging, however, is not recommended, yet a ſingle vomit and purge are adviſed in the beginning of the diſorder, with a view to evacuate ſuch indigeſted matter and mucus as happens to remain in the ſtomach and bowels. Theſe having operated properly, there is ſeldom occaſion for repeating them; and it is ſufficient, if the body be coſtive, to throw up, every ſecond or third day, a clyſter, compoſed of half a dram of aloes, diſſolved in five ounces of infuſion of chamomile.

The principal part of the cure, however, depends upon external applications to the bowels and ſtomach; and, as the cauſe of the diſorder is of a cold nature, the applications muſt be warm, cordial, and invigorating; and their action muſt be promoted by conſtant actual heat.

The following is the form recommended.

“ Take of leaves of wormwood and rue, each equal parts: make a ſaturated decoction in a ſufficient quantity of water, with which foment the region of the ſtomach and abdomen for a quarter of an hour, repeating the fomentation every three or four hours. A poultice of the boiled herbs is to be applied after the fomentation, and conſtantly renewed as it cools.” For internal uſe, the following is all that has been found neceſſary. “ Take of ſpirituous and ſimple cinnamon-water, each half an ounce; oil of almonds, an ounce and an half; balſamic ſyrup, three drachms. Mix, and ſhake the vial when uſed.” From two to ſix drachms are given every third hour.

When any nervous ſymptoms come on, or remain after the diſorder is abated, they are eaſily removed by giving a pill of four grains of aſafœtida once or twice a-day.

The diagnoſtics of worms are very uncertain; but, even in real worm caſes, the treatment above recommended would, it is imagined, be much more efficacious than the practice commonly had recourſe to. As worms either find the conſtitution weakly, or very ſoon make it ſo, the frequent repetition of purges, particularly mercurials, cannot but have a pernicious effect. Bares-foot is ſtill more exceptionable, being in truth to be ranked rather among poiſons than medicines. Worm-ſeed and bitters are too offenſive to the palate and ſtomach to be long perſiſted in. The powder of coralline creates diſguſt by its quantity; and the infuſion of pink-root is well known to occaſion now and then vertiginous complaints and fits.

Fomenting the belly night and morning with a ſtrong decoction of rue and wormwood, is much recommended. It is a perfectly ſafe remedy, and, by invigorating the bowels, has thereby a conſiderable influence in rendering them capable of expelling ſuch worms as they happen to contain. After the fomentation, it is adviſed to anoint the belly with a liniment, compoſed of one part of eſſential oil of rue, and two parts of a decoction of rue in ſweet oil. Of internal medicines, the beſt is aſafœtida, with an aloëtic pill or two at proper intervals.

The diet of children diſpoſed to worms, ſhould be warm and nouriſhing, conſiſting in part at leaſt of animal food, which is not the worſe for being a little ſeaſoned. Their drink may be any kind of beer that is well hopped, with now and then a ſmall draught of porter or negus. A total abſtinence from butter is not ſo neceſſary, perhaps, as is generally imagined. Poor cheeſe muſt by all means be avoided; but ſuch as is rich and pungent, in a moderate quantity, is particularly ſerviceable. In the ſpurious worm-fever, the patient ſhould be ſupported occaſionally by ſmall quantities of broth; and, at the cloſe of it, when the appetite returns, the firſt food given ſhould be of the kinds above recommended.

The diet here recommended will, perhaps, be thought extraordinary, as the general idea is at preſent, that, in the management of children, nothing is ſo much to be avoided as repletion and rich food. It is no doubt an error to feed children too well, or to indulge them with wine and rich ſauces; but it is equally an error to confine them to too ſtrict or too poor a diet, which weakens their digeſtion, and renders them much more ſubject to diſorders of every kind, but particularly to diſorders of the bowels. In regard to the ſpurious worm-fever, if it be true that acid fruits too plentifully eaten are the general cauſe of it, it follows as a conſequence, that a warm nutritious diet, moderately uſed, will moſt effectually counteract the miſchief, and ſooneſt reſtore the natural powers of the ſtomach. Beſides, if the diſorder does not readily yield to the methods here directed, as there are many examples, and ſome have happened to our author, of its terminating by an inflammation and ſuppuration of the navel, it is highly adviſeable to keep this probability in view, and, by a moderate allowance of animal-food, to ſupport thoſe powers of nature, from which only ſuch a happy criſis is to be expected.

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The application of this ſubtile fluid to medicinal purpoſes was thought of ſoon after the diſcovery of the electric ſhock; and after various turns of reputation, its medical virtues ſeem now to be pretty well eſtabliſhed. After giving ſo particular a deſcription of the electrical apparatus under the proper article, it would here be ſuperfluous to ſay any thing farther on that head. We ſhall only obſerve, that Mr Cavallo, who hath publiſhed the lateſt and the beſt treatiſe on Medical Electricity, entirely diſapproves of giving violent ſhocks, and finds it moſt efficacious to expoſe the patient to the electrical aura diſcharged from an iron or a wooden point; or if ſhocks are given, they ſhould be very ſlight, and not exceed 12 or 14 at a time. In this way he recommends it as effectual in a great number of diſorders. The patient may be electrified from three to ten minutes; but if ſparks are drawn, they ſhould not exceed the number of ſhocks abovementioned.

Rheumatic diſorders, even of long ſtanding, are relieved, and generally quite cured, by only drawing the electric fluid with a wooden point from the part, or by drawing ſparks thro' flannel. The operation ſhould be continued for about four or five minutes, repeating it once or twice every day.

Deafneſs, except when it is occaſioned by obliteration, or other improper configuration of the parts, is either entirely or partly cured by drawing the ſparks from the ear with the glaſs-tube director, or by drawing the fluid with a wooden point. Sometimes it is not improper to ſend exceedingly ſmall ſhocks (for inſtance, of one-thirtieth of an inch) from one ear to the other.—It has been conſtantly obſerved, that whenever the ear is electrified, the diſcharge of the wax is conſiderably promoted.

The toothach, occaſioned by cold, rheumatiſm, or inflammation, is generally relieved by drawing the electric fluid with a point, immediately from the part, and alſo externally from the face. But when the body of the tooth is affected, electrization is of no uſe; for it ſeldom or never relieves the diſorder, and ſometimes increaſes the pain to a prodigious degree.

Swellings in general, which do not contain any *matter*, are generally cured by drawing the electric fluid with a wooden point. The operation ſhould be continued for three or four minutes every day.—It is very remarkable, that in ſome caſes of white ſwellings, quite cured by means of electricity, the bones and cartilages were in ſome meaſure diſfigured.

Inflammations of every ſort are generally relieved by a very gentle electrization.

In inflammations of the eyes, the throwing of the electric fluid by means of a wooden point is conſtantly attended with great benefit; the pain being quickly abated, and the inflammation being generally diſſipated in a few days. In theſe caſes, the eye of the patient muſt be kept open; and care ſhould be taken not to bring the wooden point very near it, for fear of cauſing any ſpark. Sometimes it is ſufficient to throw the fluid with a metal point; for in theſe caſes, too great an irritation ſhould be always avoided. It is not neceſſary to continue this operation for three or four minutes without intermiſſion; but, after throwing the fluid for about half a minute, a ſhort time may be allowed to the patient to reſt and to wipe his tears, which generally flow very copiouſly; then the operation may be continued again for another half minute, and ſo on for four or five times every day.

The *gutta ſerena* has been often cured by electrization; but at the ſame time it muſt be confeſſed, it has proved ineffectual in many ſuch caſes, in which it was adminiſtered for a long time and with all poſſible attention. However, it hath never been known that any body was made worſe by it. The beſt method of adminiſtering electricity in ſuch caſes, is firſt to draw the electric fluid with a wooden point for a ſhort time, and then to ſend about half a dozen of ſhocks of one-twentieth of an inch from the back and lower part of the head to the fore head, very little above the eye.

A remarkable diſeaſe of the eye was ſome time ago perfectly cured by electrization; it was an opacity of the vitreous humour of the eyes. This ſeems to be the only caſe of the kind to which electricity was applied.

All the caſes of *fiſtula lacrymalis* which Mr Cavallo hath known to have been electrified by perſons of ability for a ſufficient time, have been entirely cured. The method generally practiſed, has been that of drawing the fluid with a wooden point, and to take very ſmall ſparks from the part. The operation may be continued for about three or four minutes every day. It is remarkable, that in thoſe caſes, after curing the fiſtula lacrymalis, no other diſeaſe was occaſioned by it, as blindneſs, inflammations, &c. by ſuppreſſing that diſcharge.

Palſies are ſeldom perfectly cured by means of electricity, eſpecially when they are of long ſtanding; but they are generally relieved to a certain degree. The method of electrifying in thoſe caſes, is to draw the fluid with the wooden point, and to draw ſparks thro' flannel, or though the uſual coverings of the part if they are not too thick. The operation may be continued for about five minutes per day.

Ulcers, or open ſores of every kind, even of a long ſtanding, are generally diſpoſed to heal by electrization. The general effects are a diminution of the inflammation, and at firſt a promotion of the diſcharge of properly formed matter; which diſcharge gradually leſſens, according as the limits of the ſore contract, till it is quite cured. In theſe caſes the gentleſt electrization muſt be uſed, in order to avoid too great an irritation, which is generally hurtful. To draw or throw the fluid with a wooden or even with a metal point, for three or four minutes per day, is abſolutely ſufficient.

Cutaneous eruptions have been ſucceſsfully treated with electrization: but in theſe caſes it muſt be obſerved, that if the wooden point is kept too near the ſkin, ſo as to cauſe any conſiderable irritation, the eruption will be cauſed to ſpread more; but if the point be kept at about ſix inches diſtance, or farther, if the electrical machine is very powerful, the eruptions will be gradually diminiſhed, till they are quite cured. In this kind of diſeaſe, the immediate and general effect of the wooden point is to occaſion a warmth about the electrified part, which is always a ſign that the electrization is rightly adminiſtered.

The application of electricity has perfectly cured various caſes of *St Vitus's dance*, or of that diſeaſe which is commonly called ſo; for it is the opinion of ſome very learned phyſicians, that the real diſeaſe called *St Vitus's dance*, which formerly was more frequent than it is at preſent, is different from that which now goes under that name. In this diſeaſe, ſhocks of about one-tenth of an inch may be ſent through the body in various directions, and alſo ſparks may be taken. But if this treatment proves very diſagreeable to the patient, then the ſhocks muſt be leſſened, and even omitted; inſtead of which, ſome other more gentle applications muſt be ſubſtituted.

Scrophulous tumours, when they are juſt beginning, are generally cured by drawing the electric fluid with a wooden or metal point from the part. This is one of thoſe kinds of diſeaſes in which the action of electricity requires particularly the aid of other medicines in order to effect a cure more eaſily; for ſcrophulous affections generally accompany a great laxity of the habit, and a general cachexy, which muſt be obviated by proper remedies.

In *cancers*, the pains only are moſtly alleviated by drawing the electric fluid with a wooden or metal point. Mr Cavallo, however, mentions one caſe in which a moſt confirmed cancer of very long ſtanding, on the breaſt of a woman, has been much reduced in ſize. It is remarkable, that this patient was ſo far relieved by drawing the fluid with a metal point from the part, that the excruciating pains ſhe had ſuffered for many years did almoſt entirely diſappear; and alſo, that when the electric fluid was drawn by means of a wooden point, the pains did rather increaſe. This perſon is ſtill under the application of electricity; and the cancer ſeems not unlikely to be perfectly cured, altho' contrary to the expectations even of the judicious phyſician who electrifies her, and who knows too well the nature of that dangerous diſeaſe.

Abſceſſes, when they are in their beginning, and in general whenever there is any tendency to form matter, electrization diſperſes them. Lately, in a caſe in which matter was formed upon the hip, called the *lumbar abſceſs*, the diſeaſe was perfectly cured by means of electricity. The *ſciatica* has alſo been often cured by it. In all ſuch caſes, the electric fluid muſt be ſent through the part by means of two directors applied to oppoſite parts, and in immediate contact either with the ſkin or with the coverings, when theſe are very thin. It is very remarkable, that the mere paſſage of the electric fluid in this manner, is generally felt by the patients afflicted with thoſe diſorders, nearly as much as a ſmall ſhock is felt by a perſon in good health. Sometimes a few ſhocks have been alſo given, but it ſeems more proper to omit them; becauſe ſometimes, inſtead of diſperſing, they rather accelerate the formation of matter.

In caſes of *pulmonary inflammations*, when they are in the beginning, electrization has been ſometimes beneficial; but in confirmed diſeaſes of the lungs, it does not ſeem to have ever afforded any unqueſtionable benefit; however, it ſeems that in ſuch caſes the power of electricity has been but ſeldom tried.

Nervous head-achs, even of a long ſtanding, are generally cured by electrization. For this diſeaſe, the electric fluid muſt be thrown with a wooden, and ſometimes even with a metal point, all round the head ſucceſſively. Sometimes exceedingly ſmall ſhocks have been adminiſtered; but theſe can ſeldom be uſed, becauſe the nerves of perſons ſubject to this diſeaſe are ſo very irritable, that the ſhocks, the ſparks, and ſometimes even the throwing the electric fluid with a wooden point kept very near the head, throw them into convulſions.

The application of electricity has often been found beneficial in the *dropſy* when juſt beginning, or rather in the tendency to a dropſy; but it has never been of any uſe in advanced dropſies. In ſuch caſes, the electric fluid is ſent through the part, in various directions, by means of two directors, and ſparks are alſo drawn acroſs the flannel or the cloaths; keeping the metal rod in contact with them, and ſhifting it continually from place to place. This operation ſhould be continued at leaſt ten minutes, and ſhould be repeated once or twice a-day.—Perhaps in thoſe caſes, a ſimple electrization, (viz. to inſulate the patient, and to connect it with the prime conductor whilſt the machine is in action) continued for a conſiderable time, as an hour or two, would be more beneficial.

The *gout*, extraordinary as it may appear, has certainly been cured by means of electricity, in various inſtances. The pain has been generally mitigated, and ſometimes the diſeaſe has been removed ſo well as not to return again. In thoſe caſes, the electric fluid has been thrown by means of a wooden point, altho' ſometimes, when the pain was too great, a metal point only has been uſed.

Agues very ſeldom fail of being cured by electricity, ſo that ſometimes one electrization or two have been ſufficient. The moſt effectual and ſure method has been that of drawing ſparks through flannel, or the cloaths, for about ten minutes or a quarter of an hour. The patients may be electrified either at the time of the fit, or a ſhort while before the time in which it is expected.

The ſuppreſſion of the menſes, which is a diſeaſe of the female ſex that often occaſions the moſt diſagreeable and alarming ſymptoms, is ſucceſsfully and ſpeedily cured by means of electricity, even when the diſeaſe is of long ſtanding, and after that the moſt powerful medicines uſed for it have proved ineffectual. The caſes of this ſort in which electrization has proved uſeleſs are ſo few, and the ſucceſsful ones ſo numerous, that the application of electricity for this diſeaſe may be juſtly conſidered as an efficacious and certain remedy. Great attention and knowledge is required, in order to diſtinguiſh the arreſt of the menſes from a ſtate of pregnancy. In the former, the application of electricity, as we obſerved above, is very beneficial; whereas, in the latter, it may be attended with very diſagreeable effects: it is therefore a matter of great importance to aſcertain the real cauſe of the diſeaſe, before the electricity be applied in thoſe caſes. Pregnant women may be electrified for other diſeaſes, but always uſing very gentle means, and directing the electric fluid through other parts of the body diſtant from thoſe ſubſervient to generation. In the real ſuppreſſion of the menſes, ſmall ſhocks, *i. e.* of about one-twentieth of an inch, may be ſent thro' the pelvis; ſparks may be taken through the cloaths from the parts adjacent to the ſeat of the diſeaſe; and alſo the electric fluid may be tranſmitted by applying the metallic or wooden extremities of two directors to the hips, in contact with the clothes; part of which may be removed in caſe they are too thick. Thoſe various applications of electricity ſhould be regulated according to the conſtitution of the patient. The number of ſhocks may be about 12 or 14. The other applications may be continued for two or three minutes; repeating the operation every day. But either ſtrong ſhocks, or a ſtronger application of electricity than the patient can conveniently bear, ſhould be carefully avoided; for by thoſe means, ſometimes more than a ſufficient diſcharge is occaſioned, which is not eaſily cured. In caſes of uterine hæmorrhages, it is not known that the application of electricity was ever beneficial, neither that it has been often tried. Perhaps a very gentle electrization, as to keep the patient inſulated and connected with the prime conductor, whilſt the electrical machine is in action, may be ſome benefit.

In reſpect to *unnatural diſcharges* and *fluxes* in general, it may be obſerved, that ſome diſcharges are quite unnatural or adventitious, as the fiſtula lacrymalis, and ſome ſpecies of the venereal diſeaſe; but others are only increaſed natural diſcharges, ſuch as the menſes, perſpiration, &c. Now the power of electricity in general, has been found more beneficial for the firſt, than for the ſecond ſort of diſcharges, which are moſtly increaſed by it.

In the *venereal diſeaſe*, electrization has been generally forbidden; having moſtly increaſed the pains, and other ſymptoms, rather than diminiſhed them. Indeed, conſidering that any ſort of ſtimulus has been found hurtful to perſons afflicted with that diſorder, it is no wonder that electricity has produded ſome bad effects, eſpecially in the manner it was adminiſtered ſome time ago, viz. by giving ſtrong ſhocks. However, it has been lately obſerved, that a very gentle application of electricity, as drawing the fluid by means of a wooden or metal point, is peculiarly beneficial in various caſes of this kind, even when the diſeaſe has been of long ſtanding. Having remarked above, that tumours, when juſt beginning, are diſperſed, and that unnatural diſcharges are gradually ſuppreſſed by a judicious electrization, it is ſuperfluous to deſcribe particularly thoſe ſtates of the venereal diſeaſe in which electricity may be applied; it is only neceſſary to remind the operator to avoid any conſiderable ſtimulus in caſes of this ſort.

The application of electricity has been found alſo beneficial in other diſeaſes beſides thoſe mentioned above; but as the facts are not ſufficiently numerous, ſo as to afford the deduction of any general rules, we have not thought proper to take any particular notice of them.

We may laſtly obſerve, that, in many caſes, the help of other remedies to be preſcribed by the gentlemen of the faculty is required to aſſiſt the action of electricity, which by itſelf would perhaps be uſeleſs; and, on the other hand, electrization may often be applied to aſſiſt the action of other remedies, as of ſudorifics, ſtrengthening medicines, &c.

Of FIXED AIR *as a* Medicine. 498

The antiſeptic qualities of fixed air have of late introduced it as a medicine in caſes of putrid diſorders. Dr Percival obſerves, that, though fatal if inſpired in a very lage quantity, it may in ſmaller quantities be breathed without danger or uneaſineſs. And it is a confirmation of this concluſion, that at Bath, where the waters copiouſly exhale this mineral ſpirit, the bathers inſpire it with impunity. At Buxton alſo, where the bath is in a cloſe vault, the effects of ſuch effluvia, if noxious, muſt certainly be perceived.

Encouraged by theſe and ſome other conſiderations, he has adminiſtered fixed air in more than 30 caſes of the *phthiſis pulmonalis*, by directing his patients to inſpire the ſteams of an efferveſcing mixture of chalk and vinegar through the ſpout of a coffee-pot. The hectic fever has in ſeveral inſtances been conſiderably abated, and the matter expectorated has become leſs offenſive and better digeſted. He hath not yet, however, been ſo fortunate in any once caſe as to effect a cure; although the uſe of mephitic air has been accompanied with proper internal medicines. But Dr Withering has been more ſucceſsful. One phthiſical patient under his care, by a ſimilar courſe entirely recovered; another was rendered much better; and a third, whoſe caſe was truly deplorable, ſeemed to be kept alive by it more than two months. It may be proper to obſerve, that fixed air can only be employed with any proſpect of ſucceſs in the latter ſtages of the *phthiſis pulmonalis*, when a purulent expectoration takes place. After the rupture and diſcharge of a vomica, alſo, ſuch a remedy promiſes to be a powerful palliative. Antiſeptic fumigations and vapours have been long employed, and much extolled, in caſes of this kind. The following experiment was made to determine whether their efficacy in any degree depends on the ſeparation of fixed air from their ſubſtance.

One end of a bent tube was fixed in a phial full of lime-water; the other end in a bottle of the tincture of myrrh. The junctures were carefully luted; and the phial containing the tincture of myrrh was placed in water, heated almoſt to the boiling point, by the lamp of a tea-kettle. A number of air-bubbles were ſeparated, but probably not of the mephitic kind; for no precipitation enſued in the lime-water. This experiment was repeated with the *tinct. Tolutana Ph. Ed.* and with *ſp. vinoſ. camph.* and the reſult was entirely the ſame. The medicinal action therefore of the vapours raiſed from ſuch tinctures, cannot be aſcribed to the extrication of fixed air; of which it is probable bodies are deprived by chemical ſolution as well as by mixture.

If mephitic air be thus capable of correcting purulent matter in the lungs, we may reaſonably infer it will be equally uſeful when applied externally to *foul ulcers*; and experience confirms the concluſion. Even the ſanies of a cancer, when the carrot-poultice failed, has been ſweetened by it, the pain mitigated, and a better digeſtion produced. But though the progreſs of the cancers ſeems to be checked by the fixed air, it is to be feared that a cure will not be effected. A palliative remedy, however, in a diſeaſe ſo deſperate and lothſome, may be conſidered as a very valuable acquiſition. Perhaps nitrous air might be ſtill more efficacious. This ſpecies of factitious air is obtained from all the metals, except zinc, by means of the nitrous acid; as a ſweetener and antiſeptic, it far ſurpaſſes fixed air.

In the ulcerous *ſore throat*, much advantage has been experienced from the vapours of efferveſcing mixtures drawn into the *fauces*. But this remedy ſhould not ſuperſede the uſe of other antiſeptic applications.

In *malignant fevers*, wines abounding with fixed air may be adminiſtered to check the ſeptic ferment, and ſweeten the putrid *colluvies* in the *primæ viæ*. If the laxative quality of ſuch liquors be thought an objection to the uſe of them, wines of a greater age may be given, impregnated with mephitic air. —The patient's common drink might alſo be medicated in the ſame way. A putrid diarrhœa frequently occurs in the latter ſtage of ſuch diſorders; and it is a moſt alarming and dangerous ſymptom. If the diſcharge be ſtopped by aſtringents, a putrid *fomes* is retained in the body, which aggravates the delirium, and increaſes the fever. On the contrary, if it be ſuffered to take its courſe, the ſtrength of the patient muſt ſoon be exhauſted, and death unavoidably enſue. The injection of mephitic air into the inteſtines, under theſe circumſtances, bids fair to be highly ſerviceable. And in ſome caſes of this kind, the vapour of chalk and oil of vitriol conveyed into the body by the machine employed for tobacco-clyſters, quickly reſtrained the diarrhœa, corrected the heat and fetor of the ſtools, and in a ſhort time removed every ſymptom of danger.

As a *ſolvent* of the *calculus*, its virtues have been already mentioned; but the experiments made on that ſubject have been too few to determine the matter with ſufficient accuracy.

CONCLUSION;

Being a Diſcourſe on the HYGEINE, *or Method of Preſerving* HEALTH. 499

I. RULES *for the Management of* VALETUDINARIANS.

THAT part of the medical ſyſtem which lays down rules for the preſervation of health, and prevention of diſeaſes, termed *Hygeine*, is not to be ſtrictly underſtood as if it reſpected only thoſe people who enjoy perfect health, and who are under no apprehenſions of diſeaſe, for ſuch ſeldom either deſire or attend to medical advice; but ſhould rather be conſidered as relating to valetudinarians, or to ſuch as, though not actually ſick, may yet have ſufficient reaſons to fear that they will ſoon become ſo: hence it is that the rules muſt be applied to correct morbific diſpoſitions, and to obviate the various things that were ſhewn to be the remote or poſſible cauſes of diſeaſes.

From the way in which the ſeveral temperaments are uſually mentioned by ſyſtematic writers, it ſhould ſeem as if they meant that every particular conſtitution muſt be referred to one or other of the four; but this is far from being reducible to practice, ſince by much the greater number of people have conſtitutions ſo indiſtinctly marked, that it is hard to ſay to which of the temperaments they belong.

When we actually meet with particular perſons who have evidently either,

1. Too much ſtrength and rigidity of fibre, and too much ſenſibility;
2. Too little ſtrength, and yet too much ſenſibility;
3. Too much ſtrength, and but little ſenſibility; or,
4. But little ſenſibility, joined to weakneſs;

we ſhould look on ſuch perſons as more or leſs in the valetudinary ſtate, who require that theſe morbific diſpoſitions be particularly watched, leſt they fall into thoſe diſeaſes which are allied to the different temperaments.

People of the firſt-mentioned temperament being liable to ſuffer from continued fevers, eſpecially of the inflammatory ſpecies, their ſcheme of preſerving health ſhould conſiſt in temperate living, with reſpect both to diet and exerciſe; they ſhould ſtudiouſly avoid immoderate drinking, and be remarkably cautious leſt any of the natural diſcharges be checked. People of this habit bear evacuations well, eſpecially bleeding: they ought not, however, to loſe blood but when they really require to have the quantity leſſened; becauſe too much of this evacuation would be apt to reduce the conſtitution to the ſecond-mentioned temperament, wherein ſtrength is deficient, but ſenſibility redundant.

Perſons of the ſecond temperament are remarkably prone to ſuffer from painful and ſpaſmodic diſeaſes, and are eaſily ruffled; and thoſe of the ſofter ſex who have this delicacy of habit, are very much diſpoſed to hyſterical complaints. The ſcheme here ſhould be, to ſtrengthen the ſolids by moderate exerciſe, cold bathing, the cortex, and chalybeate waters; particular attention ſhould conſtantly be had to the ſtate of the digeſtive organs, to prevent them from being overloaded with any ſpecies of ſaburra which might engender flatus, or irritate the ſenſible membranes of the ſtomach and inteſtines, from whence the diſorder would ſoon be communicated to the whole nervous ſyſtem. Perſons of this conſtitution ſhould never take any of the draſtic purges, nor ſtronger emetics; neither ſhould they loſe blood but in caſes of urgent neceſſity. But a principal ſhare of management, in theſe extremely irritable conſtitutions, conſiſts in avoiding all ſudden changes of every ſort, eſpecially thoſe with reſpect to diet and cloathing, and in keeping the mind as much as poſſible in a ſtate of tranquillity: hence the great advantages which people of this frame derive from the uſe of medicinal waters drunk on the ſpot, becauſe of that freedom from care and ſerious buſineſs of every kind, which generally obtains in all the places laid out for the reception of valetudinarians.

The third-mentioned temperament, where there is an exceſs of ſtrength and but little ſenſibility, does not ſeem remarkably prone to any diſtreſſing or dangerous ſpecies of diſeaſe; and therefore it can hardly be ſuppoſed that perſons ſo circumſtanced will either of themſelves think of any particular ſcheme of management, or have recourſe to the faculty for their inſtructious: ſuch conſtitutions, however, we may obſerve, bear all kinds of evacuations well, and ſometimes require them to prevent an over-fulneſs, which might end in an oppreſſion of the brain or ſome other organ of importance.

But the fourth temperament, where we have weakneſs joined to want of ſenſibility, is exceedingly apt to fall into tedious and dangerous diſeaſes, ariſing from a defect of abſorbent power in the proper ſets of veſſels, and from remiſſneſs of the circulation in general: whence corpulency, dropſy, jaundice, and different degrees of ſcorbutic affection. In order to prevent theſe, or any other ſpecies of accumulation and depravation of the animal-fluids, the people of this conſtitution ſhould uſe a generous courſe of diet, with briſk exerciſe, and be careful that none of the ſecretions be interrupted, nor any of the natural diſcharges ſuppreſſed. Theſe conſtitutions bear purging well, and often require it; as alſo the uſe of emetics, which are frequently found neceſſary to ſupply the place of exerciſe, by agitating the abdominal viſcera, and are of ſervice to prevent the ſtagnation of bile, or the accumulation of mucous humours, which hinder digeſtion, and clog the firſt paſſages. The free uſe of muſtard, horſe-radiſh, and the like ſort of ſtimulating dietetics, is ſerviceable in theſe torpid habits.

When the general maſs of fluids is accumulated beyond what is conducive to the perfection of health, there ariſes what the writers term a *plethora*, which may prove the ſource of different diſeaſes; and therefore, when this overfulneſs begins to produce languor and oppreſſion, care ſhould be taken in time to reduce the body to a proper ſtandard, by abridging the food and increaſing the natural diſcharges, uſing more exerciſe, and indulging leſs in ſleep.

But in oppoſite circumſtances, where the fluids have been exhauſted, we are to endeavour the prevention of further waſte by the uſe of ſtrengthening ſtomachics, nouriſhing diet, and indulgence from fatigue of body or mind.

Vitiated fluids are to be conſidered as affected either with the different kinds of general acrimony, or as betraying ſigns of ſome of the ſpecies of morbific matter which give riſe to particular diſeaſes, ſuch as gout, rheumatiſm, ſtone, ſcurvy, &c.

During the ſtate of infancy, we may ſometimes obſerve a remarkable acidity, which not only ſhews itſelf in the firſt paſſages, but alſo ſeems to contaminate the general maſs of fluids. As it takes its riſe, however, from weak bowels, our views, when we mean to prevent the ill conſequences, muſt be chiefly directed to ſtrengthen the digeſtive organs, as on their ſoundneſs the preparation of good chyle depends; and hence ſmall doſes of rhubarb and chalybeates (either the natural chalybeate waters mixed with milk, or the *flores martiales* in doſes of a few grains, according to the age of the child), are to be adminiſtered; and the diet is to be ſo regulated as not to add to this acid tendency: briſk exerciſe is likewiſe to be enjoined, with frictions on the ſtomach, belly, and lower extremities.

Where the fluids tend to the putrefactive ſtate, which ſhews itſelf by rottenneſs of the teeth, ſpongineſs and bleeding of the gums, a bloated look and livid caſt; the diet then ſhould be chiefly of freſh vegetables and ripe fruits, with wine in moderation, briſk exerciſe, and ſtrengthening bitters.

Where acrimony ſhews itſelf by itching eruptions, uncommon thirſt, and fluſhing heats, nothing will anſwer better than ſuch ſulphureous waters as the Harrowgate and Moffat in Britain, or the Lucan and Swadlinbar in Ireland; at the ſame time uſing a courſe of diet that ſhall be neither acrid nor heating.

So far with reſpect to thoſe kinds of morbific matter which do not invariably produce a particular ſpecies of diſeaſe: but there are others of a ſpecific nature, ſome of which are generated in the body ſpontaneouſly, and ſeem to ariſe from errors in diet, or other circumſtances of ill management with reſpect to the animal œconomy; and hence it is ſometimes poſſible, in ſome degree, if not altogether, to prevent the ill conſequences. Thus, there are inſtances where returns of the gout have been prevented by adhering ſtrictly to a milk diet.

The rheumatiſm has alſo been ſometimes warded off by wearing a flannel ſhirt, or by uſing the cold bath without interruption.

The ſtone may be retarded in its progreſs, and prevented from creating much diſtreſs, by the internal uſe of ſoap and lime-water, or by ſoap-lees taken in milk or in veal-broth.

The putrid ſcurvy may be prevented by warm clothing and perſeverance in briſk exerciſe, by drinking wine or cyder, and eating freely of ſuch vegetable ſubſtances as can be had in thoſe ſituations where this diſeaſe is moſt apt to ſhew itſelf.

In conſtitutions where there is an hereditary diſpoſition to the ſcrophula, if early precautions be taken to ſtrengthen the ſolids by cold bathing, a nouriſhing courſe of diet, and moderate uſe of wine, the acrimony which gives riſe to the diſeaſe will probably be prevented from producing any very bad effects.

The other kinds of morbific matter, which are of the ſpecific nature, are received into the body by infection or contagion.

The infection of a putrid fever or dyſentery, is beſt prevented by immediately taking an emetic on the firſt attack of the ſickneſs or ſhivering; and if that does not completely anſwer, let a large bliſter be applied between the ſhoulders: by this method the nurſes and other attendants on the ſick in the naval hoſpitals have often been preſerved.—As to other infectious morbific matter, ſee the HYDROPHOBIA, POISONS, &c.

The ill effects that may ariſe from the different ſpecies of ſaburra are to be obviated, in general, by the prudent adminiſtration of emetics, and carefully abſtaining from ſuch kinds of food as are known to cauſe the accumulation of noxious matters in the firſt paſſages.

Crude vegetables, milk, butter, and other oily ſubſtances, are to be avoided by perſons troubled with a ſourneſs in the ſtomach; briſk exerciſe, eſpecially riding, is to be uſed, and they are to refrain from fermented liquors: the common drink ſhould be pure water; or water with a very little of ſome ardent ſpirit, ſuch as rum or brandy. Selters and Vahls water are to be drunk medicinally; and aromatic bitters, infuſions, or tinctures, with the acid elixir of vitriol, from ten to twenty drops, will be found ſerviceable, in order to ſtrengthen the fibres of the ſtomach, and promote the expulſion of its contents, thereby preventing the too haſty fermentation of the alimentary mixture. In order to procure immediate relief, the magneſia alba, or *Creta præparata*, will ſeldom fail; and the magneſia, as well as the other, may be made into lozenges, with a little ſugar and mucilage; and in that form may be carried about and taken occaſionally by people afflicted with the acid ſaburra.

In conſtitutions where there is an exuberance or ſtagnation of bile, and a troubleſome bitterneſs in the mouth, it is neceſſary to keep the bowels always free, by taking occaſionally ſmall doſes of pure aloes, *oleum ricini*, cream of tartar, ſome of the common purging ſalts, or the natural purging waters.

When there is a tendency to the empyreumatic and rancid ſaburra, people ſhould carefully avoid all the various kinds of thoſe oily and high-ſeaſoned things generally termed *made-diſhes*, and eat ſparingly of plain meat, without rich ſauces or much gravy; and in theſe caſes the propereſt drink is pure water.

500 II. RULES *for thoſe who enjoy perfect* HEALTH.

THERE can be no doubt that, in general, temperance is the true foundation of health; and yet the ancient phyſicians, as we may ſee in the rules laid down by Celſus, did not ſcruple to recommend indulgence now and then, and allowed people to exceed both in eating and drinking: but it is ſafer to proceed to exceſs in drink than in meat; and if the debauch ſhould create any extraordinary or diſtreſſing degree of pain or ſickneſs, and a temporary fever ſhould enſue, there are two ways of ſhaking it off, either to lie in bed and encourage perſpiration, or to get on horſe-back and by briſk exerciſe reſtore the body to its natural ſtate. The choice of theſe two methods muſt always be determined by the peculiar circumſtances of the parties concerned, and from the experience which they may have had which agrees beſt with them.

If a perſon ſhould commit exceſs in eating, eſpecially of high-ſeaſoned things, with rich ſauces, a draught of cold water, acidulated with ſpirit of vitriol, will take off the ſenſe of weight at the ſtomach, and aſſiſt digeſtion, by moderating and keeping within bounds the alimentary fermentation, and thus preventing the generation of too much flatus. The luxury of ices may be here of real ſervice at the tables of the great, as producing ſimilar effects with the cold water acidulated. Perſons in theſe circumſtances ought not to lay themſelves down to ſleep, but ſhould keep up and exerciſe until they are ſenſible that the ſtomach is unloaded, and that they no longer feel any oppreſſive weight about the præcordia.

If a man is obliged to faſt, he ought, if poſſible, during the time, to avoid laborious work: after ſuffering ſevere hunger, people ought not at once to gorge and fill themſelves; nor it is proper, after being overfilled, to enjoin an abſolute faſt: neither is it ſafe to reſt totally immediately after exceſſive labour, nor ſuddenly fall hard to work after having been long without motion: in a word, all changes ſhould be made by gentle degrees; for though the conſtitution of the human body be ſuch that it can bear many alterations and irregularities without much danger, yet, when the tranſitions are extremely ſudden, they cannot fail of producing ſome kind or degree of diſorder.

It is alſo the advice of Celſus to vary the ſcenes of life, and not confine ourſelves to any ſettled rules: but as inaction renders the body weak and liſtleſs, and exerciſe gives vigour and ſtrength, people ſhould never long omit riding, walking, or going abroad in a carriage; fencing, playing at tennis, or dancing, as each ſhall be found moſt agreeable or convenient, are to be uſed in their turns, according to the circumſtances and tendency to any particular ſpecies of diſeaſe. But when the weakneſs of old age ſhall have rendered the body incapable of all theſe, then dry frictions with the fleſh-bruſh will be extremely requiſite to preſerve health, by accelerating the flow of humours through the ſmalleſt orders of veſſels, and preventing the fluids from ſtagnating too long in the cellular interſtices of the fleſhy parts.

Sleep is the great reſtorer of ſtrength; for, during this time, the nutritious particles appear to be chiefly applied to repair the waſte, and replace thoſe that have been abraded and waſhed off by the labour and exerciſe of the day: but too much indulgence in ſleep has many inconveniences, both with regard to body and mind, as it blunts the ſenſes, and encourages the fluids to ſtagnate in the cellular ſyſtems; whence corpulency, and its neceſſary conſequences languor and weakneſs.

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The proper time for ſleep is the night ſeaſon, when darkneſs and ſilence naturally brings it on: therefore day-ſleep in general is not ſo refreſhing; and to ſome people is really diſtreſsful, as creating an unuſual giddineſs and languor, eſpecially in perſons addicted to literary purſuits. Cuſtom, however, frequently renders ſleep in the day neceſſary; and in thoſe conſtitutions where it is found to give real refreſhment, it ought to be indulged.

With regard to the general regimen of diet, it has always been held as a rule, that the ſofter and milder kinds of aliment are moſt proper for children and younger ſubjects; that grown perſons ſhould eat what is more ſubſtantial; and old people leſſen their quantity of ſolid food, and increaſe that of their drink.

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Plate CLXXIV. fig. 5. ſhews the *Inhaler* as conſtructed by Mr Mudge. *a*, The grating turned back, to ſhew the opening into the valve. The adjoining fig. is a ſection of the cover. *b*, The conſtruction of the cork valve; *c*, the conical part into which the flexible tube *d* is fixed. The flexible part of the tube is about ſix inches long, and may be made by winding a long ſlip of ſilk oil-ſkin over a ſpiral braſs wire.

Some little inconvenience is ſuppoſed to attend the uſe of this machine, as the empty part of the inhaler muſt contain part of the air which the perſon has already breathed. Mr Aitken ſurgeon in Edinburgh hath contrived the inhaler fig. 6. where this inconvenience is avoided. The machine is ſupplied with heated water at the ſcrewed juncture of the flexible pipe marked A, which precludes the entrance of the air by a fold of ſoft leather interpoſed. The exſpired air is emitted by the corner of the mouth, as in ſmoaking tobacco; ſo that there is no occaſion for any other hole or valve in the machine.

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N. B. Errata, Omissions, &c. noticed and ſupplied in the APPENDIX at the end of the Work.

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